

DATED *7th March* 2016

**TRANSPORT FOR LONDON**

and

**Linsinger Maschinenbau**

**Gesellschaft m.b.H.,**

---

**MANUFACTURE AND SUPPLY**

**AGREEMENT**

---

## TABLE OF CONTENTS

Clause	Headings	Page
1.	DEFINITIONS AND INTERPRETATION .....	1
2.	EXERCISE OF RIGHTS AND PERFORMANCE OF OBLIGATIONS BY A THIRD PARTY .....	18
3.	PURCHASE.....	18
3A.	REPRESENTATIONS AND WARRANTIES.....	18
4.	MANUFACTURER'S GENERAL OBLIGATIONS .....	19
5.	CHANGE IN LAW .....	22
6.	SPECIFICATION AND DEVELOPMENT OF DESIGN.....	23
7.	CONFLICTS AND DISCREPANCIES.....	24
8.	CONTRACT PROGRAMME.....	26
9.	KEY PERSONNEL, MEETINGS AND REPORTS .....	28
10.	MANUFACTURING FACILITIES AND RIGHTS OF AUDIT AND INSPECTION .....	28
11.	SPARES AND CONTINUING SUPPORT .....	31
12.	TESTING, TAKE OVER AND DELIVERY PROCEDURE .....	32
13.	LIQUIDATED DAMAGES.....	37
14.	NOT USED .....	38
15.	EXTENSIONS OF TIME .....	38
16.	TRANSFER OF TITLE AND RISK.....	40
17.	DEFECT RECTIFICATION.....	41
18.	SUSPENSION.....	42
19.	HEALTH AND SAFETY .....	43
20.	PAYMENT .....	44
21.	VAT.....	46
22.	SECURITY .....	46
23.	VARIATION PROCEDURE.....	48
24.	INTELLECTUAL PROPERTY RIGHTS .....	50
25.	TERMINATION .....	55
26.	SURVIVAL OF CLAUSES.....	61
27.	FORCE MAJEURE.....	61
28.	INSURANCE .....	63
29.	INDEMNITIES AND LIMITATIONS ON LIABILITY .....	63
30.	CONFIDENTIALITY .....	65
31.	FREEDOM OF INFORMATION.....	67

32.	DISPUTE RESOLUTION .....	67
33.	PROHIBITED ACTS .....	68
34.	ASSIGNMENT, TRANSFER AND SUB-CONTRACTING BY THE MANUFACTURER.....	68
35.	ASSIGNMENT AND NOVATION OR GRANTING OF SECURITY BY THE PURCHASER.....	69
36.	NOTICES .....	69
37.	ENTIRE AGREEMENT .....	70
38.	RIGHTS CUMULATIVE WITH THOSE AT LAW .....	71
39.	FURTHER ASSURANCE .....	71
40.	SET-OFF .....	71
41.	WAIVER.....	72
42.	SEVERANCE .....	72
43.	COSTS .....	72
44.	LANGUAGE.....	72
45.	CONTRACTS (RIGHTS OF THIRD PARTIES) ACT 1999.....	72
46.	COUNTERPARTS.....	72
47.	GOVERNING LAW AND JURISDICTION .....	72
48.	RESPONSIBLE PROCUREMENT.....	73
49.	CRIME AND DISORDER.....	73
50.	LONDON LIVING WAGE .....	73
51.	DATA TRANSPARENCY .....	74
52.	DATA PROTECTION.....	74
53.	CONFLICT OF INTEREST .....	74
54.	CRIMINAL RECORDS DECLARATION .....	75
55.	BEST VALUE .....	76
56.	WORK RELATED ROAD RISK .....	76
57.	ACCESS.....	80
	<b>SCHEDULE 1A: SPECIFICATION .....</b>	<b>83</b>
	<b>SCHEDULE 1B: MANAGEMENT OF DELIVERY.....</b>	<b>85</b>
	<b>SCHEDULE 2: CONTRACT PROGRAMME.....</b>	<b>92</b>
	<b>SCHEDULE 3: SPARES AND SPECIAL TOOLS .....</b>	<b>93</b>
	<b>SCHEDULE 3A: CONTINUING SUPPORT .....</b>	<b>96</b>
	<b>SCHEDULE 4: CONTRACT PRICE.....</b>	<b>96</b>
	<b>SCHEDULE 5: KEY PERSONNEL .....</b>	<b>106</b>
	<b>SCHEDULE 6: FORM OF CERTIFICATES .....</b>	<b>107</b>
	<b>SCHEDULE 7: FORM OF MANUFACTURER GUARANTEE .....</b>	<b>111</b>
	<b>SCHEDULE 8: FORM OF TECHNICAL SERVICES AND SPARES SUPPLY AGREEMENT.....</b>	<b>116</b>

<b>SCHEDULE 9: INSURANCE .....</b>	<b>117</b>
<b>SCHEDULE 10: DISPUTE RESOLUTION PROCEDURE .....</b>	<b>118</b>
<b>SCHEDULE 11: FORM OF PERFORMANCE BOND .....</b>	<b>124</b>
<b>SCHEDULE 12: NOT USED.....</b>	<b>130</b>
<b>SCHEDULE 13: FORM OF ESCROW AGREEMENT.....</b>	<b>131</b>
<b>SCHEDULE 14: NOT USED.....</b>	<b>145</b>
<b>SCHEDULE 15: FORM OF SUBCONTRACTOR WARRANTY .....</b>	<b>146</b>
<b>SCHEDULE 16: CONTRACT PARTICULARS .....</b>	<b>157</b>

**THIS MANUFACTURE AND SUPPLY AGREEMENT** is made on

2016

**BETWEEN:**

- (1) **TRANSPORT FOR LONDON or TfL**, a statutory corporation established under the Greater London Authority Act 1999 of Windsor House, 42-50 Victoria Street, London SW1H 0TL (the "**Purchaser**"); and
- (2) **Linsinger Maschinenbau Gesellschaft m.b.H.**, (Registered No: FN 383993x) a company incorporated under the laws of Austria whose registered office is at - Dr. Linsinger Strasse 23-24, 4662 Steyrermuehl, Austria (the "**Manufacturer**").

**WHEREAS:**

- (A) The Purchaser wishes to procure the Goods for use on the Railway Infrastructure.
- (B) The Purchaser and the Manufacturer have agreed to enter into an agreement for (among other things) the manufacture and supply of the Goods on the terms and conditions set out hereinafter.

**IT IS AGREED:**

## **1. DEFINITIONS AND INTERPRETATION**

### **1.1 Definitions**

In this Agreement the following words and expressions shall have the following meanings save where the context requires otherwise:

**"Additional Spares"** means Spares for use in planned or unplanned maintenance, an indicative list of which is included in Schedule 3 Part B (*Additional Spares*) (as may be amended in accordance with the Variation Procedure), to be made available by the Manufacturer in accordance with Clause 11.4;

**"Agreement"** means this Agreement including the Schedules;

**"Applicable Laws"** means, as the context may require, all or any laws, statutes, by-laws, codes of practice which have force of law, directives, regulations, Industry Standards, statutory instruments, rules, orders, rules of court, delegated or subordinate legislation, rules of common law or any European Union legislation at any time or from time to time in force in the United Kingdom or the European Union and which are or may become applicable to this Agreement, any agreement or document referred to herein, any item of Goods, the Training Services and/or the Manufacturer's obligations (including their performance) under this Agreement;

**"Approved Design"** means a design which has achieved Design Approval;

**"Bond Provider"** means a bond provider having a credit rating of at least the Required Rating and having been approved in writing by the Purchaser (in its absolute discretion);

**"CBTC Signalling Delay"** has the meaning given in Clause 4.7.3;

**"CBTC Signalling Equipment"** means the train-carried signalling equipment produced by the CBTC Signalling Equipment Contractor pursuant to the CBTC Signalling Equipment Contract;

**"CBTC Signalling Equipment Contract"** means the contract to be entered into between the Purchaser and the CBTC Signalling Equipment Contractor under which the CBTC Signalling Equipment Contractor agrees to supply the CBTC Signalling Equipment for the Plant and Machinery and related services;

**"CBTC Signalling Equipment Contractor"** means Siemens Invensys Consortium, an unincorporated joint venture between (1) Siemens PLC and (2) Siemens Rail Automation, having its place of business at Faraday House, Sir William Siemens Square, Frimley, Camberley, GU16 8QD;

**"CBTC Signalling Installation Instructions"** means the installation instructions produced by the CBTC Signalling Equipment Contractor pursuant to the CBTC Signalling Equipment Contract and provided by the Purchaser to the Manufacturer, a copy of which is set out in Appendix 1 to Schedule 1A;

**"Change Date"** means the date set out in the Contract Particulars;

**"Change in Law"** means the application to any person of any Applicable Laws and/or TfL Standards which did not apply to them at the Change Date, or any change in the application or interpretation after the Change Date of any Applicable Laws and/or TfL Standards but excluding any Foreseeable Change in Law;

**"Commencement Date"** means the date specified as such in the Contract Particulars, 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;

**"Competent Authority"** means any legislative, judicial, regulatory or administrative body or agency (or any subdivision of them) of the United Kingdom or the European Union or any supranational body which has rule-making power or whose directions, instructions, rulings, laws or regulations are directly enforceable against a Party in connection with the performance of this Agreement;

**"Condition"** means a condition stated in Schedule 16 (*Contract Particulars*) as may be further described in Schedule 1A (*Specification*);

**"Confidential Information"** has the meaning ascribed to it in Clause 30.1;

**"Consequential Loss"** means in relation to a breach of this Agreement or other circumstances in which an Indemnified Party is entitled to recover any costs, expenses or liabilities suffered or incurred, any loss of production, loss of profit, loss of revenue, loss of contract, loss of goodwill, liability under other agreements or liability to third parties and/or indirect or consequential or other financial loss resulting from such breach and whether or not the Party committing the breach knew, or ought to have known, that such indirect or consequential loss would be likely to be suffered as a result of such breach;

**"Contract Information"** means (i) this Agreement in its entirety (including from time to time agreed changes to this Agreement) and (ii) data extracted from the invoices submitted by the Manufacturer which shall consist of the Manufacturer's name, the expenditure account code, the expenditure account code description, the SAP document number, the clearing date and the invoice amount;

**"Contract Particulars"** means the contract particulars set out in Schedule 16 (*Contract Particulars*);

**"Contract Price"** means the amount payable by the Purchaser to the Manufacturer under this Agreement as specified in the Contract Particulars and as further detailed in Schedule 4 (*Contract Price*), as such amount may be amended from time to time pursuant to this Agreement;

**"Contract Programme"** means the programme set out in Schedule 2 (*Contract Programme*) or, where no programme is so included or the included programme has subsequently been revised (and such revisions have been accepted by the Purchaser Representative), the latest programme accepted by the Purchaser Representative pursuant to Clause 8. The latest programme accepted by the Purchaser Representative supersedes previous Contract Programmes;

**"controlling interest"** shall have the meaning given to it in Clause 25.1.12;

**"Corrective Action"** has the meaning ascribed to it in Clause 10.6.1;

**"Critical Spares"** means critical Spares which are agreed pursuant to Clause 11.4 and an indicative list of which is set out in Schedule 3 Part B (*Critical Spares*);

**"Declaration"** has the meaning ascribed to it in Clause 54.1;

**"Default Interest"** means interest on late payment at the rate of two per cent per annum above the base rate of the Bank of England from time to time;

**"Defect"** means that the Goods or any part of them are defective, damaged, of unsatisfactory quality or not Fit for Purpose whether in consequence of:

- (a) defective materials, workmanship or design;
- (b) transit of the Goods from the Manufacturer to the Purchaser; or
- (c) any act or omission of the Manufacturer during the Defect Rectification Period, and is not principally caused by:
  - (i) any failure by the Purchaser or any third party appointed by the Purchaser to use, operate or maintain the Goods in accordance with the Manuals and/or any Applicable Laws and applicable TfL Standards;
  - (ii) fair wear and tear; or
  - (iii) vandalism, collision or accidental damage caused by any person other than the Manufacturer, its Subcontractors or suppliers or the directors, agents, representatives or employees of any of them;

**"Defect Rectification Period"** means (without prejudice to the further provisions of this Clause 17), in relation to the Plant and Machinery (and those Parts forming part of the Plant and Machinery), the period commencing on the date that the Plant and Machinery has been Taken Over and ending on the date twelve (12) months thereafter, as may be extended in accordance with Clause 17.3;

**"Delivery Location"** means the location specified in the Contract Particulars or such other location as may be notified in writing by the Purchaser's Representative to the Manufacturer;

**"Design"** means all design documentation (whether in written or electronic form) produced by or on behalf of the Manufacturer for the Plant and Machinery;

**"Design Approval"** means approval of the Design pursuant to Clause 6.3.2(B);

**"Detailed Design"** has the meaning ascribed to it in Schedule 1A (*Specification*);

**"Dynamic Tests"** means the dynamic tests identified in the Specification to be carried out by the Manufacturer in accordance with the Technical Assurance Plan;

**"Environmental Damage"** means any material injury or damage to persons, living organisms or property (including offence to man's senses) or any pollution or impairment of the environment resulting from the discharge, emission, escape or migration of any substance or energy, noise or vibration save to the extent any of the foregoing are within the requirements of Schedule 1A (*Specification*);

**"Escrow Agent"** means NCC Escrow International Limited (Company Number 03081952) or any successor or replacement to all or any of its functions;

**"Escrow Agreement"** means an agreement in the form or substantially in the form set out in Schedule 13 (*Form of Escrow Agreement*);

**"European Railway Agency"** means the European Railway Agency established pursuant to Regulation (EC) No 1335/2008 of the European Parliament and of the Council of 16 December 2008 amending Regulation (EC) No 881/2004 establishing a European Railway Agency (Agency Regulation) and includes any successor to all or any of its functions;

**"Excepted Liabilities"** means:

- (a) the Manufacturer's liability for death, personal injury, or fraud, fraudulent misrepresentation or corruption;
- (b) the Manufacturer's liability for loss suffered or incurred by the Purchaser or any other person to the extent such loss is or is required to be insured by the Manufacturer in accordance with the provisions of Clause 28;
- (c) the Manufacturer's liability under Clause 13;
- (d) the Manufacturer's liability in respect of its express obligations in relation to warranty claims and for Defect rectification pursuant to each of the Manufacturer's obligations under Clause 17;

- (e) the Manufacturer's liability in respect of any IPRs pursuant to Clause 24.6;
- (f) the Manufacturer's liability to pay any Taxes as expressly provided by this Agreement or as required by Applicable Law;
- (g) any Default Interest on any payments falling within (a) to (g) above; and
- (h) any policy of insurance that the Manufacturer is required to maintain under this Agreement (or would have been entitled but for any breach or failure to maintain such insurance), subject to any limits on such Losses stated in the Contract Particulars and any deductibles payable under such policies;
- (i) the Manufacturer's liability on termination or cancellation of this Agreement or otherwise to refund and pay to the Purchaser all payments previously paid by the Purchaser in respect of any Plant or Machinery and other items of Goods which are the subject of termination or cancellation in accordance with this Agreement (together with all Default Interest payable on such refund or payment), as such refund is calculated in accordance with Clause 25.5; and
- (j) any costs or expenses which the Manufacturer is obliged or does expend during the term of the Agreement in carrying out its obligations;

**"Fit for Purpose"** means, in relation to any item of Goods to be provided under this Agreement:

- (a) that it complies with all requirements and provisions of this Agreement including the Specification;
- (b) that it complies with all Applicable Laws, Relevant Consents and applicable TfL Standards and, to the extent that there is non-compliance with an applicable TfL Standard, that there is a valid derogation from that TfL Standard; and
- (c) where it is a Part and/or Spare, that if such Part or Spare is incorporated into the Plant and Machinery, such incorporation does not prevent the Plant and Machinery from complying with (a) or (b) above;

**"Fleet Acceptance"** means that 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;

**"Fleet Acceptance Certificate"** means a certificate in the form or substantially in the form set out in Schedule 6, Part C (*Form of Fleet Acceptance Certificate*) issued by the Purchaser Representative in respect of the Plant and Machinery;

**"Fleet Acceptance Criteria"** means the criteria required to be satisfied in order to achieve Fleet Acceptance of the Plant and Machinery in accordance with Clause 12.6.2;

**"Fleet Acceptance Longstop Date"** means the date specified in the Contract Particulars;

**"FM Affected Party"** has the meaning ascribed to it in Clause 27.1.1;

**"FM Notice"** has the meaning ascribed to it in Clause 27.4;

**"FOI Legislation"** means the Freedom of Information Act 2000, all regulations made under it and the Environmental Information Regulations 2004 and any amendment or re-enactment of any of them; and any guidance issued by the Information Commissioner, the Department of Constitutional Affairs, or the Department for Environment Food and Rural Affairs (including in each case its successors or assigns) in relation to such legislation;

**"Force Majeure Event"** means any:

- (a) fire, earthquake or flood;
- (b) act of terrorism;
- (c) war, invasion, acts of foreign enemies, hostilities, civil war, revolutions, insurrection, riots or civil unrest; and/or
- (d) strikes, lock outs or other industrial action not solely affecting the Manufacturer's and/or their Subcontractors' employees or those of any of its Subcontractors.

save to the extent that such event is caused by the Manufacturer, any Subcontractor, or their respective agents, officers and/or employees;

**"Foreseeable Change in Law"** means any Change in Law which:

- (a) is a requirement under the Specification;
- (b) is, provided it comes into force in the same or substantially similar form:
  - (i) enacted prior to the Change Date as coming into effect on a specified future date;
  - (ii) in a draft bill or statutory instrument published on or before the Change Date;
  - (iii) in a draft Industry Standard published on or before the Change Date by Transport for London, the Secretary of State for Transport, RSSB, Network Rail, or the European Rail Agency;
- (c) a prudent manufacturer of plant and machinery should have reasonably known about on or before the Change Date; and/or
- (d) otherwise arises on or before the Change Date;

**"GLA Act"** means the Greater London Authority Act 1999;

**"Goods"** means the Plant and Machinery, Spares, Special Tools, Manuals and other item to be provided by the Manufacturer in accordance with this Agreement;

**"Government Authority"** means any national, supra-national (including the European Union), state or local government, any political subdivision thereof or any governmental, quasi-governmental, judicial, public or statutory instrumentality, administrative agency, authority, body or other similar entity and includes the ORR and the Secretary of State;

**"Greater London"** means that term as it is used in the GLA Act;

**"Greater London Authority"** means the authority established by section 1 of the Greater London Authority Act 1999 and its successors;

**"Group"** means, in relation to any company (which for the purposes of this Agreement shall include TfL), that company and any company which is a holding company or subsidiary of that company and any subsidiary of any such holding company; for which purposes **"subsidiary"** and **"holding company"** have the meanings respectively given to them by section 1159 of the Companies Act 2006;

**"Indemnified Parties"** has the meaning ascribed to it in Clause 0;

**"Independent Auditor"** has the meaning ascribed to it in Clause 25.10.3;

**"Industry Standards"** means all the laws, rules, regulations, recommendations and instructions, including (without limitation) guidance, codes of practice and conduct which have the force of law or with which it is generally accepted within the United Kingdom rail industry that it is good practice to comply, relating to the performance of this Agreement and/or applicable to the Goods which are or have been issued by the Secretary of State, Network Rail, ORR, RSSB, or any other Relevant Consents Authority or other person from time to time legally authorised to set standards in respect of the rail industry including the European Railway Agency and shall include, without limitation, Railway Group Standards, the Rule Book, Notified National Technical Rules and Technical Specifications for Interoperability;

**"Information"** means information recorded in any form held by or on behalf of the Purchaser;

**"Information Request"** means a request for any Information under the FOI Legislation;

**"Infrastructure Testing Deliverables"** means the infrastructure testing deliverables specified in the Contract Particulars;

**"Infrastructure Tests"** means the infrastructure tests identified in the Specification to be carried out by the Manufacturer in accordance with the Technical Assurance Plan;

**"Insolvency Event"** in relation to any person means:

- (a) such person stopping or suspending or threatening to stop or suspend payment of all or a material part of its debts, or becoming unable to pay its debts, or being deemed unable to pay its debts under section 123(1) or (2) of the Insolvency Act 1986;
- (b) any step being taken by any person with a view to the winding up of such person or any person presenting a winding-up petition in respect of such person which is not dismissed within seven (7) days;
- (c) any step being taken to enforce security over or a distress execution or other similar process being levied or served out against the whole or a substantial part of the assets or undertaking of such person;

- (d) a receiver, administrative receiver, administrator, compulsory manager or other similar officer being appointed in respect of such person;
- (e) such person ceasing or threatening to cease to carry on all or a material part of its business, except for the purpose of and followed by a reconstruction, amalgamation, reorganisation, merger or consolidation on terms approved by the Purchaser (in its absolute discretion) before that step is taken;
- (f) the making by such person of a general assignment or an arrangement or composition with or for the benefit of creditors; or
- (g) any event occurring which, under the laws of any relevant jurisdiction other than England and Wales, has an analogous or equivalent effect to any of the events listed above;

**"Intellectual Property Rights" or "IPRs"** means all intellectual property rights in any part of the world, including any patent, rights to inventions, patent application, trade mark and service mark (including any trade, brand or business names), trade mark application, domain names, rights in get-up, rights in goodwill or to sue for passing off, unfair competition rights, design rights, registered design, registered design application, utility model, trade name, discovery, invention, process, formula, specification, copyright and related rights, unregistered design right, technical information or drawing (including rights in software, database rights and topography rights), rights in confidential information (including know-how and trade secrets) and any other intellectual property rights, in each case whether registered or unregistered and including all applications (or rights to apply) for, and renewals or extensions of, such rights and all similar or equivalent rights or forms of protection which subsist or will subsist now or in the future in any part of the world;

**"Key Date"** means a date, as stated in Schedule 16 (*Contract Particulars*) unless later changed in accordance with this Agreement, by which the Manufacturer is required to meet a Condition;

**"Key Personnel"** means the persons listed in Schedule 5 (*Key Personnel*) (or any replacements appointed in accordance with Clause 9.1);

**"Late Design Approval"** has the meaning given in Clause 13.1;

**"Late Take Over"** has the meaning given in Clause 13.1;

**"London Living Wage"** means the basic hourly wage current at the date of this Agreement (before tax, other deductions and any increase for overtime) as may be revised from time to time by the Mayor of London or any other body or agency whose directives, decisions, instructions, rulings, laws, or regulations are directly enforceable against the Purchaser;

**"Losses"** means, in the context of the definition of Excepted Liabilities, any expense, liability, loss, claims, fines, damages, costs (including reasonable legal and other professional fees and disbursements), penalties, settlements and judgments incurred by the Purchaser, its employees or agents or any other person;

**"Maintenance Spares"** means those Spares listed in Schedule 3 Part A (*Maintenance Spares*);

**"Manuals"** means documents which fully describe how the Plant and Machinery should be operated, serviced, maintained, dismantled, reassembled, repaired and overhauled;

**"Manufacturer Event of Default"** means any of the events or circumstances listed in Clause 25.1;

**"Manufacturer Guarantee"** means, where the Contract Particulars specifies a Manufacturer Guarantee is required, the parent company guarantee of the Manufacturer's obligations under this Agreement provided by the Manufacturer Guarantor in favour of the Purchaser and substantially in the form set out in Schedule 7 (*Form of Manufacturer Guarantee*);

**"Manufacturer Guarantor"** means the Manufacturer's parent company (if any) identified as such in the Contract Particulars;

**"Manufacturer Group"** means the Manufacturer and any member of its Group from time to time;

**"Manufacturer IPR"** means any existing or new Intellectual Property Rights owned by the Manufacturer, any Subcontractor or other third party that:

- (a) are used for; or
- (b) arise in connection with,

the performance by the Manufacturer of its obligations under this Agreement, including design, manufacture, supply, assembly, testing, commissioning and delivery of the Plant and Machinery and other items of Goods;

**"Manufacturer Termination Notice"** has the meaning ascribed to it in Clause 25.9;

**"Manufacturer's Records"** has the meaning ascribed to it in Clause 10.3.1(A);

**"Manufacturer's Works"** means the premises specified as such in the Contract Particulars;

**"Material"** means all plans, drawings, specifications, schedules, reports, Manuals, record calculations, correspondence and other documents (including any computer software developed by the Manufacturer to generate them and any design contained in them) prepared or provided by the Manufacturer in connection with this Agreement;

**"Mayor of London"** means the person elected to hold the office as Mayor of London with the powers and function set out in the Greater London Authority Act 1999;

**"Milestone"** means, in the case of Goods, the achievement of each of the stages in the design, manufacture, testing, commissioning, delivery and take-over of the Goods, in each case as more particularly set out in the table in Schedule 4 Part 4 (*Payment Milestones*);

**"Milestone Payment"** has the meaning given to it in Clause 20.2.4;

"**Network Rail**" means Network Rail Infrastructure Limited (Registered No: 02904587) a company incorporated under the laws of England and Wales whose registered office is at 1 Eversholt Street, London, NW1 2DN;

"**Notified Body**" has the meaning given to it in Schedule 1A;

"**Notified National Technical Rules**" or "**NNTR**" means those rules or standards notified by the Secretary of State to the European Commission in accordance with Directive 2008/57/EC on the interoperability of the rail system within the community;

"**Part**" means any component, furnishing or equipment forming part of the Plant and Machinery or Spare;

"**Party**" means each of the Purchaser and the Manufacturer and "**Parties**" shall be construed accordingly;

"**Payment Certificate**" has the meaning given to it in Clause 20.2.4;

"**Performance Bond**" means, where the Contract Particulars specifies a Performance Bond is required, a performance bond issued by a Bond Provider in favour of the Purchaser in substantially the form set out in Schedule 11 (*Form of Performance Bond*);

"**Performance Failure**" has the meaning given in Clause 13.3;

"**Performance Period**" means the period commencing on the date that the first Unit has been Taken Over by the Purchaser and ending on the date twelve (12) months after the date on which the last Unit has been taken over the by the Purchaser;

"**Performance Period Targets**" means the targets specified in the Contract Particulars;

"**Permitted Delay Event**" has the meaning given to it in Clause 15.1;

"**Persistent Breach**" has the meaning ascribed to it in Clause 25.4.2;

"**Plant and Machinery**" means the plant and machinery to be provided by the Manufacturer in accordance with this Agreement;

"**Preconditions**" has the meaning ascribed to it in Clause 12.5.1;

"**Preliminary Unit Design**" means the preliminary unit design more particularly described in Schedule 1A (*Specification*)

"**Proceedings**" has the meaning ascribed to it in Clause 47.2;

"**Prohibited Act**" means:

- (a) offering or agreeing to give to any servant, employee, officer or agent of the Purchaser or the TfL Group any grant, gift or consideration of any kind as an inducement or reward;

- (i) for doing or not doing (or for having done or not having done) any act in relation to the obtaining or performance of this Agreement or any other contract with the Purchaser; or
  - (ii) for showing or not showing favour or disfavour to any person in relation to this Agreement or any other contract with the Purchaser;
- (b) entering into this Agreement or any other contract with the Purchaser in connection with which commission has been paid or has been agreed to be paid by the Manufacturer or on its 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;
- (c) committing any offence:
- (i) under the Prevention of Corruption Acts 1889-1916 and/or the Bribery Act 2010;
  - (ii) under any law or legislation creating offences in respect of fraudulent acts; or
  - (iii) at common law in respect of fraudulent acts,
- in relation to this Agreement or any other contract with the Purchaser; or
- (d) defrauding or attempting to defraud the Purchaser;

**"Purchaser Event of Default"** means any of the events or circumstances listed in Clause 25.8;

**"Purchaser Representative"** means the person specified as such in the Contract Particulars;

**"Purchaser Termination Notice"** has the meaning ascribed to it in Clause 25.2.2;

**"Qualified Take Over"** means 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, as evidenced by the issue of a signed QTOC;

**"Qualified Take Over Certificate"** or **"QTOC"** means a certificate in the form or substantially in the form set out in Schedule 6, Part A (*Form of Qualified Takeover Certificate*);

**"Railway Group Standards"** means, to the extent applicable to the Goods and their operation, those standards to which railway assets or equipment used on or as part of railway assets must conform, and operating procedures with which the purchasers of railway assets must comply, in each case as prepared and updated by RSSB;

**"Railway Infrastructure"** means the stations and depots (wherever situate), assets, systems, track and other buildings which are used in the operation of the Plant and Machinery, as more particularly described in the Contract Particulars;

**"Rectification Works"** has the meaning ascribed to it in Clause 12.3.4(A)12.3.4;

**"Recurrent Defect"** means:

- (a) a Defect in any Spare or Part and which:
  - (i) in any consecutive 12-month period occurs in or affects three or more items of Spares or Parts; or
  - (ii) the Purchaser reasonably believes will occur in or affect three or more items of the same items of Spares or Parts in any 12-month period; or
- (b) any defect, or actual or potential failure (whether relating to safety, reliability or maintainability), occurring in or affecting any plant and machinery, spares or parts provided by the Manufacturer which is similar to the Goods to be supplied pursuant to this Agreement;

**"Relevant CBTC Signalling Date"** means the date specified as such in the Contract Particulars or such later date as may be notified by the Purchaser;

**"Relevant Consents"** has the meaning ascribed to it in Clause 4.4;

**"Relevant Consents Authority"** means any or all of the Government Authority, the Notified Body, or any other entity which has the appropriate authority for the granting of a Relevant Consent;

**"Relevant Conviction"** means any unspent criminal conviction relating to actual or potential acts of terrorism or acts which threaten national security;

**"Relevant Individual"** means any servant, employee, officer, consultant or agent of the Manufacturer or any Subcontractor carrying out, or intended to carry out, any aspects of this Agreement on the Railway Infrastructure and/or the TfL Premises;

**"Remedial Plan"** has the meaning ascribed to it in Clause 25.3.1(B);

**"Remedy Notice"** has the meaning ascribed to it in Clause 25.3.1

**"Required Insurance"** means the insurances specified in Schedule 9 (*Insurance*);

**"Required Rating"** means a long term, stable credit rating of at least "A+" or better from Standard & Poor's or the equivalent rating from Moody's or Fitch;

**"Responsible Procurement Principles"** means the seven principles of responsible procurement more particularly described in the GLA Group Responsible Procurement Policy dated March 2006, as updated in January 2008 and as may be further updated from time to time and which is available from the Purchaser on request;

**"Retention Period"** has the meaning ascribed to it in Clause 10.3.1(B);

**"RSSB"** means the Rail Safety and Standards Board;

**"Rule Book"** means the document with references GE/RT 8000 (including all applicable Modules as defined in GE/RT 8051) issued by RSSB;

**"Security"** means:

- (a) any right of ownership, lien, mortgage, charge, pledge, hypothecation, attachment, security interest, assignment by way of security, right of possession, right of detention or other encumbrance; or
- (b) any other preferential arrangement resulting in a secured transaction or having the same economic or legal effect as any of the foregoing; or
- (c) any agreement to give any of the foregoing; or
- (d) any arrangement to prefer one creditor over another creditor; or
- (e) the interest of the vendor or lessor under any conditional sale agreement, lease, hire purchase agreement or other title retention arrangement; or
- (f) any interest described in (a) to (e) above over any interest described in (a) to (e) above;

**"Siemens PLC"** means Siemens PLC (registered number 00727817), a company incorporated in England and Wales, whose registered office is at Faraday House, Sir William Siemens Square, Frimley, Camberley, Surrey GU16 8QD;

**"Siemens Rail Automation"** means Siemens Rail Automation Limited (registered number 01641421), a company incorporated in England and Wales, whose registered office is at Faraday House, Sir William Siemens Square, Frimley, Camberley, Surrey GU16 8QD;

**"Software"** means, as may be developed, enhanced, modified, adapted, altered or updated from time to time, the lists of instructions, stored in permanent or semi-permanent form, used:

- (a) to define the functions of microprocessors and similar devices installed on any Goods or any part thereof or in equipment to be used in conjunction with, or for the operation, testing, commissioning, modification and/or refurbishment of, any Goods or any part thereof; and/or
- (b) to run programmes, spreadsheets and/or databases in connection with the operation, testing, commissioning, modification and/or refurbishment of the Goods, in each case except for such as are standard commercial products, usable as made, and which have not been modified in order to perform any of the tasks set out in sub-clause (a) above,

which:

- (i) forms part of the Goods; and
- (ii) is not Third Party Software;

"**Source Code**" means the source code version of any Manufacturer-owned Software which is licensed to the Purchaser pursuant to this Agreement in a form capable of being read and interpreted by humans, together with related interpretative documentation and material;

"**Spares**" means all spare parts of any description including fluids, parts and assemblies required in connection with the Plant and Machinery supplied or to be supplied by the Manufacturer or any Subcontractor under this Agreement;

"**Special Tools**" means those special tools listed in Schedule 3 Part D (*Special Tools*);

"**Specification**" means the specification set out in Schedule 1A (*Specification*), as such requirements may be amended in accordance with this Agreement;

"**Static Tests**" means the static tests identified in the Specification to be carried out by the Manufacturer in accordance with the Technical Assurance Plan;

"**Subcontract**" means any contract awarded by, or to be awarded by, the Manufacturer in relation to, or connected with, the carrying out of any of the Manufacturer's obligations under this Agreement and, unless the context herein requires otherwise, includes a subcontractor or supplier of any such person;

"**Subcontractor**" means any party to a Subcontract other than the Manufacturer;

"**Take Over**" means:

- (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;

and "**Taken Over**" shall be construed accordingly;

"**Take Over Certificate**" or "**TOC**" means a certificate in the form or substantially in the form set out in Schedule 6, Part B (*Form of Take Over Certificate*);

"**Take Over Criteria**" has the meaning given in Clause 12.4.1;

"**Taxes**" means all present and future taxes, charges, imposts, duties or levies of any kind whatsoever, payable at the instance of or imposed by any Competent Authority, together with any penalties, additions, fines, surcharges or interest relating thereto and "**Tax**" and "**Taxation**" shall be construed accordingly;

"**Technical Information**" means information (including Software and Source Code) and materials required by the Purchaser in relation to the Plant and Equipment, Parts, Spares and Special Tools for the purposes contemplated under this Agreement and/or the MSA and shall include without limitation:

- (a) the Materials, including all design documents relating to the Plant and Machinery, Parts, Spares and Special Tools;

- (b) design calculations;
- (c) manufacturing documents;
- (d) configuration of control records;
- (e) basic design parameters;
- (f) data, test scripts, test procedures, test plans, test certificates, quality plans, quality programmes, quality certification;
- (g) records of maintenance and repairs undertaken using:
- (h) the Service Provider's Proprietary Software or any such substitute system as the Service Provider and the Purchaser shall agree; and
- (i) a hard copy, vehicle by vehicle maintenance log;
- (j) in respect of the Software, "as made" copies, in machine readable form, of the final structure of the Software, and of the intermediate stages leading to it (including Source Code and object codes);
- (k) any ancillary computer programmes used to generate Source Codes and/or object codes (such as, without limitation, compilers);
- (l) all other documents, information materials and know-how materials whether on paper or magnetic format or in any other form prepared by the Manufacturer or any of its Sub-Contractors and submitted to obtain any Relevant Consents and/or relating to the operation, maintenance, repair and/or overhaul of the Plant and Machinery, Parts, Spares and Special Tools; and
- (m) all training materials;

"**Technical Library**" has the meaning given in Clause 24.11.224.11.2(A);

"**Technical Library Services**" has the meaning given in Clause 24.11.1;

"**Technical Specifications for Interoperability**" means the Technical Specifications for Interoperability adopted pursuant to EU Directive 2001/16/EC;

"**Technical Assurance Plan**" means the technical assurance to be developed and provided by the Manufacturer and agreed with the Purchaser in accordance with the Specification setting out the regime of tests required for Take Over of the Plant and Machinery;

"**Tests**" means the tests identified in the Specification to be carried out by the Manufacturer in accordance with the Technical Assurance Plan and "**Testing**" shall be construed accordingly;

"**TfL Group**" means Transport for London and any member of its Group;

"**TfL Premises**" means any property, including railway infrastructure, owned by or under the control or supervision of the Purchaser and/or any member of the TfL Group;

"**TfL Standards**" means the various standards documents and associated codes of practice identified in the "Reference Documents" section of the Specification;

"**Third Party Software**" means software owned by third parties prior to the Commencement Date which has not been produced in connection with or for the purpose of the Goods;

"**Training Services**" means the training services stated in the Specification to be provided by the Manufacturer;

"**Transparency Commitment**" means the transparency commitment stipulated by the UK government in May 2010 (including any subsequent legislation) in accordance with which the TfL Group is committed to publishing its contracts, tender documents and data from invoices received;

"**Unit**" means each item of Plant and Machinery;

"**Variation**" means any addition, omission or other change whatsoever to or in respect of this Agreement including to the Specification, the Goods, the Contract Programme and/or any other technical requirement contained in this Agreement;

"**Variation Procedure**" means the variation procedure set out in Clause 23;

"**Variation Quote**" has the meaning given in Clause 23.1.1;

"**Variation Valuation**" has the meaning given in Clause 23.3.1;

"**VAT**" means

- (a) any tax imposed in compliance with the Council Directive of 28 November 2006 on the common system of value added tax (EC Directive 2006/112); and
- (b) any other tax of a similar nature, whether imposed in a member state of the European Union in substitution for, or levied in addition to, such tax referred to in paragraph (a), or imposed elsewhere;

"**Working Day**" means a weekday (other than a Saturday or Sunday or other public holiday) on which banks are open for domestic business in the City of London; and

## 1.2 Interpretation

In this Agreement, except where the context otherwise requires:

- 1.2.1 any reference to this Agreement includes the Schedules to it, each of which forms part of this Agreement for all purposes;
- 1.2.2 a reference to an enactment, statutory provision or Industry Standard shall unless otherwise expressly specified in this Agreement include a reference to any subordinate legislation made under the relevant enactment, statutory provision or Industry Standard and unless otherwise expressly specified in this Agreement is a reference to that enactment, statutory provision, Industry

Standard or subordinate legislation as from time to time amended, consolidated, modified, reenacted or replaced;

- 1.2.3 words in the singular shall include the plural and vice versa;
- 1.2.4 references to one gender include other genders;
- 1.2.5 a reference to a person shall include a reference to a firm, a body corporate, an unincorporated association, a partnership, limited partnership, limited liability partnership or to an individual's executors or administrators;
- 1.2.6 a reference to a Clause or Schedule (other than to a schedule to a statutory provision) shall be a reference to a clause or schedule (as the case may be) of or to this Agreement and a reference in a Schedule to a paragraph shall mean a reference to a paragraph of that Schedule;
- 1.2.7 if a period of time is specified as "from" or "within" a given day, or "from" or "within" the day of an act or event, it shall be calculated exclusive of that day;
- 1.2.8 references to any English legal term for any action, remedy, method of judicial proceeding, legal document, legal status, court, official or any legal concept or thing shall in respect of any jurisdiction other than England be deemed to include what most nearly approximates the English legal term in that jurisdiction and references to any English statute or enactment shall be deemed to include any equivalent or analogous laws or rules in any other jurisdiction;
- 1.2.9 references to writing shall include any modes of reproducing words in any legible form and shall exclude email except where expressly stated otherwise;
- 1.2.10 a reference to "includes" or "including" shall mean "includes without limitation" or "including without limitation";
- 1.2.11 the contents page and headings in this Agreement are for convenience only and shall not affect its interpretation;
- 1.2.12 references to this Agreement include this Agreement as amended, varied or supplemented in accordance with its terms;
- 1.2.13 a reference to the "Purchaser" or the "Manufacturer" includes its respective (and any subsequent) successors in title, and its respective permitted transferees or assignees;
- 1.2.14 references in the Agreement to costs, expenses and losses which are to be indemnified to, or recovered by, the person incurring the same shall be construed as references to an amount equal to the amount of such costs, expenses and losses together with any amount that represents VAT or other similar tax properly chargeable therein in any jurisdiction;
- 1.2.15 reference to a "third party" is a reference to any person who is not a Party;
- 1.2.16 references in this Agreement to any other agreement or other instrument (other

than an enactment or statutory provision) shall be deemed to be references to that agreement or instrument as from time to time amended, varied, supplemented, substituted, novated or assigned; and

1.2.17 references to time of day are to that time in London.

## **2. EXERCISE OF RIGHTS AND PERFORMANCE OF OBLIGATIONS BY A THIRD PARTY**

2.1 The Manufacturer acknowledges and agrees that the Purchaser may, after notifying the Manufacturer in writing, delegate at any time some or all of its actions in connection with this Agreement to the Purchaser Representative and may cancel any delegation.

2.2 The Purchaser Representative may, after notifying the Manufacturer in writing, delegate at any time some or all of its actions in connection with this Agreement and may cancel any delegation. Any reference to an action of the Purchaser Representative in this Agreement includes an action by his delegate.

2.3 The Manufacturer will perform its obligations under this Agreement in accordance with the relevant provisions of this Agreement as if the Purchaser Representative was, to the extent notified, the Purchaser, and, to that extent, accept the instructions, requests, notifications, claims and demands of the Purchaser Representative in substitution for the Purchaser accordingly.

2.4 The Manufacturer shall be entitled to rely and act upon the exercise by a Purchaser Representative of any right permitted in accordance with Clauses 2.1 and 2.2 and any performance by a Purchaser Representative of any obligation on the part of the Purchaser shall constitute good and valid discharge of the Purchaser's obligation in question.

2.5 Except as provided under this Clause 2, no person or entity is authorised to act or give any instruction to the Manufacturer in connection with this Agreement on behalf of the Purchaser.

## **3. PURCHASE**

### **3.1 Purchase**

The Manufacturer shall supply each item of Goods to the Purchaser by the relevant Key Date for that item in consideration for the Purchaser procuring payment to the Manufacturer of the Contract Price in respect of each such item in each case in accordance with the terms of this Agreement.

## **3A. REPRESENTATIONS AND WARRANTIES**

### **3A.1 Manufacturer's Representations and Warranties**

The Manufacturer represents and warrants to the Purchaser that as at the date of this Agreement:

3A.1.1 it is validly incorporated and has the power, capacity and legal right to enter into this Agreement and any related ancillary documents to which it is a party and

perform its obligations and exercise its rights, hereunder and thereunder and has taken all necessary corporate and other action to authorise the entry into, performance and delivery of this Agreement and any related ancillary documents to which it is a party;

- 3A.1.2 this Agreement and any related ancillary documents to which it is a party constitute its legal, valid and binding obligations;
  - 3A.1.3 the entry by it into this Agreement and performance of its obligations under this Agreement will not conflict with its constitutional documents, which are true, accurate and up-to-date;
  - 3A.1.4 the entering into or the performance of its obligations or the exercise of its rights under this Agreement and any related ancillary documents to which it is a party will not breach, or cause to be breached, any restriction (whether arising in contract or otherwise), that is binding on the Manufacturer or any of its assets or undertakings;
  - 3A.1.5 the Manufacturer has not knowingly provided any information or made any statement of fact (whether oral or in writing) to the Purchaser which is untrue or inaccurate or which was intended by the Manufacturer to mislead the Purchaser;
  - 3A.1.6 except as disclosed on or before the Commencement Date, no legal proceedings are pending or, to the Manufacturer's knowledge, threatened against it which if decided against the Manufacturer would have a material adverse effect upon the Manufacturer's financial condition or business or its ability to perform its obligations under this Agreement and any related ancillary documents; and
  - 3A.1.7 no Insolvency Event has occurred or is reasonably likely to occur in relation to the Manufacturer.
- 3A.2 The Manufacturer acknowledges and agrees that the Purchaser is relying on the representations and warranties above and is entering into this Agreement on the basis of them.

#### **4. MANUFACTURER'S GENERAL OBLIGATIONS**

##### **4.1 General Undertaking and Warranties**

The Manufacturer undertakes and warrants to the Purchaser, for the benefit of the Purchaser that it shall design, manufacture, supply, assemble, test, commission, and deliver the Plant and Machinery and other items of Goods:

- 4.1.1 so that it is Fit for Purpose;
- 4.1.2 so that the Plant and Machinery satisfies the Take Over Criteria and the Fleet Acceptance Criteria;
- 4.1.3 so that the Plant and Machinery is manufactured in accordance with the design agreed in accordance with this Agreement;

- 4.1.4 in accordance with, and so that the Plant and Machinery shall function in accordance with, sound modern design and engineering principles and practices in the rail industry except where these would conflict with Clauses 4.1.1 and 4.1.2;
- 4.1.5 in accordance with the Specification and the Contract Programme so as to achieve Take Over and Fleet Acceptance of the Plant and Machinery and other items of Goods on the relevant Key Date;
- 4.1.6 in compliance with all Applicable Laws and all TfL Standards;
- 4.1.7 in accordance with good industry practice and with all due skill, care and diligence to be expected of appropriately qualified and experienced professional designers and engineers with experience in carrying out work of a similar scope, type, nature and complexity to that required under this Agreement;
- 4.1.8 using materials and goods that comply with the Specification and the TfL Standards will be of new manufacture and comply with the Specification;
- 4.1.9 in accordance with the requirements of any instructed Variation and in all other respects in accordance with this Agreement; and
- 4.1.10 in respect of the Spares, so that each of those is sufficient and adequate to enable maintenance to be carried out on the Plant and Machinery.

#### 4.2 **Third Party Warranties**

The Manufacturer shall extend to the Purchaser the benefit of any guarantee, condition or warranty which may be expressly given to it by any of the Sub-Contractors in respect of each Unit, Part(s), Spare or Special Tool, and shall use its best endeavours to extend to the Purchaser the benefit of any guarantee, condition or warranty which may have been expressly given to it by any other person in respect of each Unit, Part(s), Spare or Special Tool.

#### 4.3 **Compliance**

In performing its obligations under this Agreement, the Manufacturer shall, and shall procure that its Subcontractors shall:

- 4.3.1 comply with the version of the Contract Programme in place from time to time; and
- 4.3.2 comply with all Applicable Laws, all TfL Standards and all directions of the Purchaser and any other Competent Authority.

#### 4.4 **Licences and Consents**

The Manufacturer shall obtain and maintain all consents, approvals, authorisations, acceptances, certificates, licences (including export licences), exemptions, registrations, filings, permits and other matters, give all notices and pay all fees, in each case which are

required or necessary for the proper performance of the Manufacturer's duties and obligations under this Agreement ("**Relevant Consents**").

#### 4.5 **Tax Allowances**

The Manufacturer undertakes and confirms to the Purchaser that neither it nor any other person which is a member of the Manufacturer Group, a Subcontractor, a supplier or a provider of finance to the Manufacturer or any of those persons has claimed and that it will not claim and shall procure that no such other person shall claim any capital allowances or analogous Tax allowances in respect of the Plant and Machinery or any other item of Goods.

#### 4.6 **Key Dates**

The Manufacturer shall perform its duties and obligations under this Agreement so that the Condition stated for each Key Date is met by the relevant Key Date.

#### 4.7 **CBTC Signalling**

4.7.1 The Purchaser shall, by the Relevant CBTC Signalling Date, make the CBTC Signalling Equipment available to the Manufacturer for installation on each Unit. The Manufacturer shall install the CBTC Signalling Equipment on each Unit in accordance with the CBTC Signalling Installation Instructions by the relevant Key Date for Take Over.

4.7.2 In addition to the undertakings and warranties contained in the other provisions of this Agreement (including Clause 4.1 other than the undertakings and warranties set out in Clauses 4.1.3, 4.1.8 and 4.1.10 which are not applicable to the CBTC Signalling Equipment), the Manufacturer warrants and undertakes to the Purchaser that it shall install the CBTC Signalling Equipment:

- (A) in accordance with the CBTC Signalling Installation Instructions; and
- (B) using all reasonable endeavours in accordance with the Contract Programme so as to achieve Take Over of each Unit on the relevant Key Date for Take Over for that Unit.

4.7.3 Where any delay in achieving the Key Date for Take Over of any Unit arises, or will arise, as a result of a failure of the Purchaser to make available the CBTC Signalling Equipment on the Relevant Signalling Date (a "**CBTC Signalling Delay**"), the Manufacturer shall, subject to and in accordance with the terms of this Clause 4.7.3, be entitled to submit to the Purchaser Representative a Take Over Certificate for such Unit in accordance with Clause 12.4.2, only to the extent that such delay is directly caused by a CBTC Signalling Delay, and provided that the Manufacturer:

- (A) has otherwise complied with the Take Over Criteria;
- (B) in accordance with the standard expected of appropriately qualified and experienced professional designers and engineers with experience in carrying out work of a similar scope, type, nature and complexity to that required under this Agreement, uses its reasonable endeavours to mitigate any adverse consequences of the relevant CBTC Signalling Delay; and

(C) shall not be entitled to an extension of time or to recover losses as a result of the occurrence of a CBTC Signalling Delay,

and the Purchaser Representative shall issue a QTOC in respect of such Unit in accordance with Clause 12.5.

4.7.4 In the event the Purchaser or the Manufacturer becomes aware of any defect, damage or failure in any Unit which:

(A) is wholly and solely due to a failure in the CBTC Signalling Equipment; and/or

(B) arises as a consequence of the installation of the CBTC Signalling Equipment pursuant to Clause 4.7.2 above,

such party shall notify the other of such occurrence. Following such notification, the Purchaser may issue a Variation to the Manufacturer instructing the Manufacturer to undertake such corrective action and/or rectification works as may be necessary to address the defect, damage or failure and the provisions of Clause 23 shall apply, provided that the costs of undertaking such corrective action and/or rectification works shall be met by the Purchaser under the Variation Procedure unless:

(C) the Manufacturer has not complied with Clause 4.7.2; and/or

(D) the defect, damage or failure was otherwise caused in whole or in part, directly or indirectly by any act, omission or negligence of the Manufacturer,

in which case, the costs of undertaking such corrective action and/or rectification works shall be met by the Manufacturer.

## **5. CHANGE IN LAW**

5.1 The Parties have agreed to allocate the risks associated with any Change in Law as set out in this Clause 5.

5.2 On becoming aware of the occurrence of any Change in Law, the Purchaser Representative shall notify the Manufacturer in writing with an instruction to address and comply with such Change in Law and the Manufacturer shall forthwith comply with that Change in Law as specified in the instruction. The Purchaser's instruction under this Clause 5.2 shall constitute a Variation and the consequences of implementing such Change in Law shall be dealt with in accordance with Clause 23.

5.3 The Manufacturer shall, without prejudice to its general obligation to comply with the terms of this Agreement:

5.3.1 use its reasonable endeavours to mitigate the adverse effects of any Change in Law and take all reasonable steps to minimise any increase in costs arising from such Change in Law; and

5.3.2 use its reasonable endeavours to take advantage of any positive or beneficial effects of the Change in Law and take all reasonable steps to maximise any reduction in costs arising from such Change in Law. The Purchaser Representative and the Manufacturer shall adjust the Contract Price by the

amount calculated in accordance with the Variation Procedure. The Manufacturer shall not be entitled to any other payment or compensation or, save as expressly provided otherwise in this Agreement, relief in respect of such Change in Law or associated Variation (or the consequence of either) and the provisions of this Agreement shall be construed accordingly.

- 5.4 The Parties agree that the Manufacturer shall not be entitled to propose a Variation for any Foreseeable Change in Law and the Manufacturer shall be required to comply with and implement such Foreseeable Change in Law at its own risk, cost and expense and with no entitlement to additional remuneration, adjustment to the Contract Price and/or any Key Date.
- 5.5 The Manufacturer shall take all steps necessary to ensure that it performs all of its obligations under this Agreement in accordance with the terms of this Agreement following any Change in Law.

## **6. SPECIFICATION AND DEVELOPMENT OF DESIGN**

### **6.1 Technical Requirements**

The Manufacturer acknowledges and agrees that it has reviewed and considered the Specification and is satisfied:

- 6.1.1 as to its feasibility with respect to the design, manufacture, supply, assembly, testing, commissioning and delivery of the Plant and Machinery and other items of Goods; and
- 6.1.2 that it will be able to implement the Specification so as to achieve the relevant Key Dates.

### **6.1A Trust and co-operation**

The Parties shall act as stated in this Agreement and in a spirit of mutual trust and co-operation.

### **6.2 Design Procedures**

The Manufacturer shall undertake the design of the Plant and Machinery in accordance with the requirements of this Agreement.

### **6.3 Design Approval Process**

- 6.3.1 The Manufacturer shall submit to the Purchaser Representative, in accordance with the Contract Programme and the Specification, the Design for the Plant and Machinery in the format set out in Schedule 1A (*Specification*). Where the Specification requires the Manufacturer to achieve Design Approval for different stages of the Design, the Manufacturer shall follow the process set out in this Clause 6.3 to achieve Design Approval with respect to each such stage.
- 6.3.2 Following submission of the proposed Design under Clause 6.3.1, the Purchaser Representative shall notify the Manufacturer within the period stated in Schedule 1A (*Specification*):

- (A) of any reason why the proposed Design submitted under Clause 6.3.1 does not comply with this Agreement, following which the Manufacturer shall promptly address any such deficiency and re-submit the proposed Design. This Clause 6.3.2 shall apply to the re-submitted proposed Design; or
- (B) that the Purchaser has no objections to the proposed Design, in which case the Manufacturer shall have achieved Design Approval.

6.3.3 The Manufacturer may at its own risk, cost and expense commence the manufacture of the Plant and Machinery prior to achieving Design Approval in accordance with Clause 6.3.2(B). The Manufacturer acknowledges and agrees that it shall not be entitled to any extension of time or adjustment to the Contract Price as a consequence of implementing any changes that may be required in the manufacture of the Plant and Machinery following achievement of Design Approval in accordance with Clause 6.3.2(B).

6.3.4 Should the Manufacturer subsequently wish to make any material modification to the Design, it shall notify the Purchaser Representative and Clauses 6.3.1, 6.3.2 and 6.3.3 shall apply mutatis mutandis (and, in the case of Clause 6.3.3, reference to manufacture of the Plant and Machinery shall mean any manufacturing activity resulting from the implementation of such modification).

#### 6.4 **Design Liability**

All design liability in relation to the Plant and Machinery and/or any other item of Goods shall be borne solely by the Manufacturer regardless of any assurance that may be given by the Purchaser.

#### 6.5 **Liability for Performance**

Notwithstanding any other provision of this Agreement, no examination or lack of examination and/or assurance given by the Purchaser in respect of any document submitted by the Manufacturer shall in any way relieve or absolve the Manufacturer from any obligation or liability under or in connection with this Agreement whether in relation to accuracy, safety, suitability, adequacy, performance, time or otherwise.

### 7. **CONFLICTS AND DISCREPANCIES**

#### 7.1 **Priority of provisions in this Agreement**

Unless expressly stated otherwise, where there is any conflict, error, inconsistency or other discrepancy between any Clause of this Agreement and the provisions of any Schedule(s) or between the provisions of any Schedules to this Agreement, the order of priority shall be as follows:

- 7.1.1 first, the Contract Particulars (as set out in Schedule 16 (*Contract Particulars*));
- 7.1.2 second, the Clauses comprising the main body of this Agreement;
- 7.1.3 third, the Specification (excluding the Tfl Standards);

7.1.4 fourth, the TfL Standards; and

7.1.5 fifth, the remaining Schedules to this Agreement.

## 7.2 **Manufacturer's acknowledgements regarding discrepancies and errors**

The Manufacturer confirms to the Purchaser that as at the Commencement Date it has reviewed and considered in detail this Agreement and has satisfied itself:

7.2.1 that no conflicts, errors, inconsistencies or discrepancies exist within the Agreement; and

7.2.2 it has:

(A) obtained all necessary information as to the risks, contingencies and all other circumstances which may influence or affect the level of payment arising under or in connection with this Agreement; and

(B) satisfied itself that the performance of its obligations under and in accordance with this Agreement will be in accordance with all Applicable Laws; and

7.2.3 as to the feasibility of the Specification with respect to the design, manufacture, supply, assembly, testing, commissioning and delivery of the Plant and Machinery and other items of Goods.

## 7.3 **Notification of conflict, errors, discrepancies and inconsistencies**

7.3.1 Without prejudice to Clause 7.3.3, the Manufacturer shall notify the Purchaser in writing forthwith upon becoming aware of any conflict, error, inconsistency or discrepancy within this Agreement that cannot be resolved in accordance with Clause 7.1 and the Manufacturer shall provide with the notice detailed written proposals for resolving such conflict, error, inconsistency or discrepancy. The Purchaser shall decide how such conflict, error, inconsistency or discrepancy should be dealt with and shall notify the Manufacturer of such decision within fifteen (15) Working Days of the Manufacturer's notice of such conflict, error, inconsistency or discrepancy. The Manufacturer shall immediately proceed to comply with such decision. The Purchaser's notification under this Clause 7.3.1 shall constitute a Variation provided that the Manufacturer shall not be entitled to any increase in the Contract Price or any other payment, compensation, extension of time or relief in respect of such Variation instructed in accordance with this Clause 7.3.1.

7.3.2 Without prejudice to Clause 7.3.1 and subject to Clause 7.3.3, whenever a conflict, error, inconsistency or discrepancy appears within this Agreement, the Parties shall consult with each other over, and seek to agree, the manner in which the conflict, error, inconsistency or discrepancy should be resolved.

7.3.3 Where any conflict, error, inconsistency or discrepancy appears within the TfL Standards, or between a TfL Standard and the equivalent Industry Standard, each Party shall notify the other forthwith in writing upon becoming aware of such

conflict, error, inconsistency or discrepancy. The Purchaser shall decide how such conflict, error, inconsistency or discrepancy should be dealt with and shall notify the Manufacturer within fifteen (15) Working Days of receiving or issuing the notice (as the case may be). The Manufacturer shall comply with such decision in carrying out the manufacture of the Goods. The Purchaser's notification under this Clause 7.3.3 shall constitute a Variation and the provisions of Clause 23 shall apply.

#### **7.4 Exclusions of Claims or Relief**

The Manufacturer acknowledges and agrees that, save as provided in Clauses 7.3.3, it accepts all risks arising from any conflicts, errors, inconsistencies or discrepancies that subsequently appear within this Agreement or between any provisions and/or Schedules of this Agreement and that, subject as aforesaid, it shall not be entitled to make any claim against the Purchaser for any additional payment or compensation, adjustment to the Contract Price, extension of time or relief from the due performance of its obligations, in respect of any such conflicts, errors, inconsistencies or discrepancies.

### **8. CONTRACT PROGRAMME**

#### **8.1 Contract Programme**

8.1.1 If a programme is not included in Schedule 2 (*Contract Programme*), the Manufacturer shall within the period stated in the Contract Particulars submit a programme to the Purchaser Representative for his acceptance showing:

- (A) the Commencement Date, the Key Dates and the payment dates;
- (B) the sequence and timing of activities by which the Manufacturer proposes to carry out the Agreement (including design, manufacture, testing, commissioning and delivery);
- (C) the respective dates for submission by the Manufacturer of the Design and Manuals for approval thereof by the Purchaser Representative;
- (D) the dates by which, in order to carry out the Agreement, the Manufacturer will need (to the extent provided for under this Agreement):
  - (i) access to the Purchaser's premises;
  - (ii) acceptances or approvals from the Purchaser and/or Purchaser Representative;
  - (iii) any plant, materials, drawings, information or other things to be provided by the Purchaser;
- (E) the dates when the Manufacturer plans to conduct the Tests or inspections; and

(F) any other information which the Specification requires the Manufacturer to show on the Contract Programme, including but not limited to the information specified in the Contract Particulars.

8.1.2 The Manufacturer undertakes to carry out the design, manufacture, supply, assembly, testing and commissioning and delivery of the Plant and Machinery and all other items of Goods in a regular and diligent manner and in accordance with the Contract Programme.

8.1.3 The matters set out in the Contract Programme shall be wholly without prejudice to the Manufacturer's obligation to achieve Take Over and Fleet Acceptance for the Plant and Machinery and each other item of Goods on the relevant Key Date.

## 8.2 **Form of programme**

The programme shall be in such form as may be specified in the Contract Particulars or, if not so specified, as may reasonably be required by the Purchaser Representative.

## 8.3 **Acceptance of programme**

8.3.1 The Purchaser Representative shall either accept a programme (or any revised programme submitted pursuant to Clauses 8.5 or 8.6 or notify the Manufacturer of his reasons for not accepting it. Reasons for not accepting the programme may include:

- (A) the Manufacturer's plans shown on it are not practicable;
- (B) it does not show the information which this Agreement requires;
- (C) it does not represent the Manufacturer's plans realistically; or
- (D) it does not comply with the Contract Particulars or the Specification.

8.3.2 Acceptance by the Purchaser Representative of the programme shall not relieve the Manufacturer of any of his obligations under this Agreement.

## 8.4 **Alterations to programme**

The Manufacturer shall not without the Purchaser Representative's prior written consent make any alteration to the Contract Programme.

## 8.5 **Revision of programme**

8.5.1 The Manufacturer shall submit a revised programme to the Purchaser Representative for acceptance:

- (A) every four weeks from the Commencement Date pursuant to Schedule 1B (*Management of Delivery*); and
- (B) if instructed to do so pursuant to Clause 8.6.

## 8.6 **Rate of progress**

8.6.1 The Purchaser Representative may notify the Manufacturer if it assesses that the Plant and Machinery and each other item of Goods will not be capable of any of the Key Dates, and that this is not due to a circumstance for which the Manufacturer is entitled to an extension of time pursuant to Clause 15.

8.6.2 Following receipt of such notice the Manufacturer shall take such steps as may be necessary and as the Purchaser Representative may approve to remedy or mitigate the likely delay, including submitting a revised programme to the Purchaser Representative for acceptance. The Manufacturer will not be entitled to additional payment or an extension of time for taking such steps.

## 9. **KEY PERSONNEL, MEETINGS AND REPORTS**

### 9.1 **Key Personnel**

The Manufacturer shall not replace any Key Personnel without:

9.1.1 giving not less than sixty (60) days' notice; and

9.1.2 proposing a replacement Key Personnel to the Purchaser who the Purchaser has approved (such approval not to be unreasonably withheld or delayed).

### 9.2 **Management of Delivery**

The Parties shall comply with Schedule 1B (*Management of Delivery*) in relation to design management, project management and programme management.

## 10. **MANUFACTURING FACILITIES AND RIGHTS OF AUDIT AND INSPECTION**

### 10.1 **Manufacturing facilities**

The Manufacturer shall ensure that the assembly and testing of the Plant and Machinery shall be carried out by the Manufacturer at the Manufacturer's Works and the Manufacturer shall not use any other manufacturing facility for such assembly and testing without the prior written agreement of the Purchaser.

### 10.2 **Access to Facilities for Purpose of Audits**

For the purposes of exercising any of their rights under Clause 10, the Manufacturer shall (a) grant the Purchaser access on reasonable prior notice to any of the Manufacturer's premises involved in the design, manufacture, supply, assembly, testing, certification, commissioning and delivery of the Plant and Machinery and any other item of Goods including the Manufacturer's Works and (b) use its reasonable endeavours to procure such access to those premises of its agents and Subcontractors.

### 10.3 **Right of Audit and Inspection**

10.3.1 The Manufacturer shall, and shall (unless the Purchaser Representative otherwise agrees in writing) procure that its Subcontractors shall:

- (A) maintain a complete and correct set of records pertaining to all activities relating to the performance of the Manufacturer's obligations under this Agreement and all transactions and Subcontracts entered into by the Manufacturer for the purposes of performing its obligations under this Agreement (in respect of the Manufacturer) and the performance by the Subcontractor of its obligations under its Subcontract (in respect of the Subcontractor) (the "**Manufacturer's Records**"); and
- (B) retain all the Manufacturer's Records until the date six (6) years (or such longer period as may be required by law or specified in the Contract Particulars) following expiry or termination of this Agreement for whatever reason (the "**Retention Period**").

10.3.2 Notwithstanding any other right of audit that the Purchaser is entitled to under this Agreement, in order to verify the Manufacturer's performance of and compliance with the Agreement the Purchaser shall be entitled on reasonable notice (whether in writing or verbally), either itself or using such agents or representatives as it may authorise to:

- (A) audit, inspect or witness any aspects of the manufacturing, testing or commissioning of the Plant and Machinery or any other item of Goods or any of their Parts and to audit the design and certification thereof including being present at, and participating in, amongst other things:
  - (i) any inspection and conformance control of subsystems supplied by Subcontractors;
  - (ii) any inspection and conformance control of the Plant and Machinery construction at stages to be agreed between the Purchaser and the Manufacturer;
  - (iii) any Static Tests;
  - (iv) any Dynamic Tests; and
  - (v) any inspection and certification of the Plant and Machinery's compliance with the Specification after completion of assembly and Dynamic Testing;
- (B) inspect the sub-assembly of the Plant and Machinery;
- (C) inspect any and all of the Manufacturer's Records during the Retention Period as are reasonably necessary to investigate the Manufacturer's (and any Subcontractor's) performance of its obligations under this Agreement;
- (D) audit the management systems of the Manufacturer and those of any Subcontractor; and
- (E) inspect and/or audit compliance by the Manufacturer and its Subcontractors with the Manufacturer's obligations under this Agreement.

#### 10.4 **Co-operation with Audit Procedure**

To the extent necessary for the purpose of exercising any of the rights granted under Clause 10.3.2 the Manufacturer shall provide, and shall procure that its Subcontractors shall provide, all reasonable co-operation to the Purchaser, including:

10.4.1 upon request from the Purchaser, acting reasonably, providing electronic or paper copies of any Manufacturer's Records required for the purposes of Clause 10.3.2(C) free of charge and within a reasonable time of any request; and

10.4.2 making the Manufacturer's employees available for discussion with the Purchaser.

#### 10.5 **No Claim for Relief**

No audit, inspection and/or testing by the Purchaser pursuant to Clause 10.3.2 shall relieve the Manufacturer (nor any of its Subcontractors) from any of its obligations under this Agreement or prejudice any right, power and/or remedy of the Purchaser against the Manufacturer.

#### 10.6 **Corrective Actions Arising**

10.6.1 Any actions found to be reasonably necessary having regard to the Manufacturer's obligations under this Agreement as a consequence of the Purchaser undertaking any inspections or audits (a "**Corrective Action**") shall be carried out by the Manufacturer. The Manufacturer shall acknowledge formally within two (2) Working Days receipt of any request for a Corrective Action raised by the Purchaser, together with the Manufacturer's confirmation of the timescale allocated by the Purchaser for the Manufacturer to close out the Corrective Action. The Manufacturer shall advise the Purchaser upon its close-out of the Corrective Action, together with details of the Corrective Action applied. The Purchaser shall be entitled to undertake a further audit of any Corrective Actions on the same basis as set out in Clauses 10.2 to 10.5.

10.6.2 If the Manufacturer (acting reasonably) disputes any Corrective Action, it shall notify the Purchaser whereupon the Manufacturer and the Purchaser shall consult with each other and seek to resolve such dispute and in default of such resolution either the Purchaser or the Manufacturer may refer the dispute for determination in accordance with Clause 32.

#### 10.7 **Plans for Remedial Action**

If, at any time in the course of any participation or inspection by the Purchaser in accordance with Clauses 10.2 and 10.6, the Purchaser reasonably determines that any item of Goods does not, or is unlikely in the future to comply with any of the Specification or the requirements of Clause 4.1, the Purchaser shall notify the Manufacturer of such determination. The Purchaser and the Manufacturer shall thereafter use all reasonable endeavours to agree a plan for necessary remedial action to be implemented by the Manufacturer, at the Manufacturer's cost, to ensure that that the item of Goods does or will conform to the Specification and the requirements of Clause 4.1.

## **11. SPARES AND CONTINUING SUPPORT**

### **11.1 Quality and Identifiability**

11.1.1 The Manufacturer shall ensure that:

- (A) each of the Spares is a brand new part manufactured from materials of sound and satisfactory quality, is Fit for Purpose and has no Defects;
- (B) to the extent of good industry practice, each Spare has a serial number which is clearly identifiable; and
- (C) each Spare is clearly labelled or otherwise identifiable as being the property of the Purchaser.

### **11.2 Time for Delivery**

11.2.1 Without prejudice to Clause 4.1, the Manufacturer shall deliver the Maintenance Spares, Special Tools and any Additional Spares instructed pursuant to Clause 11.4 to the Purchaser by no later than the Key Date for Take Over.

11.2.2 The Manufacturer shall deliver the minimum quantity of each type of Maintenance Spare as specified in Part A of Schedule 3 unless the Parties otherwise agree, acting reasonably.

### **11.3 Sufficiency of Maintenance Spares**

The Manufacturer warrants to the Purchaser at the date of this Agreement that the Maintenance Spares to be delivered to the Purchaser pursuant to Clause 11.2 are sufficient (in terms of both quality and quantity) to enable the Purchaser to carry out, or procure the carrying out of, all maintenance of the Plant and Machinery during the period from Take Over of the first item of Goods to Fleet Acceptance and for the Purchaser to operate the Plant and Machinery on the Railway Infrastructure in accordance with the Manuals. If, following Design Approval, this warranty proves to have been incorrect when made, the Manufacturer shall at its own cost procure and supply the necessary additional Maintenance Spares.

### **11.4 Additional Spares**

11.4.1 The Purchaser may from time to time instruct the Manufacturer in writing to provide Additional Spares by instructing a Variation setting out reasonable details of its requirements, and the provisions of Clause 23 shall apply.

11.4.2 The Manufacturer shall use all reasonable endeavours to make Additional Spares available to the Purchaser by delivering them to the Purchaser within the time period specified in the Variation.

### **11.5 Obsolescence of Spares**

11.5.1 The Manufacturer shall ensure that, where it intends to or becomes aware that any of its suppliers and/or subcontractors intends to:

(A) dispose of any item of Spares due to such Spare becoming obsolete or being replaced by a comparable spare; and/or

(B) stop the production or sale of any item of Spares,

the Manufacturer shall notify the Purchaser Representative prior to any such disposal or cessation of production and sale, and the Purchaser may in such circumstances require the Manufacturer to:

(i) produce one or more of such Spares for the Purchaser; and/or

(ii) sell any remaining Spares or Spares produced in accordance with Clause 11.5.1(B)(i) to the Purchaser Representative at the rates set out in Schedule 3 (*Spares and Special Tools*).

#### 11.6 **Ongoing Spares**

The Purchaser may, at its option at any time during the term of this Agreement, procure pursuant to a separate technical support and spares supply agreement in substantially the same form as set out in Schedule 8 (*Form of Technical Services and Spares Supply Agreement*) the supply of Spares and other support services from the Manufacturer.

#### 11.7 **Continuing Support**

The Parties shall comply with Schedule 3A (*Continuing Support*) in relation to continuing support.

### 12. **TESTING, TAKE OVER AND DELIVERY PROCEDURE**

#### 12.1 **Compliance with the Programmes and Procedures**

The Manufacturer shall ensure that:

12.1.1 the Plant and Machinery and other items of Goods are delivered, tested and made ready for Take Over and Fleet Acceptance by the Purchaser Representative on the relevant Key Dates in accordance with the Specification and the other provisions of this Agreement; and

12.1.2 no Plant and Machinery or other item of Goods is Delivered to the Purchaser for Take Over prior to the relevant Key Date unless otherwise agreed by the Purchaser Representative in its absolute discretion.

#### 12.2 **Right to attend, cost of testing etc.**

12.2.1 The Purchaser Representative shall be entitled to attend any Static Tests, Dynamic Tests and Infrastructure Tests together with such other representatives of the Purchaser as the Purchaser Representative may nominate, and the Manufacturer shall be responsible for procuring such access. The Manufacturer shall provide the Purchaser Representative with not less than 15 (fifteen) Working Days' notice of the time, location and subject matter of any such Static Tests, Dynamic Tests and/or Infrastructure Tests.

- 12.2.2 The Manufacturer shall be responsible for all costs and expenses associated with the Static Tests, the Dynamic Tests, and, subject to Clause 12.3.3 and notwithstanding Clause 12.3.4, the Infrastructure Tests.
- 12.2.3 Any repetition or prolongation of the Static Tests and/or the Dynamic Tests which is necessary by reason of a failure of the Plant and Machinery to meet the requirements of the Static Tests or Dynamic Tests (as the case may be) shall be at the Manufacturer's cost. The Manufacturer shall not be entitled to any additional costs, any extension of time or any other relief in connection with such failure.

### 12.3 Completion of Tests

- 12.3.1 Following completion of all Static Tests and Dynamic Tests pursuant to Clause 12.2, the Manufacturer shall (at its own expense) deliver the Plant and Machinery, together with such evidence as the Purchaser Representative may reasonably require that the Plant and Machinery has passed all of the Static Tests and all of the Dynamic Tests, to the Delivery Location on the Key Date for Take Over.
- 12.3.2 Following delivery of the Plant and Machinery under Clause 12.3.1, the Infrastructure Tests shall be conducted by the Manufacturer at its own expense in accordance with the Technical Assurance Plan. In conducting the Infrastructure Tests:
- (A) the Manufacturer shall comply with its obligations under Clause 57; and
  - (B) the Purchaser Representative shall be given reasonable notice (such notice to be consistent with the Manufacturer's requirements for infrastructure access as set out in the Technical Assurance Plan) by the Manufacturer of all on-track testing or commissioning to be carried out by or on behalf of the Manufacturer so that the Purchaser Representative can make the arrangements referred to in Clause 12.3.3. The Manufacturer acknowledges that, if it does not provide the notice required by this Clause 12.3.2(B), the Purchaser Representative may not be able to secure the required track access and the Manufacturer shall not be entitled to any additional costs, any extension of time or any other relief in connection with any resulting delay.
- 12.3.3 The Manufacturer shall be responsible for all costs and expenses associated with the Infrastructure Tests, save for the Infrastructure Testing Deliverables, which shall be provided by the Purchaser at the Purchaser's expense.
- 12.3.4 In the event that the Plant and Machinery does not pass any Infrastructure Test, the Manufacturer shall be responsible at its own expense for:
- (A) carrying out the works required to ensure that the failed Infrastructure Test(s) can be passed (the "**Rectification Works**");
  - (B) (if required by the Purchaser Representative) removing the relevant Plant and Machinery from the Delivery Location;

- (C) re-delivering the relevant Plant and Machinery to the Delivery Location once the Rectification Works are complete on a date to be arranged with the Purchaser Representative; and
- (D) the repetition and/or prolongation of the Infrastructure Test(s) necessary by reason of the failure of the Plant and Machinery to meet the requirements of the Infrastructure Test(s);

and, for the avoidance of doubt, the Manufacturer shall not be entitled to any additional costs, any extension of time or any other relief in connection with such failure.

## 12.4 Take Over

12.4.1 Where, in relation to a Unit:

- (A) the Manufacturer has provided evidence acceptable to the Purchaser Representative, including all relevant supporting documentation, that such Unit has passed all Tests required by the Technical Assurance Plan to be performed prior to Take Over;
- (B) such Unit meets in all material respects the Specification;
- (C) such Unit is Fit for Purpose and has no Defects, or items missing from it;
- (D) the Manufacturer has provided to the Purchaser Representative the Manuals and any other documentation reasonably necessary to enable operation and maintenance of such Unit;
- (E) the Manufacturer has complied with its obligations under this Agreement with respect to the provision of Training Services;
- (F) the Purchaser has received the Spares and Special Tools in accordance with the provisions of this Agreement;
- (G) such Unit complies with Applicable Laws Tfl Standards;
- (H) such Unit has achieved all Relevant Consents; and
- (I) the Manufacturer has installed the CBTC Signalling Equipment in accordance with its obligations pursuant to Clause 4.7,

(together the "**Take Over Criteria**") the Manufacturer shall be entitled to request Take Over in accordance with Clause 12.4.2.

12.4.2 Where the Take Over Criteria are satisfied in respect of each Unit, the Manufacturer shall be entitled to submit to the Purchaser Representative a Take Over Certificate for such Unit signed by a duly authorised representative of the Manufacturer certifying that the Take Over Criteria have been satisfied. Following receipt of a Take Over Certificate from the Manufacturer in accordance with this Clause 12.4.2, the Purchaser Representative shall within the

period stated in the Contract Particulars counter-sign and date that Take Over Certificate and Take Over shall occur, or refuse to do so under Clause 12.4.3.

- 12.4.3 The Purchaser Representative may refuse to sign a Take Over Certificate for any Unit if it, acting reasonably, believes the Take Over Criteria have not been satisfied in full in which case it shall either (in its absolute discretion) (i) within twenty (20) Working Days of such refusal, notify the Manufacturer in writing setting out which of the Take Over Criteria have not been satisfied or (ii) issue a QTOC in accordance with Clause 12.5. In the event the Purchaser issues a QTOC, the relevant Milestone Payment for Qualified Take Over shall become payable.
- 12.4.4 If the Manufacturer, acting reasonably, disputes any of the reasons set out in the notice issued by the Purchaser Representative pursuant to Clause 12.4.3, it shall notify the Purchaser Representative of this in writing within five (5) Working Days of receipt of such notice and the Parties shall resolve the matter in accordance with the Dispute Resolution Procedure.
- 12.4.5 Where each Unit has not been Taken Over by the relevant Key Date, liquidated damages shall be payable in accordance with Clause 13.1.

## 12.5 **Qualified Take Over**

- 12.5.1 If the Purchaser Representative, acting reasonably, believes that one or more of the Take Over Criteria, other than those set out in Clauses 12.4.1(A) and 12.4.1(G), has not been satisfied, and provided that the Plant and Machinery can nevertheless be operated safely and in accordance with all Applicable Laws and the terms of all Relevant Consents, the Purchaser Representative shall be entitled, at its absolute discretion, to issue a QTOC in respect of that Unit, in which case the Purchaser Representative shall list in detail in the QTOC the outstanding conditions to be satisfied and tasks to be performed by the Manufacturer in order for full Take Over of the relevant Unit to occur (the "**Preconditions**"), and require the Manufacturer to satisfy the Preconditions in accordance with an agreed timetable set out in the relevant QTOC, which timetable shall state that all Preconditions must be completed on or before the date on which Fleet Acceptance of the Plant and Machinery is scheduled to occur pursuant to the Contract Programme.
- 12.5.2 Upon the Purchaser Representative confirming in writing that such Preconditions have been satisfied, the relevant Unit shall be Taken Over and the Purchaser Representative shall issue a Take Over Certificate in respect of such Unit.
- 12.5.3 Fleet Acceptance of the Plant and Machinery shall not occur until all the Preconditions have been satisfied.
- 12.5.4 The Milestone Payment for Take Over shall not become payable in respect of a Unit for which a Qualified Take Over Certificate until the Preconditions in respect of such Unit have been satisfied.

## 12.6 Fleet Acceptance

- 12.6.1 The Manufacturer shall use all reasonable endeavours to achieve Fleet Acceptance of the Plant and Machinery by the relevant Key Date.
- 12.6.2 The Manufacturer shall make a submission for Fleet Acceptance to the Purchaser's Representative once the Fleet Acceptance Criteria have been satisfied. The Fleet Acceptance Criteria are:
- (A) the Plant and Machinery has met the Performance Period Targets during the Performance Period;
  - (B) any liquidated damages payable pursuant to Clause 13.3 as a result of a failure to meet the Performance Period Targets during the Performance Period have been paid to the Purchaser;
  - (C) the Preconditions set out in any QTOC under Clause 12.5.1 have been satisfied to the satisfaction of the Purchaser's Representative in respect of the relevant Unit;
  - (D) each Unit has no Defects;
  - (E) there are no Recurrent Defects or, in the event there is a Recurrent Defect, the Manufacturer has either:
    - (i) provided to the Purchaser's satisfaction a programme for rectification works in respect of such Recurrent Defects in accordance with Clause 17.7; or
    - (ii) confirmed to the Purchaser's satisfaction that a Recurrent Defect occurring in or affecting any plant and machinery, spares or parts provided by the Manufacturer which is similar to the Goods to be supplied pursuant to this Agreement will not affect the Goods supplied pursuant to this Agreement;
  - (F) the Technical Library has been established and maintained in accordance with Clause 24.11; and
  - (G) each Unit has been Taken Over.
- 12.6.3 Upon the Fleet Acceptance Criteria having been satisfied in accordance with Clause 12.6.2, the Manufacturer shall be entitled to submit a Fleet Acceptance Certificate for the Plant and Machinery signed by a duly authorised representative of the Manufacturer to the Purchaser Representative, and the Purchaser Representative shall counter-sign and date that Fleet Acceptance Certificate and Fleet Acceptance shall occur. Subject to Clause 12.6.4 and for the avoidance of doubt, the Milestone Payment for Fleet Acceptance shall not become payable until (i) the requirements of this Clause 12.6.3 have been satisfied in full in respect of the Plant and Machinery and (ii) the Fleet Acceptance Certificate has been counter-signed and date by the Purchaser Representative.

12.6.4 If, on the expiry of the Performance Period, the Plant and Machinery has failed to meet any of the Performance Targets, the Purchaser Representative shall be entitled to extend the Performance Period until the Fleet Acceptance Longstop Date. If the Plant and Machinery has failed to meet the Performance Targets by the Fleet Acceptance Longstop Date then the Purchaser's Representative shall be entitled to issue a Fleet Acceptance Certificate irrespective of such failure and in such circumstances Fleet Acceptance shall occur, provided that:

- (A) the Purchaser Representative may, in its absolute discretion, reduce or withdraw the Milestone Payment for Fleet Acceptance; and
- (B) the occurrence of Fleet Acceptance shall not constitute a waiver of the Purchaser's right to claim damages against the Manufacturer arising out of the Manufacturer's failure to meet the Performance Targets.

### **13. LIQUIDATED DAMAGES**

#### **13.1 Delay Liquidated Damages**

If the Plant and Machinery has not been Taken Over by the Purchaser by the applicable Key Date ("**Late Take Over**"), or if Design Approval has not been achieved by the applicable Key Date ("**Late Design Approval**"), the Manufacturer shall pay to the Purchaser on demand liquidated damages calculated in accordance with Clause 13.2:

13.1.1 in the case of Late Take Over, for the period commencing on the Key Date for the Plant and Machinery and ending on the actual date when the Plant and Machinery has been Taken Over by the Purchaser; and

13.1.2 in the case of Late Design Approval, for the period commencing on the applicable Key Date and ending on the actual date when Design Approval has been achieved.

Such liquidated damages shall (without prejudice to the provisions of Clause 25) be the sole and exclusive remedy of the Purchaser in respect of such late delivery.

#### **13.2 Calculation of Delay Liquidated Damages**

Any liquidated damages payable under Clause 13.1 shall accrue at the rate specified in the Contract Particulars up to the maximum amount specified in the Contract Particulars.

#### **13.3 Performance Liquidated Damages**

On each occasion that the Manufacturer fails to achieve the Performance Period Targets during the Performance Period (a "**Performance Failure**"), the Manufacturer shall pay to the Purchaser on demand liquidated damages calculated in accordance with Clause 13.4. Such liquidated damages shall (without prejudice to the provisions of Clause 25) be the sole and exclusive remedy of the Purchaser in respect of such Performance Failure.

#### 13.4 **Calculation and Payment of Performance Liquidated Damages**

13.4.1 Any liquidated damages payable under Clause 13.3 shall accrue at the rate specified in the Contract Particulars per Performance Failure up to the maximum amount specified in the Contract Particulars.

13.4.2 Where Clause 13.3 applies, the Purchaser shall be entitled (without prejudice to Clause 40) to demand payment of the relevant sum from the Manufacturer

#### 13.5 **Genuine Pre-Estimate of Loss**

The Manufacturer acknowledges and agrees that the liquidated damages specified in Clauses 13.2 and 13.4 represent a genuine pre-estimate of the Purchaser's losses arising from Late Take Over and Late Design Approval, and Performance Failures, respectively.

#### 14. **NOT USED**

#### 15. **EXTENSIONS OF TIME**

##### 15.1 **Permitted Delays**

For the purposes of this Agreement, the occurrence of one or more of the following shall constitute a "**Permitted Delay Event**":

15.1.1 a Force Majeure Event which prevents the Manufacturer from performing its obligations under this Agreement;

15.1.2 any breach by the Purchaser or Purchaser Representative of an express obligation under this Agreement;

15.1.3 the suspension of this Agreement in accordance with Clause 18 (other than where the suspension results from the circumstance in Clause 18.3.1 or 18.3.2);

15.1.4 any Variation instructed pursuant to the Variation Procedure (including any Variation instructed to (i) resolve a Change in Law or (ii) a conflict, error, inconsistency or discrepancy pursuant to Clause 7.3.3), other than a Variation instructed pursuant to Clause 7.3.1; and

15.1.5 the Manufacturer is denied access to the TfL Premises in the circumstances described in Clause 57.12,

but in each case only insofar as any of the events described in Clauses 15.1.1 to 15.1.5:

(A) has a direct and material adverse effect on the Manufacturer's ability to achieve any of the Key Dates; and

(B) has not been caused or contributed to by the act, omission or default of the Manufacturer.

## 15.2 **Qualification to Permitted Delays**

Where any delay in achieving the applicable Key Date for the Plant and Machinery or any other item of Goods arises, the Manufacturer shall be entitled to an extension to the applicable Key Date for the Plant and Machinery and/or any other item of Goods (as the case may be) but only to the extent that such delay is directly caused by a Permitted Delay Event and provided that the Manufacturer:

- 15.2.1 has fully complied with the requirements of Clause 15.3 and subsequently provided such further information as the Purchaser may reasonably require regarding the nature and likely duration of such event;
- 15.2.2 has provided the Purchaser with reasonable access to the Manufacturer's Works and/or the facilities of its Subcontractors for investigating the validity of the potential Permitted Delay Event;
- 15.2.3 has used its reasonable endeavours to mitigate the delay to the applicable Key Date for the Plant and Machinery and/or other item of Goods (as the case may be); and
- 15.2.4 shall not be entitled to an extension of time to the extent that the Permitted Delay Event was caused by or resulted from any act, neglect or default of the Manufacturer, its Subcontractors or suppliers or the directors, agents, representatives or employees of any of them and/or any breach of this Agreement by the Manufacturer, its Subcontractors or suppliers or the directors, agents, representatives or employees of any of them

## 15.3 **Notification of Permitted Delay Event**

The Manufacturer shall give notice to the Purchaser of the occurrence of a Permitted Delay Event promptly and in any event no later than ten (10) Working Days of when the Manufacturer became aware of such occurrence. Any notice given under this Clause 15.3 shall specify the Permitted Delay Event upon which the claim for an extension of time is based. Within twenty (20) Working Days (or such other period as the parties may agree) of:

- 15.3.1 in the case of a Permitted Delay Events under Clauses 15.1.1, 15.1.2 and 15.1.5, the Manufacturer serving notice on the Purchaser of such event; and
- 15.3.2 in the case of a Permitted Delay Event under Clauses 15.1.3 or 15.1.4, the Purchaser instructing a Variation or a suspension of this Agreement (as the case may be),

the Manufacturer shall provide the Purchaser with the following details:

- (A) full and detailed particulars of the cause and extent of the delay and the effect of the Permitted Delay Event on the Manufacturer's ability to comply with its obligations under this Agreement;
- (B) details of the documents and records which the Manufacturer will rely upon to support its claim for an extension of time; and

- (C) details of the measures which the Manufacturer has adopted and/or proposes to adopt to mitigate the consequences of the Permitted Delay Event.

Save with respect to variations instructed under the Variation Procedure, if the Manufacturer fails to notify the Purchaser of any Permitted Delay Event or fails to provide details of any Permitted Delay Event, in either case within the time periods specified in Clause 15.3, the Manufacturer shall not be entitled to request an extension of time for that Permitted Delay Event and such event shall not constitute a Permitted Delay Event.

#### **15.4 Grant of Extension of Time**

Subject to the Manufacturer complying with the requirements of this Clause 15 and the Purchaser, acting reasonably, being satisfied that a Permitted Delay Event has occurred, the Purchaser shall, as soon as reasonably practicable, agree with the Manufacturer a reasonable extension of time to the relevant Key Date and any such extension shall amend the Contract Programme and each relevant Key Date.

#### **15.5 Extensions of Time – General**

15.5.1 Any extension of time agreed by the Purchaser and the Manufacturer under this Clause 15 to a Key Date shall not of itself entitle the Manufacturer to any extension to any other Key Date.

15.5.2 Except as expressly provided elsewhere in this Agreement, any extension of time agreed between the Purchaser and the Manufacturer pursuant to this Clause 15.5 shall be in full compensation and satisfaction for any loss sustained or sustainable by the Manufacturer in respect of any Permitted Delay Event in connection with which that extension is granted.

### **16. TRANSFER OF TITLE AND RISK**

#### **16.1 Title to Items of Goods**

16.1.1 Title to each item of Goods shall pass to the Purchaser immediately upon the issue of the Take Over Certificate or Qualified Take Over Certificate in respect of the relevant item of Goods, and such title shall be full unencumbered legal and beneficial title to that item of Goods.

16.1.2 Until delivery of any item of Goods to the Purchaser, the Manufacturer shall ensure all items of Goods are readily identifiable as the Purchaser's property, including by marking them as the Purchaser's property. The Manufacturer shall provide access to any premises at which such items are stored so that the Purchaser can verify compliance with this Clause 16.1.2.

#### **16.2 Risk of loss etc**

Risk of loss, theft, damage or destruction of an item of Goods shall pass to the Purchaser immediately upon the issue of the Take Over Certificate or Qualified Take Over Certificate in respect of the relevant item of Goods. The Manufacturer shall be responsible for the

safe custody and transit of any item of Goods until the Take Over Certificate or Qualified Take Over Certificate has been issued in respect of the relevant item of Goods.

**16.3 Warranty in respect of Title**

The Manufacturer warrants to the Purchaser that the title to the Plant and Machinery and each other item of Goods transferred to it under this Agreement shall be with full title guarantee and free and clear of all Security.

**16.4 Prohibition on Creating Security**

The Manufacturer undertakes that it shall not at any time create or purport to create any Security over the Plant and Machinery or any other item of Goods (including any Manual or other documentation) to be Taken Over in accordance with this Agreement and which has been, or is to be, supplied to the Purchaser under and in accordance with the terms of this Agreement.

**17. DEFECT RECTIFICATION**

**17.1 NOT USED**

**17.2 Rectification of Defects**

17.2.1 The Manufacturer shall, at its own cost, rectify (which, for the purposes of this Clause 17, means repair, replace, modify or (as appropriate) amend) each Defect which arises, occurs or becomes apparent in relation to any item of Goods during the Defect Rectification Period for that item and where necessary shall execute or procure the execution by another of all rectification works.

17.2.2 Where the Purchaser identifies a Defect in an item of Goods, the Purchaser shall notify the Manufacturer of such Defect within a reasonable time of its discovery. The Manufacturer shall, after consultation with the Purchaser, determine how the Defect is to be rectified.

17.2.3 The Manufacturer shall commence the rectification of any Defect as set out in Clauses 17.2.1 and 17.2.2 without delay and complete the rectification within a reasonable period having regard to the circumstances.

**17.3 Extended Defect Rectification Period**

Where an item of Goods and/or any Part of the same is rectified or replaced due to a Defect, the Defect Rectification Period for the that item shall be twelve (12) months from the date of repair or (as the case may be) replacement certified in writing by the Purchaser.

**17.4 Rectification by the Purchaser**

17.4.1 Where the Manufacturer is obliged to rectify a Defect in accordance with this Clause 17 but has not, for any reason, responded and commenced either fault finding or any rectification work in relation to that Defect within ten (10) Working Days of being notified of such Defect by the Purchaser, the Purchaser may rectify that Defect using its own or third party personnel or resources.

17.4.2 All costs and expenses properly and reasonably incurred by the Purchaser in undertaking any work pursuant to Clause 17.4.1, together with VAT chargeable thereon shall be recoverable by the Purchaser within ten (10) Working Days of demand from the Purchaser as a debt due and owing from the Manufacturer.

17.5 **NOT USED**

17.6 **NOT USED**

17.7 **Recurrent Defects**

If, during the Defect Rectification Period, the Parties identify that a Recurrent Defect has occurred or in the reasonable opinion of the Purchaser is reasonably likely to occur, each Party shall notify the other Party of such occurrence. The Manufacturer warrants to the Purchaser that it shall remedy such Recurrent Defect and undertake necessary rectification on all items of Plant and Machinery, Spares and Parts (as appropriate), and undertake such work as may be feasible in order to enable such items of Plant and Machinery, Spares or Parts (as the case may be) to continue in operation in compliance with the terms of this Agreement pending such rectification. Within twenty (20) Working Days of having identified, or having been notified of, such Recurrent Defect, the Manufacturer shall submit to the Purchaser a programme for rectification of such Recurrent Defect and any necessary rectification required on any Unit, Spares or Parts (as the case may be) as soon as is practicable and the Parties shall negotiate and agree such programme in good faith, within a period of twenty (20) Working Days after receipt of such programme.

**18. SUSPENSION**

18.1 **Right to Suspend Work**

The Purchaser may at any time instruct the Manufacturer to suspend the design, manufacture, supply, assembly, testing, commissioning or delivery of the Plant and Machinery and/or any other item of Goods.

18.2 **Protection of Work in Progress**

The Manufacturer shall during any such suspension take reasonable steps to protect, secure and insure the Plant and Machinery and/or any other items of Goods affected at the Manufacturer's premises (or other location agreed with the Purchaser).

18.3 **Entitlement to Costs for Suspension**

If a suspension occurs, the additional reasonable and documented costs incurred by the Manufacturer in complying with an instruction under Clause 18.1 (including those costs incurred in protecting, securing and insuring the items described in Clause 18.2) shall be reimbursed by the Purchaser save that the Manufacturer shall not be entitled to be paid any additional costs:

18.3.1 where the suspension arises by reason of material default on the part of the Manufacturer or any of its Subcontractors or suppliers or the directors, agents, representatives or employees of any of them; or

18.3.2 arising from remedying any deterioration, defect or loss caused by the Manufacturer's faulty workmanship or materials or by the Manufacturer's failure to comply with any of its obligations under this Agreement, including under Clause 18.2.

#### **18.4 Prolonged Suspension**

Unless otherwise agreed, if any suspension lasts for three hundred and sixty (360) or more days the Purchaser shall, if requested to do so by the Manufacturer, terminate this Agreement in accordance with Clause 25.7 (Voluntary Termination).

#### **18.5 Resumption**

Subject to Clause 18.4, the Purchaser may at any time instruct the Manufacturer to resume any activities suspended pursuant to Clause 18.1.

#### **18.6 Making Good Deterioration**

Upon receipt by the Manufacturer of an instruction from the Purchaser to proceed with any suspended activities, the Manufacturer shall examine the Plant and Machinery and other Goods affected by the suspension. The Manufacturer shall make good any deterioration or defect in or loss of such Plant and Machinery and other Goods that may have occurred during suspension.

#### **18.7 Entitlement to Costs for Resumption**

The additional reasonable and documented costs incurred by the Manufacturer in complying with an instruction under Clause 18.5 and its obligations under Clause 18.6 shall be added to the Contract Price, provided that the Manufacturer shall not be entitled to be paid any cost arising from:

18.7.1 remedying any deterioration, defect or loss caused by the Manufacturer's faulty workmanship or materials; or

18.7.2 the Manufacturer's failure to comply with any of its obligations under this Agreement, including under Clause 18.2.

### **19. HEALTH AND SAFETY**

Where the Manufacturer or any of its Subcontractors carries out any work, including testing and commissioning work on the Plant and Machinery on the Railway Infrastructure and/or any TfL Premises, the Manufacturer shall and shall procure that its Subcontractors shall:

19.1.1 comply with all TfL Standards and Applicable Laws and carry out such work in a manner which would be adopted by a diligent and skilled contractor;

19.1.2 comply with any direction or instruction (whether written or oral) given by the Purchaser or their respective employees, contractors or agents, including any direction to cease working; and

19.1.3 comply with Schedule 14 (*QUENSH*).

## 20. PAYMENT

### 20.1 Not used

### 20.2 Payment

#### Payment

20.2.1 In consideration of performance of the Manufacturer's obligations under this Agreement, the Purchaser shall pay the Manufacturer the amount of the Contract Price in the manner set out in this Clause 20.

20.2.2 Each Milestone Payment shall be sequential and no Milestone Payment shall be due to the Manufacturer unless and until:

- (A) if no programme is included in Schedule 2 (*Contract Programme*), the Manufacturer has submitted an initial programme to the Purchaser Representative showing the information required under Clause 8.1.1 and which is capable of acceptance in accordance with Clause 8.3.1; and
- (B) the Performance Bond and the Manufacturer Guarantee (as applicable) are in place in accordance with Clause 22.

#### Payment applications

20.2.3 On completion of each Milestone, the Manufacturer shall submit a payment application for:

- (A) the amount set out against the relevant Milestone, setting out in reasonable detail a description of the Milestone achieved; and
- (B) any amounts due (less any payments already made) pursuant to Clause 23.3, and in accordance with the principles set out in paragraph 2 of Part 2 of Schedule 4 (Payment), in respect of any properly completed Variation (or, where the Parties have agreed that a Variation shall be paid on a sectional basis, in respect of any properly completed section of the Variation) provided that the Manufacturer's payment application sets out the details and value of any Variation payment being sought,

to the Purchaser Representative at the address specified in Clause 36. The Manufacturer shall ensure that each payment application is dated and issued no earlier than the date on which the relevant Milestone and/or the Variation to which it relates has been completed.

20.2.4 The Purchaser Representative shall consider the Manufacturer's payment application and assess the amount due (the "**Milestone Payment**"). The Purchase Representative shall certify the Milestone Payment (the "**Payment Certificate**") within fourteen (14) days of receipt of the payment application and shall give the Manufacturer details of how the Milestone Payment due has been assessed.

#### VAT invoice

20.2.5 Following receipt of the Payment Certificate the Manufacturer shall issue a corresponding VAT invoice for the amount of the relevant Milestone Payment,

accompanied by a copy of the Payment Certificate, to the Purchaser Representative in accordance with any instructions received from him. The Manufacturer shall ensure that such VAT invoice:

- (A) is dated and issued no earlier than the date when the Payment Certificate was issued; and
- (B) clearly states the purchase order number.

#### Payment due date

20.2.6 Subject to 20.2.10, the Purchaser Representative shall, on receipt by it of an appropriate VAT invoice in accordance with Clause 20.2.5, pay to the Manufacturer within thirty (30) days of receipt by it of such VAT invoice the relevant Milestone Payment calculated in accordance with Clause 20.2.4. If the Manufacturer's VAT invoice does not comply with the requirements of this Clause 20 then the Purchaser shall be under no obligation to pay the same.

#### Payments owed by Manufacturer

20.2.7 Where a payment application shows a net amount owed by the Manufacturer to the Purchaser the Manufacturer shall pay the amount to the Purchaser within thirty (30) days of such application being provided to the Purchaser Representative or, at the option of the Purchaser Representative, carry forward that amount to the next Milestone payment application in reduction of amounts which would otherwise have been owed by the Purchaser to the Manufacturer.

#### Payment recovery

20.2.8 Any payment made by the Purchaser under this Agreement does not prevent the Purchaser from recovering any amount over-paid or wrongfully paid however such payment may have arisen, including but not limited to, those amounts paid to the Manufacturer by mistake of law or fact.

#### Late payment

20.2.9 Save where otherwise specifically provided, where any payment or sum of money due from one Party to the other Party under any provision of this Agreement is not paid in accordance with the timescales set out in this Agreement and providing that there has been no dispute in respect of the sums therein, without prejudice to the Parties' other rights under the Agreement, that sum shall bear simple interest thereon from the due date until payment is made in full at the Default Interest rate current at the date a payment under this Agreement becomes overdue. The Parties agree that this is a substantial remedy for late payment of any sum payable under this Agreement in accordance with section 8(2) of the Late Payment of Commercial Debts (Interest) Act 1998. The Manufacturer is not entitled to suspend works under the Agreement or delivery of the Goods as a result of any sums being outstanding.

#### Disputed Payment Applications

20.2.10 The Purchaser Representative shall notify the Manufacturer in writing of any disputed amounts or payment applications stating the reasons for such dispute within seven (7) days of receipt of such payment application, and any dispute shall be resolved in accordance with Clause 32. In the event of any disputed payment application, the undisputed element of such payment application shall be certified by the Purchaser Representative in accordance with this Clause 20.

## **21. VAT**

### **21.1 Payment of VAT**

The Contract Price is, unless otherwise stated, exclusive of VAT. To the extent that VAT is properly chargeable in respect of the Contract Price and the Manufacturer is liable to account for such VAT to any Competent Authority, such VAT shall be charged by the Manufacturer to the Purchaser at the rate in force on the date of the relevant payment application and must be shown as a separate amount on such payment application and shall accordingly be paid by the Purchaser to the Manufacturer. To the extent that VAT is chargeable in respect of the Contract Price and the Purchaser is liable to account for such VAT to any Competent Authority, the Contract Price shall not be affected by such VAT and no additional payments in respect of such VAT shall be made by the Purchaser to the Manufacturer pursuant to this Agreement but the Purchaser shall instead account for such VAT to the relevant Competent Authority.

### **21.2 Reimbursement of VAT**

Where under this Agreement one Party is to reimburse or indemnify another Party in respect of any payment made or cost incurred by the other Party, the first Party shall also reimburse any VAT paid by the other Party in question which forms part of its payment made or cost incurred to the extent such VAT is not available for credit for the other Party in question (or for any person with whom the indemnified party is treated as a member of a group for VAT purposes).

### **21.3 VAT Credit Note to be Issued on Repayment**

Where under this Agreement any rebate or repayment of any amount is payable by one Party to another Party, and the first Party is entitled as a matter of law or of HM Revenue and Customs practice to issue a valid VAT credit note, such rebate or repayment shall be paid together with an amount representing the VAT paid on that part of the consideration in respect of which the rebate or repayment is made, and the first Party shall issue an appropriate VAT credit note to the other Party in question.

## **22. SECURITY**

### **22.1 NOT USED**

### **22.2 Performance Bond**

22.2.1 Where the Contract Particulars specify a Performance Bond is required, this Clause 22.2 shall apply.

22.2.2 On or prior to the date of this Agreement, the Manufacturer shall procure at its cost a valid and effective Performance Bond in favour of the Purchaser. The Performance Bond shall:

- (A) be in the amount stated in the Contract Particulars;
- (B) substantially in the form set out in Schedule 11 (*Form of Performance Bond*);
- (C) expire upon Final Acceptance; and
- (D) be duly executed and delivered by a Bond Provider.

### 22.3 **Manufacturer Guarantee**

22.3.1 Where the Contract Particulars specify a Manufacturer Guarantee is required, this Clause 22.3 shall apply.

22.3.2 On or prior to the date of this Agreement, the Manufacturer shall procure at its cost a valid and effective Manufacturer Guarantee in favour of the Purchaser. The Manufacturer Guarantee shall:

- (A) be substantially in the form set out in Schedule 7;
- (B) expire upon Final Acceptance; and
- (C) be duly executed and delivered by the Manufacturer Guarantor.

### 22.4 **Replacement Bonds**

22.4.1 If at any time:

- (A) a Performance Bond ceases to be in full force and effect;
- (B) the Bond Provider's obligations under the Performance Bond are or become wholly or partly invalid or unenforceable;
- (C) the Bond Provider ceases to meet the Required Rating;
- (D) an Insolvency Event occurs in relation to a Bond Provider;

then the Manufacturer shall provide a replacement Performance Bond issued by a Bond Provider and that otherwise complies with this Clause 22 within 10 (ten) Working Days of the Performance Bond ceasing to meet the relevant requirement(s) of this Clause 22.4.

22.4.2 In the event that the Manufacturer does not provide a replacement Performance Bond in accordance with Clause 22.4.1, the Purchaser may at its option:

- (A) make a demand upon the full amount (or remaining balance thereof if a demand or demands have already been made) of the Performance Bond, which amount shall be paid to the Purchaser and retained by the Purchaser pending receipt of a replacement Performance Bond meeting

the requirements of this Clause 22 (provided that if, prior to receipt of such Performance Bond this Agreement is terminated, the Purchaser may apply such amount towards any sums owing to it under this Agreement); or

- (B) procure the issue of a replacement Performance Bond meeting the requirements of this Clause 22 and invoice the Manufacturer for the cost thereof. The Manufacturer shall reimburse the Purchaser for the amount of such cost, together with Default Interest from the date of such invoice until the date on which the invoice is paid.

22.5 **NOT USED**

22.6 **NOT USED**

### **23. VARIATION PROCEDURE**

#### **23.1 Right to request a quote**

23.1.1 The Purchaser Representative may, at any time prior to instructing a Variation, request the Manufacturer to provide, in writing, a quotation in respect of any variation envisaged, such quotation to detail any adjustment to the Contract Price and any effect on the Contract Programme as a result of implementing the proposed variation (the "**Variation Quote**").

23.1.2 The Manufacturer shall:

- (A) provide the Purchaser Representative with a Variation Quote within five (5) Working Days (or such longer period as the Purchaser Representative may agree) of a request from the Purchaser Representative; and
- (B) hold its Variation Quote open for ninety (90) Working Days and shall endorse the Variation Quote to this effect.

23.1.3 The Purchaser Representative may, in its absolute discretion, accept the Variation Quote and instruct a Variation in accordance with Clause 23.2.1, and the remaining provisions of this Clause 23.1 shall apply in respect of such Variation.

23.1.4 The Manufacturer shall be responsible for all costs and expenses associated with the preparation of any Variation Quote.

#### **23.2 Right to vary**

23.2.1 The Purchaser Representative may at any time until the date of the Fleet Acceptance Certificate instruct the Manufacturer in writing to proceed with a Variation of any kind in accordance with the provisions of this Clause 23.2.

23.2.2 Upon instruction of a Variation by the Purchaser Representative, the Manufacturer shall carry out such Variation and be bound by the terms of this Agreement in so doing, as though the Variation was stated in the Agreement.

23.2.3 Nothing in this Clause 23.2 shall prevent the Manufacturer from making a proposal to the Purchaser Representative for a Variation but no Variation so proposed shall be carried out by the Manufacturer except as directed in writing by the Purchaser Representative.

### 23.3 Valuation of Variations

23.3.1 As soon as possible after having received any instruction under Clause 23.2.1, the Manufacturer shall notify the Purchaser Representative if, in the Manufacturer's opinion, the Variation will involve an adjustment to the Contract Price (the "**Variation Valuation**").

23.3.2 Subject to Clause 23.3.4, the Variation Valuation shall, if not the subject of a Variation Quote which has been accepted by the Purchaser Representative in accordance with Clause 23.1.3, be determined by the Purchaser Representative:

- (A) in the case of a Variation instructed pursuant to Clause 11.4, in accordance with the prices stated in the price list set out in Part B of Schedule 3 in the case of a Spare of the kind listed in that list and otherwise at cost plus [REDACTED] and
- (B) in all other cases, in accordance with the rates and prices set out in Part 6 of Schedule 4 (*Schedule of Rates and Prices*) or, to the extent that such rates are not applicable, on a fair and reasonable basis in all the circumstances reflecting, so far as possible, the then current market rates.

Due account shall be taken of any partial performance of the Agreement which is rendered useless by any such Variation.

23.3.3 Not used.

23.3.4 The Manufacturer shall not be entitled to any increase in the Contract Price with respect to any Variation (i) instructed pursuant to Clause 7.3.1 or (ii) to the extent that it was directly or indirectly caused by or resulted from any act, neglect, default or breach of this Agreement by the Manufacturer its Subcontractors or suppliers or the directors, agents, representatives or employees of any of them or to the extent that the Manufacturer has failed to take all reasonable steps to mitigate any actual or potential increase in the Contract Price.

### 23.4 Notice of variations

23.4.1 When instructing any Variation, the Purchaser Representative shall, to the extent possible, give the Manufacturer such reasonable notice as will enable him to make his arrangements accordingly.

### 23.5 Progress with variations

23.5.1 The Manufacturer shall, on receipt of an instruction from the Purchaser Representative to proceed with a Variation, immediately proceed to carry out such Variation in accordance with its terms notwithstanding that the Variation Valuation has not yet been determined. The carrying out of the Variation by the Manufacturer shall not, without the prior written consent of the Purchaser

Representative, be delayed pending determination of the Variation Valuation in accordance with Clause 23.3.2.

23.5.2 The Parties shall enter into such amendments to this Agreement to give effect to any Variation instructed by the Purchaser Representative pursuant to Clause 23.2.1.

## **24. INTELLECTUAL PROPERTY RIGHTS**

### **24.1 NOT USED**

### **24.2 Licence of Manufacturer IPR**

The Manufacturer grants, or shall procure the grant, to the Purchaser a non-exclusive, perpetual, irrevocable, royalty-free, sub-licensable and transferable licence to use the Manufacturer IPR, Technical Library (and the Technical Information therein), Software and Source Code for:

24.2.1 the testing, commissioning, operation, maintenance, modification, refurbishment or sale of the Plant and Machinery and other items of Goods or any related activity, or permitting the Purchaser to use the Plant and Machinery and any other item of Goods and/or any other item to be supplied pursuant to this Agreement for the purposes envisaged pursuant to the Specification;

24.2.2 modifying, refurbishing, repairing, maintaining and overhauling the Plant and Machinery, and/or any other item of Goods supplied pursuant to this Agreement or any related activity;

24.2.3 complying with all Applicable Laws, TfL Standards and all Relevant Consents;

24.2.4 using and copying the Manuals in order to perform any of the above;

24.2.5 training personnel to carry out any of the activities described in Clause 24.2.1, 24.2.2 and 24.2.4;

24.2.6 inviting tenders for any of the activities described in Clause 24.2.1 to 24.2.5 inclusive;

24.2.7 in the event of termination of this Agreement other than for a Purchaser Event of Default, procuring fulfilment and performance of the Manufacturer's obligations under this Agreement, including the manufacture of any Parts, Spares and any other items of Goods or other equipment for use in connection with the Plant and Machinery; and

24.2.8 the Purchaser performing its obligations under this Agreement.

Other than in accordance with this Clause 24, the Purchaser shall not, and no party to whom it sub-licences or transfers any rights under this Clause 24 shall, have the right to manufacture (i) the Plant and Machinery or (ii) any Part that is the subject of Manufacturer IPR.

### 24.3 **Subcontractors**

The Manufacturer shall ensure that all Subcontracts entered into by the Manufacturer shall permit the Manufacturer to assign or novate its rights and obligations under such agreement relating to any Intellectual Property Rights to the Purchaser without the consent of the relevant Subcontractor and such Subcontracts shall specify the Purchaser as a permitted assignee.

### 24.4 **Documentation**

The Manufacturer shall execute such further documents, and do such other things, as the Purchaser may reasonably request in order to obtain for the Purchaser the full benefit of this Clause 24 at no cost to the Purchaser.

### 24.5 **Warranties**

The Manufacturer represents and warrants to the Purchaser that:

24.5.1 the Manufacturer IPR, Technical Library (and the Technical Information therein) and the Software constitute all the Intellectual Property Rights required by the Purchaser for the purposes of this Agreement;

24.5.2 it has the right and power to grant the licence set out in Clause 24.2; and

24.5.3 use of any Manufacturer IPR, Software, Plant and Machinery, Part and/or any other item of Goods or part thereof does not infringe any Intellectual Property rights of another person.

### 24.6 **Indemnity**

The Manufacturer shall indemnify the Purchaser and any member of the TfL Group against any claim for infringement of any Intellectual Property Rights.

### 24.7 **Remedy for Infringement**

Without prejudice to the provisions of Clause 24.5, if the use of any Manufacturer IPR, Software, the Technical Library Plant and Machinery, Part and/or any other item of Goods or part thereof is, or in the reasonable opinion of the Purchaser is likely to become, an infringement of the Intellectual Property Rights of another person, the Manufacturer shall, at its expense, either:

24.7.1 procure for the Purchaser the right to continue to use that Manufacturer IPR, Software, Technical Library, Plant and Machinery, Part and/or item of Goods; or

24.7.2 (to the extent Clause 24.7.1 is not applicable) modify the Plant and Machinery, Part and/or item of Goods so that it no longer infringes those rights, or replace the item of Goods with a non-infringing Plant and Machinery, Part and/or item of Goods (or part thereof) provided however that the modified or replacement Plant and Machinery, Part and/or item of Goods (as the case may be) shall at all times comply with all the requirements of this Agreement.

## 24.8 Software

24.8.1 The Manufacturer shall ensure in respect of all Software that is used for the design, manufacture, testing, commissioning, supply, operation, maintenance, modification, refurbishment or sale of the Plant and Machinery and/or any other item of Goods that:

- (A) there is orderly documented progress from the functional requirements to the final code and provision for regular verification and testing at each stage of the design process; and
- (B) where no particular TfL Standard is specified by the Specification, it is designed and documented following a nationally or internationally recognised standard using recognised quality control methods.

The Manufacturer shall provide copies of the documentation and information at Clause 24.8.1(A) and (B) above to the Purchaser on the request of the Purchaser.

24.8.2 The Manufacturer shall, in respect of Software, at all times during the period from the Commencement Date until the end of the thirty (30) year design life of the Plant and Machinery retain the Software designed by the Manufacturer.

## 24.9 Cessation of Software Support

If the Manufacturer or any Subcontractor supplying any of the Software stops trading or makes known its intention to withdraw support for that Software, the Manufacturer shall, without additional charge (save where the Subcontractor stops trading or makes such intention to withdraw support known in which case the Purchaser shall pay the reasonable and properly incurred costs of the Manufacturer in complying with this Clause 24.9), use reasonable endeavours to procure the transfer to the Purchaser of all rights in and to the Software in question for the relevant type of Goods.

## 24.10 Survival

Each licence granted under this Clause 24 and/or any liability arising in connection with the same shall survive the termination of this Agreement.

## 24.11 Technical Library

24.11.1 The Manufacturer shall provide the services set out in this Clause 24.11 in respect of the Technical Library (the "**Technical Library Services**").

24.11.2 Without prejudice to any other provisions of this Agreement, the Manufacturer shall:

- (A) no later than ten (10) Working Days prior to submission of the Concept Design in accordance with Schedule 1A (*Specification*), establish and maintain a secure electronic facility for the remote access of the Technical Information, referred to in this Clause 24.11.2 as the "**Technical Library**", and all Technical Information will be required to be deposited and maintained in accordance with this Clause 24.11 in such electronic facility. Subject to Clause 24.11.6, title to the Technical

Library and any Technical Information therein shall vest in the Manufacturer;

- (B) ensure that a full copy of the Technical Information is placed in the Technical Library no less than six months prior to the expected delivery date of the first Unit, provided that the Manufacturer shall deliver any such Technical Information that is not in existence at that date no later seven (7) days following the day on which the relevant document was signed off or approved by the Manufacturer. The Manufacturer shall ensure that automatically upon any addition to the Technical Library pursuant to this Clause 24.11.2(B), an automatic notification is sent to the Purchaser (to such email address as may be notified by the Purchaser Representative to the Manufacturer from time to time) informing the Purchaser that it has updated the contents of the Technical Library;
- (C) prior to Take Over of the first Unit, ensure that:
  - (i) promptly and, in any event within two (2) Working Days of updated information being available, it updates, as necessary, the contents of the Technical Library such that all relevant and up-to-date versions of the Technical Information (including all documentation as may have been produced by Subcontractors and third parties) are kept there; and
  - (ii) automatically upon updating the contents of the Technical Library in accordance with Clause 24.11.2(D)(i) and 24.11.2(D), an automatic notification is sent to the Purchaser (to such email address as may be notified by the Purchaser Representative to the Manufacturer from time to time) informing the Purchaser that it has updated the contents of the Technical Library and if requested by the Purchaser, deliver to the Purchaser the updated information where this Agreement expressly provides that the Purchaser has the right to copies of such information;
- (D) ensure that a copy of any Technical Information produced, updated and/or revised from time to time following Take Over of the first Unit is promptly and, in any event, within two (2) Working Days of it being produced, is placed in the Technical Library (including all documentation as may have been produced and/or updated by Subcontractors and third parties);
- (E) ensure that the Technical Library is presented in a clear format and any information provided therein shall enable an appropriately qualified independent auditor to verify and understand the contents of the Technical Library;
- (F) establish a catalogue, in a format approved by the Purchaser's Representative, of all Technical Information deposited in the Technical Library from time to time and:
  - (i) update that catalogue whenever any such Technical Information is deposited in the Technical Library; and
  - (ii) ensure that catalogue identifies all the Technical Information deposited in the Technical Library, a brief description of its purpose or function, its owner (if not the Manufacturer) and, where applicable, its version number and its configuration state

and all requirements for specific computer hardware and/or software (including software versions) necessary for accessing, reading and/or modifying information included;

(iii) ensure that all information in the Technical Library and the catalogue relating thereto shall be maintained in the English language;

(G) ensure that the Technical Library is adequately maintained, that the integrity and security is preserved at all times, and that sufficient measures are established to ensure the Technical Library is suitably protected and insured against loss, damage, destruction and theft.

24.11.3 The Purchaser and their agents and/or subcontractors shall:

(A) have unlimited access to the Technical Library at any time on reasonable notice;

(B) be entitled to take any number of copies of the Technical Information for the purpose of exercising their rights under this Agreement; and

(C) be entitled at any time, on reasonable notice, to audit and inspect, or procure the audit and inspection of, the contents of the Technical Library. The Manufacturer shall update or otherwise correct the contents of the Technical Library as may be necessary following any such audit and inspection.

24.11.4 The Manufacturer warrants the accuracy, sufficiency and completeness of the Technical Library.

24.11.5 Where the contents of the Technical Library comprises Software, the Manufacturer shall ensure that the object code of such Software includes all executable files, executable code and application data associated with the Software, and shall keep such copies updated in line with current industry practice so that a skilled person can:

(A) access the Software and maintain it as may be reasonably necessary; and

(B) relate the Software to the performance of the relevant equipment under normal and fault conditions, and to verify its compliance with the functional requirements of that equipment.

24.11.6 If an Insolvency Event occurs in relation to the Manufacturer, the Manufacturer shall immediately upon written request by the Purchaser either (at the Purchaser's election):

(A) transfer to the Purchaser title, possession and control of the database on which the Technical Library is held; and/or

(B) grant unlimited and unrestricted access to the Technical Library in order for the Purchaser to access such or all of the Technical Information as it requires for the purposes envisaged by this Agreement in a format compatible with the Purchaser's software system.

24.11.7 In addition to the Technical Library, the Manufacturer shall maintain a library of copies of all information which it creates (or is created on its behalf) or which is provided to it by the Purchaser and/or its agents and subcontractors (but with no

obligation to verify such information at the time it is provided to it) relating to modifications, additions or other changes to any Unit.

24.11.8 The Technical Library shall continue to be readily accessible in a location within the United Kingdom for the duration of the Agreement.

24.11.9 Upon Fleet Acceptance, the Manufacturer shall deliver the Technical Library to the Service Provider.

24.11.10 The Parties undertake to comply with the Data Protection Act 1998 and any other relevant data protection legislation in respect of all information contained in the Technical Library.

#### 24.12 **Escrow**

Within twenty (20) Working Days of the Commencement Date, the Manufacturer shall execute the Escrow Agreement. The Manufacturer shall place the Software and Source Code in escrow with the Escrow Agent on the terms set out in the Escrow Agreement as soon as reasonably possible after its completion and in any event within twenty (20) Working Days thereof. The Manufacturer shall pay all fees of the Escrow Agent in connection with the placement, storage and release of the Software and Source Code in equal shares and shall provide evidence of the same to the Purchaser on written request.

### 25. **TERMINATION**

#### 25.1 **Manufacturer Events of Default**

The occurrence of one or more of the following shall constitute a Manufacturer Event of Default:

25.1.1 the Manufacturer commits a material breach of its obligations under this Agreement;

25.1.2 the Manufacturer commits a Persistent Breach as provided for in Clause 25.4;

25.1.3 the Manufacturer commits a breach of Clause 10.1 (Manufacturing Facilities);

25.1.4 the maximum amount of any liquidated damages payable by the Manufacturer pursuant to Clause 13.1 and/or Clause 13.3 shall have accrued;

25.1.5 an Insolvency Event occurs in relation to the Manufacturer;

25.1.6 the Manufacturer fails to make payment of any sum (including any liquidated damages) not in dispute when due and payable to the Purchaser in accordance with this Agreement within thirty (30) days of a written demand for payment;

25.1.7 the Manufacturer fails to take out and/or maintain any of the Required Insurances in accordance with Schedule 9 (*Insurance*);

25.1.8 the Manufacturer fails to provide (where the Contract Particulars specify a Performance Bond is required) a Performance Bond or any replacement thereof in accordance with Clause 22.4;

- 25.1.9 Fleet Acceptance of the Plant and Machinery has not occurred by the Fleet Acceptance Longstop Date; or
- 25.1.10 (where the Contract Particulars specify a Manufacturer Guarantee is required) the Manufacturer Guarantor's obligations under the Manufacturer Guarantee are or become wholly or partly invalid or unenforceable or the Manufacturer Guarantor fails to comply promptly with any of its obligations pursuant to the Manufacturer Guarantee; or
- 25.1.11 there is a breach by the Manufacturer of its obligations under Clause 34;
- 25.1.12 without the Purchaser's written consent, at any time a person (or persons acting together) takes a controlling interest in the Manufacturer's share capital, and for this purpose, a "**controlling interest**" being either:
  - (A) the ownership or control (directly or indirectly) of more than 30% of the Manufacturer's voting share capital or the share capital of the Manufacturer's holding company; or
  - (B) the ability to direct the casting of more than 30% of the votes exercisable at the Manufacturer's general meetings or those of the Manufacturer's holding company on all, or substantially all, matters.

## 25.2 **Procedures in relation to Termination for a Manufacturer Event of Default**

- 25.2.1 The Manufacturer shall notify the Purchaser forthwith on the Manufacturer becoming aware of the occurrence of a Manufacturer Event of Default.
- 25.2.2 Following the occurrence of a Manufacturer Event of Default (and notwithstanding that the Manufacturer may not have notified it pursuant to Clause 30.2.1), the Purchaser may, by notice in writing to the Manufacturer ("**Purchaser Termination Notice**") specifying the Manufacturer Event of Default in question, terminate this Agreement either in respect of all of the Goods which have not been Taken Over or (as specified in the notice) in relation to specific items of Goods which have not been Taken Over, such termination to take effect from the date specified in the Purchaser Termination Notice (being not less than seven (7) days after the date of the Purchaser Termination Notice or, in the case of Insolvency, forthwith) provided that, in respect of a Manufacturer Event of Default under Clauses 25.1.1, 25.1.3 or 25.1.6 which is capable of remedy, the provisions of Clause 25.3 shall apply.

## 25.3 **Remedial Plan**

- 25.3.1 Where a Manufacturer Event of Default that is capable of remedy arises under Clauses 25.1.1, 25.1.3 or 25.1.6, the Purchaser shall by notice in writing to the Manufacturer signed on behalf of the Purchaser (a "**Remedy Notice**") require the Manufacturer either:
  - (A) to remedy such breach(es) referred to in the Remedy Notice within thirty (30) Working Days of that notice; or

(B) within ten (10) Working Days of the Remedy Notice, to put forward a plan (a "**Remedial Plan**") acceptable to the Purchaser in its absolute discretion to remedy the breach(es) referred to in the Remedy Notice. Such Remedial Plan shall be in writing and shall specify the proposed remedy in reasonable detail and the latest date by which it is proposed that that remedy will be completed.

25.3.2 Where the Manufacturer puts forward a Remedial Plan in accordance with Clause 25.3.1, the Purchaser shall notify the Manufacturer in writing within twenty (20) Working Days of receipt of the Remedial Plan that it does not accept the Remedial Plan. If the Purchaser does not so notify the Manufacturer, the Purchaser shall be deemed to have accepted the Remedial Plan.

25.3.3 If the Purchaser notifies the Manufacturer that it does not accept that Remedial Plan pursuant to Clause 25.3.2, the Purchaser and the Manufacturer shall use reasonable endeavours in the following ten (10) Working Days to agree any necessary amendments to the Remedial Plan in order for it to be acceptable to the Purchaser. In the absence of agreement in that period of ten (10) Working Days, the Purchaser may treat the Manufacturer Event of Default as not being capable of remedy and terminate this Agreement in accordance with Clause 25.2.2 (notwithstanding the proviso thereto). Where the Purchaser and the Manufacturer agree the form of the Remedial Plan, the Manufacturer shall forthwith implement such Remedial Plan in accordance with its terms.

25.3.4 If any breach specified in a Remedy Notice served under Clause 25.3.1 is not remedied:

(A) within the thirty (30) Working Day period specified in Clause 25.3.1(A) (if applicable); or

(B) in accordance with a Remedial Plan that has been accepted or deemed accepted by the Purchaser, or the Manufacturer otherwise fails to comply with the terms of that Remedial Plan,

then the Purchaser may exercise its rights under Clause 25.2.2 as if the Manufacturer Event of Default is not capable of remedy.

#### 25.4 **Persistent breach**

25.4.1 If the Manufacturer breaches any of its obligations (where those obligations are of the same type or nature) under this Agreement, more than twice in any three (3) month period, then the Purchaser may serve a notice on the Manufacturer:

(A) specifying that it is a formal warning notice;

(B) giving reasonable details of such breach; and

(C) stating that such breach is a persistent breach that, if it continues unremedied or if a breach of the same type or nature occurs within three

(3) months of the date of service of the notice, may result in a termination of this Agreement in accordance with this Clause 25.4.

25.4.2 If, following service of such a warning notice pursuant to Clause 25.4.1, the breach specified has continued unremedied or a breach of the same type or nature has occurred within the three (3) months following the date of service of such notice, then the Purchaser may, no later than the date falling six (6) months following the date of service of the warning notice pursuant to Clause 25.4.1, serve another notice on the Manufacturer specifying that such breach constitutes a "**Persistent Breach**" for the purposes of Clause 25.1.2.

## 25.5 **Consequences of Termination for Manufacturer Fault**

Where the Purchaser has served (a) a Purchaser Termination Notice in accordance with Clause 25.2.2 (and, where relevant, the Manufacturer Event of Default has not been remedied pursuant to Clause 25.3), or (b) a notice of termination under Clause 33.3, the Purchaser shall be entitled (in its absolute discretion) to:

25.5.1 procure the completion of the Plant and Machinery and other items of Goods so that they satisfy the conditions necessary for the passing of title to the Purchaser and, upon completion, pay to the Manufacturer that part of the Contract Price for the Plant and Machinery and any other item of Goods not yet paid as at the date of termination less the cost of completion including procurement of the same. Where this gives rise to a negative figure, the corresponding positive amount will be payable by the Manufacturer to the Purchaser together with Default Interest (calculated from the date of termination of this Agreement to the date of payment by the Manufacturer), and the amount payable by the Manufacturer shall not exceed twenty (20) per cent of the Contract Price; or

25.5.2 be reimbursed for all payments made to the Manufacturer in relation to the supply of the Plant and Machinery and other items of Goods (other than those in respect of which title has transferred to the Purchaser pursuant to Clause 16). The amount to be reimbursed shall attract Default Interest (calculated from the date of termination of this Agreement to the date of payment by the Manufacturer).

## 25.6 **Additional Remedies**

Without prejudice to Clause 38, where this Agreement has been terminated pursuant to Clause 25.2, 33.3, 33.4, 53.2, 54.5 or 56.9, the Purchaser shall be entitled to require the Manufacturer:

25.6.1 to assign the benefit of any warranties which have been given by any third parties, Subcontractors or suppliers to the Manufacturer in respect of the Goods; or

25.6.2 to provide all drawings of all Parts and all design, technical and maintenance records relating to the Goods including all Manuals relating to the Goods save to the extent the same have already been provided in accordance with this Agreement and such information shall be treated as Manufacturer IPR for the purposes of this Agreement.

## 25.7 **Voluntary Termination**

The Purchaser may terminate this Agreement without cause at any time by giving notice to the Manufacturer of such termination and the date when such termination shall become effective and the termination shall take effect upon such date.

## 25.8 **Purchaser Event of Default**

A Purchaser Event of Default shall occur when the Purchaser fails to make payment of any sum which is due and payable to the Manufacturer in accordance with this Agreement and not in dispute and such amount has not been paid within thirty (30) days following a subsequent written demand by the Manufacturer for payment.

## 25.9 **Procedures in relation to Termination for a Purchaser Event of Default**

On the occurrence of a Purchaser Event of Default, the Manufacturer may by notice to the Purchaser (a "**Manufacturer Termination Notice**") terminate this Agreement and such termination shall take effect from the date specified in the Manufacturer Termination Notice.

## 25.10 **Consequences of Voluntary Termination or Termination for a Purchaser Event of Default**

25.10.1 The Manufacturer and the Purchaser each agrees to notify each other of the occurrence of any Purchaser Event of Default as soon as it becomes aware of such occurrence.

25.10.2 Where this Agreement is terminated by the Purchaser in accordance with Clause 25.7 or Clause 25.8 or where the Manufacturer terminates this Agreement following the occurrence of any Purchaser Event of Default, the Purchaser shall pay to the Manufacturer:

- (A) an amount equivalent to the amount that would be payable by the Purchaser to the Manufacturer in respect of a termination as a result of a Force Majeure Event in accordance with Clause 25.11; and
- (B) provided that, where the amount would be a negative figure, the corresponding positive amount shall be payable by the Manufacturer to the Purchaser on the same basis as set out in Clause 25.5.1); and
- (C) subject to Clause 25.10.4, the costs, expenses and other liabilities reasonably and properly incurred by the Manufacturer as a direct result of the termination of this Agreement provided that the Manufacturer shall use all reasonable endeavours to mitigate such costs, expenses and/or other liabilities.

The Manufacturer shall not be entitled to payment of any other loss and/or damage arising from such termination.

25.10.3 The Purchaser shall be entitled to appoint a suitably qualified independent person ("**Independent Auditor**") to audit any or all of the costs, expenses and/or other

liabilities incurred by the Manufacturer as a direct result of termination of this Agreement and determine whether the amount of such costs, expenses and/or liabilities were properly and reasonably incurred by the Manufacturer as a direct result of the termination of this Agreement.

- 25.10.4 Where the Purchaser exercises its rights pursuant to Clause 25.10.3, it shall give written notice to the Manufacturer identifying the Independent Auditor appointed by the Purchaser, the terms of the Independent Auditor's appointment and the proposed timeframes for undertaking the audit. The Manufacturer shall cooperate with the Independent Auditor and grant the Independent Auditor the same rights of audit as the Purchaser enjoys under this Agreement.
- 25.10.5 The Purchaser shall procure that the Independent Auditor provides a copy of its decision in writing (together with reasons for its decisions) to the Manufacturer. Where the Independent Auditor determines that some or all of a specific cost, expense and/or liability was not properly and reasonably incurred by the Manufacturer as a direct result of termination of this Agreement, the Purchaser shall not be obliged to pay such amount to the Manufacturer.
- 25.10.6 The costs incurred by the Independent Auditor in undertaking the audit shall be borne by the Purchaser save where the Independent Auditor determines that some or all of a specific cost, expense and/or liability was not properly and reasonably incurred by the Manufacturer, in which case the costs incurred by the Independent Auditor in undertaking the audit shall be borne by the Manufacturer.
- 25.10.7 In the event the Manufacturer disputes any findings of the Independent Auditor, such Dispute shall be referred for resolution in accordance with Clause 32.

#### **25.11 Consequences of Termination for Force Majeure**

- 25.11.1 Where this Agreement is terminated in whole or in part by the Purchaser as a result of a Force Majeure Event in accordance with Clause 27, the Purchaser will acquire any:
- (A) Design that has been produced in connection with this Agreement prior to the date of service upon the Manufacturer of the FM Notice; and
  - (B) partially completed Plant and Machinery or other item of Goods that is the subject of the FM Notice.
- 25.11.2 The value of the Purchaser's acquisition will be assessed, where appropriate, in accordance with Schedule 4 (*Contract Price*) (and in particular the Contract Price breakdown contained in Part 3 of Schedule 4) or, to the extent that this is not appropriate due to the level of Design development, the costs and expenses reasonably and properly incurred by the Manufacturer in carrying out its obligations under this Agreement less the amount of progress or advance payments made to the Manufacturer. Where this gives rise to a negative figure, the corresponding positive amount shall be payable by the Manufacturer to the Purchaser on the same basis as set out in Clause 25.5.1.

## 25.12 **Consequences of Termination for other reasons**

Where this Agreement is terminated by the Purchaser under Clause 33.3, 33.4, 53.2, 54.5 or 56.9, the provisions of Clause 25.5 and 25.6 shall apply.

## 25.13 **Not used.**

## 26. **SURVIVAL OF CLAUSES**

### 26.1 **Consequence of Termination or Expiry**

Upon termination or expiry of this Agreement, whether in respect of any one item of Goods or all Goods, the obligations of the Parties under this Agreement in respect of the terminated Goods shall cease except for:

26.1.1 any rights and obligations arising as a result of any antecedent breach of this Agreement or any rights and obligations which shall have accrued or become due prior to the date of termination; and

26.1.2 the provisions of Clauses 1, 3A, 5, 7, 10.2 to 10.7 inclusive, 17, 20, 21, 22, 24, 25.5, 25.6, 25.10, 25.11, 25.12, 26, 29A, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 44, 45, 47 and 51 and the related Schedules referred to in or required to give effect to those Clauses which shall survive the termination or expiry of this Agreement and continue in full force and effect.

## 27. **FORCE MAJEURE**

### 27.1 **Consequence of a Force Majeure Event and Notification Requirements**

No Party shall be in breach of an obligation under this Agreement to the extent that it is unable to perform that obligation in whole or in part by reason of the occurrence of a Force Majeure Event provided that:

27.1.1 if any Party seeks to rely on this Clause 27 (the "**FM Affected Party**"), as soon as reasonably practicable and in any event no more than five (5) Working Days after the start of the claimed Force Majeure Event, the FM Affected Party shall notify the other Parties in writing of the act, event or circumstance relied on as a Force Majeure Event; and

27.1.2 within a further five (5) Working Days, the FM Affected Party shall notify the other Parties in writing of the date on which such act, event or circumstance commenced, including an estimate of the period of time required to overcome it and its effects, details of any failure by the FM Affected Party to perform its obligations under this Agreement, the effect on the FM Affected Party's ability to perform its obligations under this Agreement and the action being taken to mitigate its consequences in accordance with Clause 27.2 below.

### 27.2 **Mitigation**

27.2.1 An FM Affected Party shall:

- (A) make all reasonable efforts to mitigate the effects of the claimed Force Majeure Event (including, in the case of the Manufacturer, complying with the requests of the Purchaser Representative and, in relation to the Manufacturer's Works, using all reasonable endeavours to find alternative facilities at which to carry out its obligations), to continue to perform its obligations under this Agreement and to resume performance as soon as possible;
- (B) shall furnish written reports every seven (7) days to the other Party on its progress in doing so and any proposals to mitigate the effect of the claimed Force Majeure Event, including any reasonable alternative means for performance of the affected obligations; and
- (C) shall provide any information relating to the claimed Force Majeure Event and its effects that the other Party may reasonably request.

27.2.2 The FM Affected Party shall not be relieved from liability under this Agreement to the extent that it is not able to perform its obligations under this Agreement due to its failure to comply with its obligations under Clause 27.2.1 above.

### 27.3 **Extensions of Time for Force Majeure**

Subject to Clauses 27.2 and 27.4 the occurrence of a Force Majeure Event which directly causes delay to the supply of the Plant and Machinery and/or any other item of Goods will constitute a Permitted Delay Event and the provisions of Clause 15 shall apply.

### 27.4 **Termination for Force Majeure**

Notwithstanding the provision of Clause 27.3 entitling the Manufacturer to a Permitted Delay Event, the Purchaser shall be entitled to terminate this Agreement by notice in writing (a "FM Notice") to the Manufacturer if the Take Over of the Plant and Machinery or other item of Goods has been or would be delayed as the result of a Force Majeure Event for more than an aggregate total of ninety (90) days following the Key Date for such Plant and Machinery or other item. The provisions of Clause 25.11 shall apply in respect of such termination.

### 27.5 **Effect on payments**

If a Force Majeure Event results in the Manufacturer being unable to carry out its obligations, the Purchaser shall cease to be liable to make any payment which would otherwise have been due on fulfilment of that obligation until and to the extent that the Manufacturer has performed that obligation.

### 27.6 **Cessation of Force Majeure**

Immediately after the end of the Force Majeure Event, the FM Affected Party shall notify the other Party in writing that the Force Majeure Event has ended and shall resume performance of its obligations under this Agreement insofar as the Agreement has not been terminated in accordance with Clause 27.4.

## 27.7 Continuing Obligations

The Parties shall not be released from any of their obligations under this Agreement as a result of a Force Majeure Event, and this Agreement shall, subject to Clause 27.4, remain in effect for the duration of a Force Majeure Event.

## 28. INSURANCE

The Manufacturer and the Purchaser shall comply with the requirements of the insurance regime set out in Schedule 9 (*Insurance*).

## 29A. LIMITATION PERIOD

### 29A.1 Limitation on bringing claims

No Party shall bring a claim or action respect of this Agreement against the other Party after the expiry of eight (8) years from the Key Date for Take Over.

### 29A.2 Indemnity for claims after Limitation Period

If a Party brings a claim or action under or in respect of this Agreement that is excluded by Clause 29A.1, that Party shall indemnify and hold harmless the other Party against all expenses, liabilities, losses, damages, claims, costs, demands, proceedings and Taxes whatsoever suffered or incurred or arising out of such claim or action. Liability under this Clause 29A.2 shall be unlimited.

## 29. INDEMNITIES AND LIMITATIONS ON LIABILITY

### 29.1 Application

The provisions of this Clause 29 shall apply notwithstanding any other provision of this Agreement.

### 29.2 General Indemnities

Subject to Clause 29.3, the Manufacturer shall be liable for and shall indemnify on demand on an after-Tax basis the Purchaser and any member of the TfL Group, including any of their respective employees, servants, agents, subcontractors, suppliers, directors, representatives and officers (each an "**Indemnified Party**" and together the "**Indemnified Parties**"), against all expenses, liabilities, losses, damages, claims, costs, demands, proceedings and Taxes whatsoever suffered or incurred or arising out of:

29.2.1 death or personal injury to any person;

29.2.2 any loss of, or damage to, any property or assets (including the TfL Premises, the Railway Infrastructure, the Plant and Machinery or any other item of Goods);

29.2.3 any third party actions, claims, demands, costs, charges and expenses (including legal expenses on an indemnity basis) brought against any Indemnified Party;

29.2.4 breach of statutory duty;

29.2.5 any Environmental Damage;

arising from or in connection with:

- (A) the design, manufacture, supply, assembly, testing, commissioning and delivery of the Plant and Machinery (and/or any subsystem or Part forming part of the Plant and Machinery) and/or any other items of Goods; and/or
- (B) the operation and/or use of the Plant and Machinery and/or any other items of Goods in accordance with Manuals or as otherwise directed by the Manufacturer;
- (C) the performance or non-performance (including any negligent performance) of the obligations of the Manufacturer, its Subcontractors or suppliers or the directors, agents, representatives or employees of any of them under or in connection with this Agreement;
- (D) any acts or omissions, breach, negligence or wilful misconduct by the Manufacturer.

### 29.3 **Qualifications**

The Manufacturer shall not be liable to indemnify any Indemnified Party under the indemnity in Clause 29.2 in the case of any loss referred to in Clauses 29.2.1 and 29.2.2 to the extent that it results from negligence or breach of duty on the part of any Indemnified Party.

### 29.4 **Limitation on Manufacturer's Liability**

29.4.1 Subject to Clause 29.4.2 the Manufacturer's liability to the Indemnified Parties under this Agreement (whether arising in contract, tort (including negligence, breach of statutory duty or otherwise)) shall be limited as set out in the Contract Particulars.

29.4.2 The Manufacturer's liability to the Indemnified Parties under this Agreement in respect of the Excepted Liabilities shall not be subject to the limits referred to in Clause 29.4.1.

### 29.5 **Consequential Breach and Loss**

29.5.1 Neither the Manufacturer nor the Purchaser shall be treated as being in breach of this Agreement if such breach arises as a direct, necessary and inevitable consequence of the occurrence of a breach thereof on the part of the other Party.

29.5.2 Other than in respect of Excepted Liabilities, neither Party shall be liable for any matter howsoever arising out of or in connection with this Agreement (including Clause 29.2) in respect of any Consequential Loss. Each Party respectively undertakes not to sue the other Party (or make any claim against that Party), the Purchaser or any member of the TfL Group in respect of Consequential Loss.

## 29.6 **No Double Recovery**

No Indemnified Party shall be entitled to recover (by way of indemnity or otherwise) more than once in respect of the same loss or damage suffered under this Agreement and/or any document entered into in connection with or pursuant to this Agreement. There shall be no duplication solely by reason of there being multiple beneficiaries to a claim hereunder.

## 29.7 **Duty to Mitigate**

The Manufacturer and the Purchaser shall each be under a duty to mitigate any damages and losses in respect of which it makes any claim pursuant to this Agreement.

## 30. **CONFIDENTIALITY**

### 30.1 **Obligations of Confidentiality**

Subject to Clause 30.2, the contents of this Agreement, any documents referred to in this Agreement and any information whether written or oral, provided by the Purchaser to the Manufacturer or by the Manufacturer to the Purchaser in connection with this Agreement shall be treated by the recipient as confidential ("**Confidential Information**"). The Purchaser and the Manufacturer shall not (and shall procure that their respective sub-contractors, suppliers, officers, employees, advisers and agents and the officers, employees, advisers and agents of its sub-contractors and suppliers shall not) without the prior written consent of the other Party or by failure to exercise due care or otherwise by any act or omission:

- 30.1.1 disclose Confidential Information to any person whomsoever;
- 30.1.2 use or exploit Confidential Information commercially for its or their own purposes other than in connection with the performance of this Agreement; or
- 30.1.3 use Confidential Information otherwise than for the purpose for which it was provided.

### 30.2 **Permitted Disclosure**

The restrictions in Clause 30.1 shall not apply to the disclosure of Confidential Information:

- 30.2.1 in accordance with any requirement under any Applicable Law (including pursuant to Clause 31) or TfL Standard to do so;
- 30.2.2 to the disclosing Party's respective professional advisers and auditors who are bound to such Party by a duty of confidentiality which applies to any information disclosed;
- 30.2.3 to any banks and financial institutions providing finance, or advising on or envisaging the provision of finance for any purpose in connection with this Agreement;
- 30.2.4 to any Competent Authority;

- 30.2.5 in the case of the Purchaser, to the Mayor of London and/or the Greater London Authority and/or the Secretary of State for Transport;
- 30.2.6 in the case of the Purchaser, to any member of the TfL Group;
- 30.2.7 to the extent that the relevant Confidential Information is in the public domain otherwise than by breach of this Agreement;
- 30.2.8 which was made available to the disclosing Party on a non-confidential basis;
- 30.2.9 which is required in connection with a disposition or other transfer of rights permitted in accordance with this Agreement;
- 30.2.10 which is required by law or by order of a Court of a competent jurisdiction (but only to the extent required by such law or order) to be disclosed in connection with any Dispute, litigation or other dispute resolution procedure; or
- 30.2.11 to any member of the Manufacturer Group for the purposes of the performance by the Manufacturer of its obligations under this Agreement.

### 30.3 **Confidentiality Undertaking**

Where disclosure is permitted under Clause 30.2, other than Clauses 30.2.1, 30.2.2, 30.2.7 or 30.2.8, the Party disclosing the Confidential Information shall procure that the recipient of the Confidential Information shall be subject to the same obligations of confidentiality as that contained in this Agreement.

### 30.4 **Prior Notice of Disclosure**

If a Party becomes required in circumstances contemplated by Clauses 30.2.1 to 30.2.11 to disclose any Confidential Information, such Party shall give to the other Party as much notice as is practical in the circumstances of such disclosure and shall co-operate with the other Parties, having due regard to the other Parties' views, and take such steps as the other Parties may reasonably require in order to enable it to mitigate the effect of, or avoid the requirements for, any such disclosure. Where the disclosing Party giving notice is the Purchaser, it shall only be obliged to give notice to co-operate with, have due regard to the views of, and take steps as reasonably required by the Manufacturer.

### 30.5 **Standard of Care**

In fulfilling its obligations under this Clause 30, each Party shall be required to use the same degree of care to prevent unauthorised disclosure of such Confidential Information as it would use to prevent the disclosure of its own commercial and financial information of the same or similar nature and which it considers proprietary or confidential.

### 30.6 **Announcements**

The Manufacturer shall not (and shall procure that each Subcontractor and supplier shall not) without the prior written consent of the Purchaser (such consent not to be unreasonably withheld or delayed) advertise or otherwise give any publicity in any form to

any matter relating to this Agreement or announce their involvement in the design, manufacture, supply, assembly, testing, commissioning, delivery or support of any Goods.

### **30.7 Reputation**

The Manufacturer shall not knowingly do or omit to do anything in relation to this Agreement which may bring the standing or reputation of any other Party into disrepute or otherwise attract adverse publicity in relation to the other Parties.

### **30.8 Survival**

The obligations of the Parties under this Clause 30 shall survive the expiry or the termination of this Agreement for whatever reason.

## **31. FREEDOM OF INFORMATION**

31.1 The Manufacturer acknowledges that the Purchaser:

31.1.1 is subject to the FOI Legislation and agrees to assist and co-operate with the Purchaser to enable the Purchaser to comply with its obligations under the FOI Legislation, and

31.1.2 may be obliged under the FOI Legislation to disclose Information without consulting and/or obtaining consent from the Manufacturer.

31.2 Without prejudice to the generality of Clause 31.1, the Manufacturer agrees and shall procure that its Subcontractors and suppliers (if any) will agree to:

31.2.1 transfer to the Purchaser or such other persons as may be notified by the Purchaser to the Manufacturer each Information Request relevant to this Agreement or any member of the TfL Group that the Manufacturer or its Subcontractors (if any) (as the case may be) receive as soon as practicable and in any event within thirty (3) days of receiving such Information Request; and

31.2.2 in relation to Information held by the Manufacturer on behalf of the Purchaser, provide the Purchaser with details about and/or copies of all such Information that the Purchaser requests and provide such details and/or copies within six (6) days of a request from the Purchaser (or such other period as the Purchaser may reasonably specify), and in such forms as the Purchaser may reasonably specify.

31.3 The Purchaser shall be responsible for determining whether Information is exempt or excepted information under the FOI Legislation and for determining what Information (if any) will be disclosed in response to an Information Request in accordance with the FOI Legislation. The Manufacturer shall not himself respond to any person making an Information Request, save to acknowledge receipt, unless expressly authorised to do so in writing by the Purchaser.

31.4 The Manufacturer acknowledges that the Purchaser may be obliged under the FOI Legislation to disclose Information without consulting or obtaining consent from the Manufacturer.

## **32. DISPUTE RESOLUTION**

If any Dispute should arise under this Agreement, either Party may refer it for resolution pursuant to Schedule 10 (*Dispute Resolution Procedure*).

### **33. PROHIBITED ACTS**

- 33.1 The Manufacturer shall not and shall use its reasonable endeavours to procure that its Subcontractors (if any) shall not commit any Prohibited Act.
- 33.2 The Purchaser may audit and check any and all such records of the Manufacturer as are necessary in order to monitor compliance with this Clause 33 at any time during performance of this Agreement and during the three (3) years after the date on which the Final Acceptance Certificate has been given in respect of the Plant and Machinery.
- 33.3 If the Manufacturer, any of its shareholders, Subcontractors, or anyone employed by or acting on behalf of the Manufacturer or any of its agents commits any Prohibited Act, this constitutes a material breach of this Agreement and shall entitle the Purchaser to serve written notice terminating this Agreement in whole or in part with immediate effect. In the event that this Agreement is terminated in accordance with this Clause 33.3, Clauses 25.5 and 25.6 shall apply.
- 33.4 If a Prohibited Act is committed by any Subcontractor or any employee or agent of such Subcontractor or the Manufacturer then the Purchaser may serve a warning notice upon the Manufacturer instead of exercising its rights to terminate with immediate effect and unless, within thirty (30) days of receipt of such warning notice, the Manufacturer removes or procures the removal of the relevant Subcontractor, employee or agent (as the case may be) from further involvement with any aspect of the performance of this Agreement and (if necessary) procures the provision of the affected works and/or services by another Subcontractor, employee or agent (as the case may be) this constitutes a material breach of this Agreement and entitles the Purchaser to serve written notice terminating this Agreement in whole or in part with immediate effect. In the event that this Agreement is terminated in accordance with this Clause 33.4, Clauses 25.5 and 25.6 shall apply.

### **34. ASSIGNMENT, TRANSFER AND SUB-CONTRACTING BY THE MANUFACTURER**

#### **34.1 Subcontracting**

- 34.1.1 The Manufacturer may sub-contract its obligations under this Agreement either in whole or in part to any Subcontractor provided that the written consent of the Purchaser Representative is obtained by the Manufacturer prior to the Manufacturer entering into any Subcontract.
- 34.1.2 In granting such consent pursuant to Clause 34.1.1, the Purchaser may require the Manufacturer to procure that a Subcontractor duly executes and delivers to the Purchaser, within fifteen (15) Working Days of the date of the relevant Subcontract, a deed of warranty in the form set out at Schedule 15 (*Form of Subcontractor Warranty*).
- 34.1.3 The Manufacturer shall be fully responsible for any act, neglect, default or breach of this Agreement by any Subcontractor or supplier, or the directors, agents,

representatives or employees of the Manufacturer or of any of its Subcontractors or suppliers, as if such act, neglect, default or breach had been carried out by the Manufacturer.

**34.2 Assignment**

Without prejudice to Clause 34.1, the Manufacturer shall not assign (whether absolutely or by way of security and whether in whole or in part), transfer, mortgage, charge, declare itself a trustee for a third party of, or otherwise dispose of (in any manner whatsoever) its rights and/or obligations under this Agreement, and any purported dealing in contravention of this Clause 34 shall be ineffective.

**35. ASSIGNMENT AND NOVATION OR GRANTING OF SECURITY BY THE PURCHASER**

**35.1 Permitted Transfers**

The Purchaser shall be entitled without the consent of the Manufacturer to assign (whether absolutely or by way of security and whether in whole or in part) transfer, novate, mortgage, charge or otherwise dispose of its rights and/or obligations under this Agreement to any person including for the purposes of financing its obligations under this Agreement.

**35.2 Implementation of Transfers**

If the Purchaser wishes to deal with its rights and/or obligations in this Agreement (either in whole or in part) pursuant to Clause 39.1, the Manufacturer shall execute such documents and do such other things as the Purchaser may reasonably request in order to facilitate and perfect such dealing.

**36. NOTICES**

**36.1 Form of Communications**

Any notice, approval, consent or other communication referred to in this Agreement:

36.1.1 must be in writing; and

36.1.2 must be left at the address of the addressee or sent by pre-paid first class post (airmail if posted to or from a place outside the United Kingdom) to the address of the addressee or sent by facsimile to the facsimile number of the addressee in each case which is specified in this Clause 36.1 in relation to the Party to whom the notice is addressed, and marked for the attention of the person so specified, or to such other address or facsimile number in England or Wales, and/or marked for the attention of such other person as the relevant Party may from time to time specify by notice given in accordance with this Clause 36.1.

The relevant details of each Party at the date of this Agreement are:

**Purchaser:** as specified in the Contract Particulars

**Manufacturer:** as specified in the Contract Particulars

36.2 Each such communication shall, unless otherwise shown, be deemed to have been received:

36.2.1 if personally delivered, at the time of delivery;

36.2.2 if sent by first class post, on the third Working Day following the date on which it was posted or, if posted to or from a place outside the United Kingdom, the seventh Working Day after posting;

36.2.3 in the case of a facsimile, on production of a transmission report from the machine from which the facsimile was sent which indicates that the facsimile was sent in its entirety to the facsimile number of the recipient; and

36.2.4 in the case of electronic mail, five (5) working hours (where “working hours” are 09:00 to 17:00 in a Working Day) following the time when the sender’s electronic mail system dispatches the electronic mail provided that the correct email addresses as detailed in Clause 36.1 are used. The place of delivery of email will be deemed to be the postal address nominated by the recipient in Clause 36.1.

36.3 [The Manufacturer irrevocably appoints and authorises [ ] to accept service on behalf of the Manufacturer of all legal process and service on [ ] shall be deemed to be service on the Manufacturer.] *[Note: to be included if the Manufacturer has no UK-based branch to accept service of legal proceedings.]*

36.4 **Receipt on a Non-Working Day**

A notice received or deemed to be received in accordance with Clause 36.1 above on a day which is not a Working Day or after 5.00 p.m. on a Working Day according to local time in the place of receipt, shall be deemed to be received on the next following Working Day.

36.5 **Change of Address**

Each Party undertakes to notify immediately the other Parties by notice served in accordance with this Clause 36 if the address specified herein is no longer an appropriate address for the service of notice.

36.6 **Service of Proceedings**

This clause does not apply to the service of any proceedings or other documents in any legal action or, where applicable, any arbitration or other method of dispute resolution.

**37. ENTIRE AGREEMENT**

37.1 **Whole Agreement**

Each Party confirms that this Agreement and any other documents referred to in this Agreement represents the entire understanding, and constitutes the whole agreement, in

relation to its subject matter and supersedes any previous agreement between the Parties with respect thereto.

## **37.2 Non Reliance**

Each Party acknowledges and agrees that:

37.2.1 in entering into this Agreement it has not relied on any representation, warranty, assurance, covenant, indemnity, undertaking or commitment which is not expressly set out or referred to in this Agreement or any other documents referred to in this Agreement; and

37.2.2 no Party has any other right or remedy in respect of the matters set out in Clause 37.2.1 (whether by way of a claim for contribution or otherwise) in tort (including negligence) or for misrepresentation (whether negligent or otherwise, and whether made prior to, and/or in, this Agreement) save for any liability for fraudulent misrepresentation or fraudulent misstatement.

## **38. RIGHTS CUMULATIVE WITH THOSE AT LAW**

### **38.1 Rights Cumulative**

Except where expressly stated to the contrary the powers, rights and remedies conferred on the Parties herein shall be in addition and without prejudice to all other powers, rights and remedies available to the Parties by law.

### **38.2 Equitable Remedies**

Without prejudice to any other rights or remedies that the Parties may have, the Parties acknowledge and agree that the remedies of injunction and specific performance as well as any other equitable relief for any threatened or actual breach of the provisions of this Agreement by any Party shall be available to the Parties and that no proof of special damages shall be necessary for the enforcement of the provisions of this Agreement.

## **39. FURTHER ASSURANCE**

Each Party to this Agreement shall (at its own cost) do and execute, or arrange for the performance and execution of, each necessary act or document to implement its obligations under this Agreement.

## **40. SET-OFF**

The Purchaser shall be entitled to withhold from any sum or sums expressed in this Agreement to be payable by it to the Manufacturer, any amounts due or expressed to be due by the Manufacturer to the Purchaser. Any payment payable by the Manufacturer under this Agreement shall be made in full without any set-off or counterclaim howsoever arising and shall be free and clear of, and without deduction of, or withholding for or on account of, any amount which is due and payable to the Manufacturer under this Agreement.

**41. WAIVER**

The rights and remedies of the Parties shall not be affected by any failure to exercise or delay in exercising any right or remedy or by the giving of any indulgence by the other Party or by anything whatsoever except a specific waiver or release in writing and any such waiver or release shall not prejudice or affect any other rights or remedies of the Parties. No single or partial exercise of any right or remedy shall prevent any further or other exercise thereof or the exercise of any other right or remedy.

**42. SEVERANCE**

If any provision or part of this Agreement is void or unenforceable due to the operation of any Applicable Law, it shall be deemed to be deleted and the remaining provisions of this Agreement shall continue in full force and effect.

**43. COSTS**

Each Party shall be responsible for their own costs (including legal costs) in relation to the negotiation and execution of this Agreement.

**44. LANGUAGE**

This Agreement is executed in English and all communications under this Agreement shall be made in English.

**45. CONTRACTS (RIGHTS OF THIRD PARTIES) ACT 1999**

45.1 With the exception of the right of:

45.1.1 any member of the TfL Group; and

45.1.2 any person expressly stated to be indemnified by a Party,

to enforce any term of this Agreement which either expressly or by implication confers any benefit upon such person, no term of this Agreement is enforceable under the Contracts (Rights of Third Parties) Act 1999 by a person who is not a signatory to this Agreement.

**46. COUNTERPARTS**

This Agreement may be executed in any number of counterparts and by the Parties to it on separate counterparts, each of which when so executed and delivered shall be an original, but all the counterparts shall together constitute one and the same instrument.

**47. GOVERNING LAW AND JURISDICTION**

**47.1 Governing Law**

This Agreement and any non-contractual obligations arising out of or in connection with it shall be governed by, and construed in accordance with, English law.

**47.2 Exclusive Jurisdiction**

Subject to the terms of Clause 32, the English Courts have exclusive jurisdiction in relation to any claim, dispute or difference ("**Proceedings**") concerning this Agreement and any matter arising from it. For these purposes, each Party irrevocably submits to the jurisdiction of the English Courts.

**47.3 Forum**

Each Party irrevocably waives any right that it may have to object to any Proceedings being brought in the English Courts, to claim that the Proceedings have been brought in an inconvenient forum, or to claim that the English Courts do not have jurisdiction.

**48. RESPONSIBLE PROCUREMENT**

48.1 The Manufacturer shall have regard to the Responsible Procurement Principles and shall comply at all times with the Responsible Procurement Principles insofar as they are relevant to this Agreement, the Manufacturer and/or any Subcontractor.

**49. CRIME AND DISORDER**

49.1 The Manufacturer acknowledges that the Purchaser is under a duty in accordance with section 17 of the Crime and Disorder Act 1998 to:

49.1.1 have due regard to the impact of crime, disorder and community safety in the exercise of the Purchaser's duties;

49.1.2 where appropriate, identify actions to reduce levels of crime and disorder; and

49.1.3 without prejudice to any other obligation imposed on the Purchaser, exercise his functions with due regard to the likely effect of the exercise of those functions on, and the need to do all that it reasonably can to prevent crime and disorder in its area,

and in the performance of this Agreement the Manufacturer shall assist and co-operate, and use its reasonable endeavours to procure that its Subcontractors assist and co-operate, with the Purchaser where possible to enable the Purchaser to satisfy its duty.

**50. LONDON LIVING WAGE**

50.1 The Manufacturer acknowledges and agrees that the Mayor of London, pursuant to section 155 of the GLA Act, has directed the TfL Group (including the Purchaser) to ensure that the London Living Wage is paid to anyone engaged by the TfL Group who is required to perform contractual obligations in Greater London or on the TfL Premises.

50.2 Without prejudice to the generality of Clause 50.1, the Manufacturer shall and shall procure that its Subcontractors (if any) shall:

50.2.1 ensure that none of its employees engaged in the performance of this Agreement in Greater London or on the TfL Premises (but not otherwise) is paid an hourly wage (or equivalent of an hourly wage) less than the London Living Wage;

50.2.2 ensure that none of his employees engaged in the performance of this Agreement is paid less than the amount to which they are entitled in their respective contracts of employment; and

50.2.3 co-operate and provide all reasonable assistance to the Purchaser and any member of the TfL Group in monitoring the effect of the London Living Wage.

## **51. DATA TRANSPARENCY**

51.1 The Manufacturer acknowledges that the Purchaser is subject to the Transparency Commitment. Accordingly, notwithstanding any provisions of this Agreement relating to the FOI Legislation or confidentiality, the Manufacturer hereby gives its consent for the Purchaser to publish the Contract Information to the general public.

51.2 The Purchaser may in its absolute discretion redact all or part of the Contract Information prior to its publication. In so doing and in its absolute discretion the Purchaser may take account of the exemptions/exceptions that would be available in relation to information requested under the FOI Legislation. The Purchaser may in its absolute discretion consult with the Manufacturer regarding any redactions to the Contract Information to be published pursuant to Clause 51.1. The Purchaser shall make the final decision regarding publication and/or redaction of the Contract Information.

## **52. DATA PROTECTION**

52.1 The Manufacturer shall at all times comply with the Data Protection Act 1998 (including any subordinate legislation made under that Act from time to time) and any policies issued by the Purchaser from time to time in relation to the processing of data and shall not by any act or fault cause the Purchaser to be in breach of these requirements.

52.2 The Manufacturer shall:

52.2.1 take appropriate technical and organisational security measures satisfactory to the Purchaser against unauthorised or unlawful Processing of Purchaser Personal Data (as those terms are defined in the Data Protection Act) and against accidental loss, destruction of, or damage to such Personal Data;

52.2.2 provide the Purchaser with such information as it may reasonably require to satisfy itself of compliance by the Manufacturer with the requirements of this Clause 52; and

52.2.3 co-operate with the Purchaser in complying with requests or enquiries made pursuant to the Data Protection Act.

## **53. CONFLICT OF INTEREST**

53.1 The Manufacturer acknowledges and agrees that it does not have any interest in any matter where there is or is reasonably likely to be a conflict of interest with performing this Agreement or any member of the TfL Group, save to the extent fully disclosed to and approved in writing by the Purchaser.

53.2 The Manufacturer shall undertake ongoing and regular conflict of interest checks

throughout the duration of this Agreement and in any event not less than once in every six (6) months and shall notify the Purchaser in writing immediately on becoming aware of any actual or potential conflict of interest with performing this Agreement or any member of the Tfl Group and work with the Purchaser to do whatever is necessary (including the separation of staff working on and/or data relating to this Agreement from the matter in question) to manage such conflict to the Purchaser's satisfaction and provided that, where the Purchaser is not so satisfied (in its absolute discretion), the Purchaser shall be entitled to serve written notice terminating this Agreement in whole or in part with immediate effect. In the event that this Agreement is terminated in accordance with this Clause 53, Clauses 25.5 and 25.6 shall apply.

#### **54. CRIMINAL RECORDS DECLARATION**

- 54.1 The Manufacturer shall procure from each Relevant Individual (as the case may be) a declaration that he has no Relevant Convictions ("**Declaration**") or disclosure of any Relevant Convictions he has committed. The Manufacturer shall confirm to the Purchaser in writing on an annual basis upon request that each Relevant Individual has provided a Declaration. The Manufacturer shall procure that a Relevant Individual notifies the Manufacturer immediately if he commits a Relevant Conviction throughout the duration of this Agreement and the Manufacturer shall notify the Purchaser in writing immediately on becoming aware that a Relevant Individual has committed a Relevant Conviction.
- 54.2 The Manufacturer shall not engage or allow to act on behalf of the Manufacturer or any Subcontractor in the performance of any aspect of this Agreement any Relevant Individual who has disclosed a Relevant Conviction.
- 54.3 The Purchaser may audit and check any and all such records of the Manufacturer as are necessary in order to monitor compliance with this Clause 54 at any time during performance of this Agreement.
- 54.4 If the Manufacturer fails to comply with the requirements under Clause 54.1 and/or 54.2, the Purchaser may, without prejudice to its rights under Clause 54.5 serve notice on the Manufacturer requiring the Manufacturer to immediately take such steps as are necessary to ensure that such Relevant Individual has no further involvement with the performance of any aspect of this Agreement unless (in the case of non-compliance with Clause 54.1) within seven (7) days of receipt of the notice the Manufacturer confirms to the Purchaser that it has procured all of the Declarations required under Clause 54.1.
- 54.5 A persistent breach of Clause 54.1 and/or 54.2 by the Manufacturer shall constitute a material breach of this Agreement and shall entitle the Purchaser to serve written notice terminating this Agreement in whole or in part with immediate effect. In the event that this Agreement is terminated in accordance with this Clause 54, Clauses 25.5 and 25.6 shall apply.
- 54.6 If either Party becomes aware that a Relevant Individual has committed a Relevant Conviction, the Manufacturer shall take such steps as are necessary to ensure that such Relevant Individual has no further involvement with the performance of any aspect of this Agreement.
- 54.7 Nothing in this Clause 54 in any way waives, limits or amends any obligation of the

Manufacturer to the Purchaser arising under this Agreement and the Manufacturer's obligation to perform this Agreement remains in full force and effect and the Manufacturer cannot claim any extra costs or time as a result of any actions under this Clause 54.

54.8 The Manufacturer confirms that, for the duration of this Agreement, its corporate security and personnel processes are sufficient to ensure that no personnel with a Relevant Conviction will carry out any aspect of this Agreement.

## **55. BEST VALUE**

55.1 The Manufacturer acknowledges that the Purchaser is a best value authority for the purposes of the Local Government Act 1999 and as such the Purchaser is required to make arrangements to secure continuous improvement in the way it exercises its functions, having regard to a combination of economy, efficiency and effectiveness. The Manufacturer shall assist the Purchaser to discharge this duty and agrees to negotiate in good faith any changes to this Agreement in order for the Purchaser to achieve best value.

## **56. WORK RELATED ROAD RISK**

### **Definitions**

56.1 For the purposes of Clauses 56.2 to 56.9 (inclusive) of this Agreement, the following expressions shall have the following meanings:

**"Bronze Accreditation"** the minimum level of accreditation within the FORS Standard, the requirements of which are more particularly described at:

[www.fors-online.org.uk](http://www.fors-online.org.uk)

**"Car-derived Vans"** a vehicle based on a car, but with an interior that has been altered for the purpose of carrying larger amounts of goods and/or equipment;

**"Collision Report"** a report detailing all collisions during the previous twelve (12) months involving injuries to persons or fatalities;

**"Delivery and Servicing Vehicle"** a Lorry, a Van or a Car-derived Van;

**"Driver"** any employee of the Manufacturer (including an agency driver), who operates Delivery and Servicing Vehicles on behalf of the Manufacturer while delivering the Goods;

**"DVLA"** Driver and Vehicle Licensing Agency;

<b>"FORS"</b>	the Fleet Operator Recognition Scheme, which is an accreditation scheme for businesses operating van and lorry fleets. It offers impartial, independent advice and guidance to motivate companies to improve their compliance with relevant laws and their environmental, social and economic performance;
<b>"FORS Standard"</b>	the standard setting out the accreditation requirements for the Fleet Operator Recognition Scheme, a copy of which can be found at:  <a href="http://www.fors-online.org.uk">www.fors-online.org.uk</a>
<b>"Gold Accreditation"</b>	the highest level of accreditation within the FORS Standard, the requirements of which are more particularly described at:  <a href="http://www.fors-online.org.uk">www.fors-online.org.uk</a>
<b>"Lorry"</b>	a vehicle with an MAM exceeding 3,500 kilograms;
<b>"MAM"</b>	the maximum authorised mass of a vehicle or trailer including the maximum load that can be carried safely while used on the road;
<b>"Side Guards"</b>	guards that are fitted between the front and rear axles of a Lorry and that comply with EC Directive 89/297/EEC and the Road Vehicles (Construction and Use) Regulations 1986;
<b>"Silver Accreditation"</b>	the intermediate level of accreditation within the FORS Standard, the requirements of which are more particularly described at:  <a href="http://www.fors-online.org.uk">www.fors-online.org.uk</a>
<b>"to provide the Goods"</b>	to provide the Goods in the United Kingdom
<b>"Van"</b>	a vehicle with a MAM not exceeding 3,500 kilograms.
<b>"WRRR Self-certification Report"</b>	shall have the meaning set out in Clause 56.7

## **Fleet Operator Recognition Scheme Accreditation**

56.2 Where the Manufacturer operates Delivery and Servicing Vehicles to provide the Goods, it shall within ninety (90) days of the Commencement Date:

56.2.1 (unless already registered) register for FORS or a scheme, which in the reasonable opinion of Purchaser, is an acceptable substitute to FORS (the "**Alternative Scheme**"); and

56.2.2 (unless already accredited) have attained the standard of Bronze Accreditation (or higher) or the equivalent within the Alternative Scheme and shall maintain the standard of Bronze Accreditation (or equivalent standard within the Alternative Scheme) by way of an annual independent assessment in accordance with the FORS Standard or take such steps as may be required to maintain the equivalent standard within the Alternative Scheme. Alternatively, where the Manufacturer has attained Silver or Gold Accreditation, the maintenance requirements shall be undertaken in accordance with the periods set out in the FORS Standard.

### **Safety Equipment on Vehicles**

56.3 The Manufacturer shall ensure that every Lorry, which it uses to provide the Goods, shall:

56.3.1 have Side Guards, unless the Manufacturer can demonstrate to the reasonable satisfaction of Purchaser that the Lorry will not perform the function for which it was built if Side Guards are fitted;

56.3.2 have front, side and rear blind spots completely eliminated or minimised as far as practical and possible, through the use of fully operational direct and indirect vision aids and driver audible alerts;

56.3.3 have equipment fitted with an audible means of warning other road users of the Lorry's left manoeuvre; and

56.3.4 have prominent signage on the Lorry to warn cyclists and other road users of the dangers of passing the Lorry on the inside and of getting too close to the Lorry.

### **Driver Licence Checks**

56.4 Where the Manufacturer operates Delivery and Servicing Vehicles to provide the Goods the Manufacturer shall ensure that:

56.4.1 it has a system in place to ensure all its Drivers hold a valid driving licence for the category of vehicle that they are tasked to drive, along with recording any endorsements, or restrictions on the Drivers licence; and

56.4.2 each of its Drivers engaged in the provision of the Goods has a driving licence check with the DVLA or such equivalent before that Driver commences delivery of the Goods and that the driving licence check with the DVLA or equivalent authority is repeated in accordance with either the following risk scale (in the case of the DVLA issued licences only), or the Manufacturer's risk scale, provided that the Manufacturer's risk scale has been approved in writing by Purchaser within the last twelve (12) months:

- (A) 0-3 points on the driving licence – annual checks;
- (B) 4-8 points on the driving licence – six monthly checks;
- (C) 9-11 points on the driving licence – quarterly checks; or
- (D) 12 or more points on the driving licence – monthly checks.

### **Driver Training**

56.5 Where the Manufacturer operates Delivery and Servicing Vehicles to provide the Goods the Manufacturer shall ensure that each of its Drivers undergo approved progressive training (to include a mix of theoretical, e-learning, practical and on the job training) and continued professional development to include training covering the safety of vulnerable road users and on-cycle hazard awareness, throughout the term of the Agreement.

### **Collision Reporting**

56.6 Where the Manufacturer operates Delivery and Servicing Vehicles to provide the Goods, the Manufacturer shall:

56.6.1 ensure that it has a system in place to capture, investigate and analyse road traffic collisions that results in fatalities, injury or damage to vehicles, persons or property and for generating Collision Reports; and

56.6.2 no later than thirty (30) Working Days prior to the first use of Delivery and Servicing Vehicles to provide the Goods, provide to Purchaser a Collision Report. The Manufacturer shall provide to Purchaser an updated Collision Report within five (5) working days of a written request from Purchaser.

### **Self Certification of Compliance**

56.7 Where the Manufacturer operates Delivery and Servicing Vehicles to provide the Goods, within ninety (90) days of the Commencement Date, the Manufacturer shall make a written report to Purchaser detailing its compliance with Clauses 56.3, 56.4 and 56.5 of this Agreement (the "**WRRR Self-certification Report**"). The Manufacturer shall provide updates of the WRRR Self-certification Report to Purchaser on each three (3) month anniversary of its submission of the initial WRRR Self-certification Report.

### **Obligations of the Manufacturer Regarding Subcontractors**

56.8 The Manufacturer shall ensure that those of its Subcontractors or suppliers who operate Delivery and Servicing Vehicles to provide the Goods shall:

56.8.1 comply with Clause 56.2; and

56.8.2 where its Subcontractors or suppliers operate the following vehicles to provide the Goods shall comply with the corresponding provisions of this Agreement:

- (A) For Lorries – Clauses 56.3, 56.4, 56.5 and 56.6; and
- (B) For Vans – Clauses 56.4, 56.5 and 56.6.

## **Failure to Comply with Freight-related Obligations**

56.9 Without limiting the effect of any other clause of this Agreement relating to termination, if the Manufacturer fails to comply with Clauses 56.2, 56.3, 56.4, 56.5, 56.6, 56.7 and 56.8:

56.9.1 the Manufacturer has committed a material breach of this Agreement; and

56.9.2 the Purchaser may refuse the Manufacturer, its employees, agents and Delivery and Servicing Vehicles entry onto any property that is owned, occupied or managed by Purchaser for any purpose (including but not limited to deliveries).

## **57. ACCESS**

57.1 The Purchaser shall give the Manufacturer access to the parts of the TfL Premises required for the performance of this Agreement in accordance with the provisions of this Clause 57.

57.2 Subject to the provisions of this Clause 57, the Purchaser shall use reasonable endeavours to give access to such parts of the TfL Premises to the Manufacturer on the dates and times on which it has stated that it requires such access.

57.3 The Manufacturer acknowledges that the Purchaser does not guarantee uninterrupted or exclusive possession to any parts of the TfL Premises and that its access to some parts of the TfL Premises may be limited in accordance with the Agreement.

57.4 Where the Manufacturer requires access to the TfL Premises to carry out its obligations under this Agreement, it shall

57.4.1 apply for access at the earliest available opportunity; and

57.4.2 provide the Purchaser Representative without delay with such additional information as the Purchaser Representative may reasonably require in respect of the Manufacturer's access request.

57.4.3 The Purchaser shall confirm access bookings in accordance with this Clause.

57.4.4 The Purchaser does not warrant or guarantee to the Manufacturer that such access will be granted. If any request for access is rejected, the Purchaser shall advise the Manufacturer and agree with the Manufacturer alternative dates for resubmission. The rejection of an access request shall not entitle the Manufacturer to an extension of time.

57.4.5 If the Manufacturer fails to apply for access in accordance with this Clause 57, the Purchaser shall not be liable for any delays or costs arising and the Manufacturer shall be responsible for any failure to comply with the terms of the Agreement.

57.5 The Manufacturer shall as soon as practicable, take all steps to avoid, overcome or minimise the cancellation or alteration of approved access.

57.6 If the Manufacturer fails to use any booked access, for whatever reason, it shall within twenty-four (24) hours report each instance to the Purchaser's Representative setting out all

details including the part of the Tfl Premises affected, the duration of any delay and the reasons for the delay or cancellation so far as the Manufacturer is aware.

- 57.7 The Manufacturer shall ensure that all booked access is used efficiently with minimal disruption and disturbance to others or damage to the Tfl Premises. The Manufacturer shall make good any such damage at its own cost at the earliest opportunity and to the reasonable satisfaction of the Purchaser's Representative.
- 57.8 Prior to returning any part of the Tfl Premises to the Purchaser at the end of any period of booked access, the Manufacturer shall clear away and remove all of its facilities, plant, equipment, rubbish and surplus goods and materials and shall leave that part of the Tfl Premises in a clean and workmanlike condition to the satisfaction of the Purchaser Representative.
- 57.9 Where the Manufacturer is denied booked access to any part of the Tfl Premises through no fault of the Manufacturer having fully complied with the requirements of Clause 57.4, this shall constitute a Permitted Delay Event.

IN WITNESS whereof this Agreement has been executed and unconditionally delivered as a deed the day and year first above written.

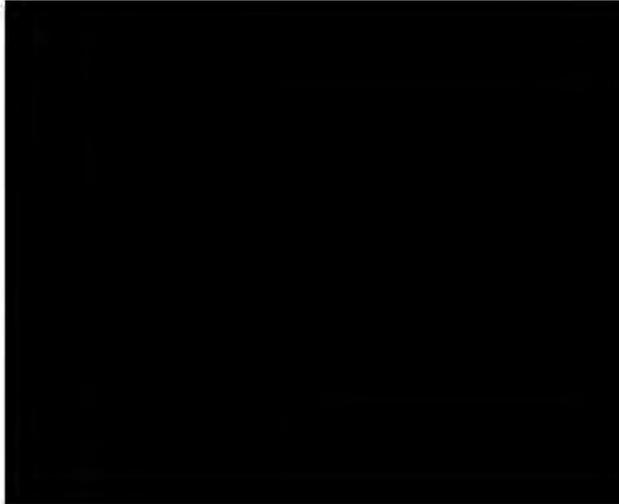
THE COMMON SEAL of  
TRANSPORT FOR LONDON

was affixed to THIS DEED

in the presence of:

Signature of Authorised Signatory

Print name of Authorised Signatory



EXECUTED AND DELIVERED AS A DEED

by Linsinger Maschinenbau Gesellschaft m.b.H.

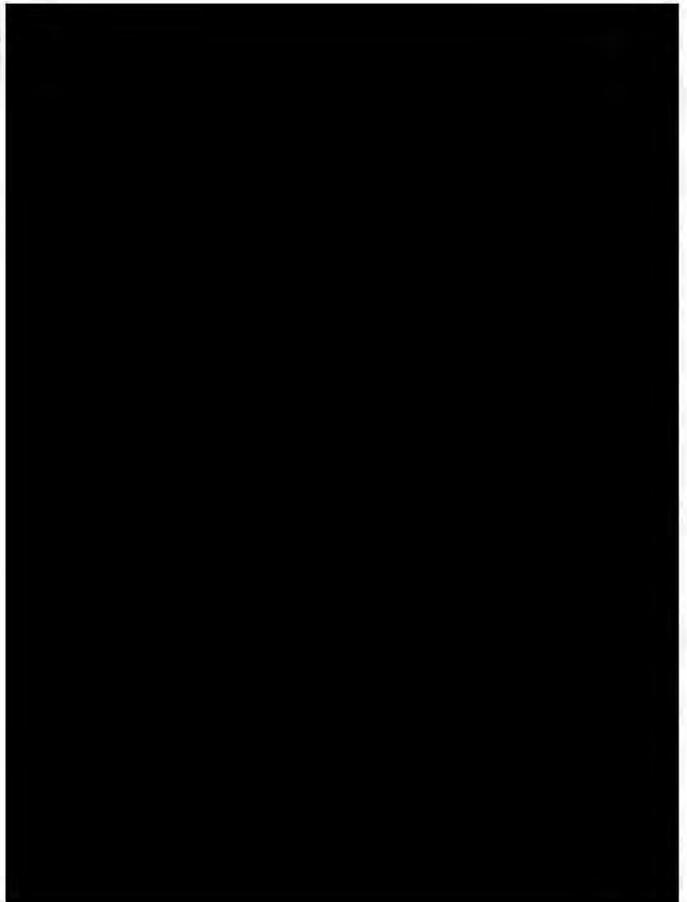
acting by:

Signature of Director

Print name of Director

Signature of Director/Secretary

Print name of Director/Secretary



5309

# Technical Information

## Railhead Profiling Machine

Document Number: CRL1-RFL-O8-STE-CR001-50001

Version:	Date:	Prepared:	Approved:	Reason for Revision:
2.0	Mar 16			For Contract Award

**Document History:**

Version:	Date:	Reason for Revision:
0.1		First Draft
1.0	02 Sep 15	For ITT

This document contains proprietary information. No part of this document may be reproduced without prior written consent from the chief executive of Crossrail Ltd.

## **1 Purpose**

The purpose of this document is to gather all of the technical deliverables and reference documents necessary for the invitation to tender for the Crossrail railhead profiling machine into a single pack for review and approval to issue.

## **2 Scope**

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

## **3 Contents**

Assurance	3
Technical Requirements Specification	26
Technical Solution	55
Reference Documents	80

# Assurance

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

## **Definitions**

For the purposes of this Schedule 1A, the following words and expressions shall have the following meanings:

**"ALARP"** means "As Low as Reasonably Practicable" as described in the Health and Safety at Work etc. Act 1974;

**"Assessment Body"** means a competent external or internal individual, organisation or entity, separate and independent from the "design, risk assessment, risk management, manufacture, supply, installation, operation/use, servicing and maintenance" of the system under assessment, to check the application of the CSM risk management process by the proposer and the risk assessment results in order to form a judgement on whether the change management process and the safety requirements resulting from this process are appropriate and adequate for the planned significant change so that the system can satisfy those safety requirements as defined in "Regulation (EU) No 402/2013(1) on the common safety method for risk evaluation and assessment" or in the equivalent OTIF UTP GEN-G of 1.1.2014;

**"Assurance Acceptance"** means the review and approval given by the Purchaser in accordance with the procedure described in paragraph 1 of this Schedule 1A and "Assurance Accept" and "Assurance Accepted" shall be construed accordingly;

**"Assurance Period"** means the period commencing from the date on which the Purchaser receives the submission of certain information, drawings and/or documents from the Manufacturer for Assurance Acceptance pursuant to paragraph 1.5 of this Schedule 1A, until such date that the Purchaser notifies the Manufacturer conclusively that such information, drawings and/or documents have been Assurance Accepted;

**"Central Operating Section"** means the Crossrail central operating section, being the railway infrastructure between Royal Oak Boundary in the west of London and Pudding Mill Lane in the east of London and Abbey Wood sidings in the south east of London;

**"Configuration Management Strategy"** has the meaning given in paragraph 7 of this Schedule 1A;

**"Crossrail Infrastructure"** means that part of the Railway Infrastructure managed by Rail for London consisting of the Central Operating Section;

**"DeBo"** or **"Designated Bodies"** means independent third parties appointed by the Secretary of State to assess and verify conformity of projects with Notified National Technical Rules (NNTRs) in the United Kingdom.

**"Design Area Breakdown Structure"** means a hierarchical and incremental decomposition of the Train Works into deliverables and work packages

**"Design Management Plan"** has the meaning given to such term in paragraph 16.2 of this Schedule 1A;

**"Design Phase"** means the period starting on the Commencement Date and ending on the date of the notice served by the Purchaser pursuant to paragraph 16.4 of this Schedule 1A and includes the Preliminary Design Phase and the Detailed Design Phase;

**"Design Submission Programme"** has the meaning given in paragraph 16.5 of this Schedule 1A.

**"Detailed Design"** means the detailed design of the Units and the production of each of the items described in paragraph 16.7 of this Schedule 1A undertaken by the Manufacturer pursuant to this Agreement;

**"Detailed Design Phase"** means that part of the Design Phase commencing on the expiry of the Preliminary Design Phase and ending on the date of the notice served by the Purchaser pursuant to paragraph 16.7 of this Schedule 1A;

**"Detailed Design Submissions"** has the meaning given to such term in paragraph 16.7.a of this Schedule 1A;

**"EMC"** means electromagnetic compatibility;

**"EMC Management Plan"** has the meaning given in paragraph 4 of this Schedule 1A;

**"EMI"** means electromagnetic interference;

**"ESM"** means engineering safety management;

**"Hazard Log"** has the meaning given to such term in paragraph 3.9.a;

**"IHA"** means interface hazard analysis;

**"Industry Standards"** has the meaning given in paragraph 10.1(a) of this Schedule 1A;

**"NoBo"** or **"Notified Bodies"** means independent third parties appointed by the Department for Transport, the Secretary of State or another European Union Member State which meet the criteria of competence, integrity and independence set out in Annex VIII of Directive 2008/57/EC;

**"Preliminary Design"** means the preliminary design of the Unit and the production of each of the items described in paragraph 16.6.a of this schedule undertaken by the Manufacturer pursuant to this Agreement;

**"Preliminary Design Submissions"** has the meaning given to such term in paragraph 16.6.a of this Schedule 1A;

**"PWHR"** means Project Wide Hazard Record as described in paragraph 3.9.c;

**"Progressive Assurance"** has the meaning given to it in paragraph 5 of this Schedule 1A;

**"Proposer"** has the meaning given in paragraph 15 of this Schedule 1A;

**"RAM"** means reliability, availability and maintainability as more particularly described in paragraph 6;

**"RAM Management Plan"** has the meaning given in paragraph 6 of this Schedule 1A;

**"Request for Review"** means a request (in the form agreed between the Parties from time to time) by the Manufacturer for the Purchaser to review certain documents for Assurance Acceptance;

**"Requirements Management System"** has the meaning given to such term in paragraph 11 of this Schedule 1A;

**"ROGS"** means the Railway and Other Guided Transport Systems (Safety) Regulations 2006;

**"System Safety Plan"** has the meaning given to such term in paragraph 3;

**"Safety Authorisation"** has the meaning given to such term in ROGS;

**"Stage Gate Review"** has the meaning given to such term in paragraph 5.1.c of this Schedule 1A;

**"Standards Matrix"** has the meaning given in paragraph 10.1 of this Schedule 1A;

**"TAP"** means the technical assurance plan to be provided by the Manufacturer pursuant to paragraph 2.2 of this Schedule 1A;

**"Technical Requirements Specification"** or **"TRS"** means the Crossrail technical requirements specification relating to railhead profiling machines as set out in the document entitled "Technical Requirements Specification" with document number CRL1-XRL-O8-RSP-CR001-50044 as appended to this Schedule 1A;

**"Tests"** has the meaning given in paragraph 13.1.b;

**"Train Works"** means the design, manufacture, supply, assembly, testing, commissioning and delivery of the Plant and Machinery by the Manufacturer for the benefit of the Purchaser in accordance with the terms of this Agreement;

**"Technical Change Control Process"** has the meaning given to such term in paragraph 8 of this Schedule 1A; and

**"Unit"** means each item of Plant and Machinery supplied pursuant to this Agreement.

## **1. ASSURANCE ACCEPTANCE PROCESS**

- 1.1. Where the Manufacturer is required to submit information, drawings and/or documents to the Purchaser for Assurance Acceptance, the Manufacturer shall comply with the requirements described in this paragraph 1. Any plan, programme, strategy or other document of the Manufacturer that is included in any Schedule to this Agreement as at the Commencement Date shall be deemed to have been Assurance Accepted in the form included in this Agreement but without prejudice to (i) the obligations of the Manufacturer to revise and/or resubmit such document for Assurance Acceptance as required by this Agreement; and (ii) the requirements of this Agreement generally.
- 1.2. The Manufacturer shall ensure that each drawing, document, report and/or other information submitted to the Purchaser for Assurance Acceptance shall be in accordance with the requirements of [paragraph 6 (Communications and Document Control) of part 1 of Schedule A3 (Contract Management) and is accompanied by a Request for Review.
- 1.3. The Manufacturer shall ensure that each Request for Review contains, to the extent applicable, the following information:
  - a. the submission number (which shall be independent of any drawing number);
  - b. the drawing and/or document number, including where relevant the revision letter or number;
  - c. the drawing title and/or title of the document;
  - d. the date of submission; and
  - e. any supplementary information which is reasonably necessary to enable the Purchaser to make a decision in accordance with paragraph 1.6 below (including, where relevant, a description of the latest revision).
- 1.4. Where the Purchaser has received drawings, documents and/or information that have been submitted for Assurance Acceptance in accordance with the requirements of this paragraph 1, the Purchaser shall promptly acknowledge receipt of such submission by signing, dating and returning to the Manufacturer a copy of the Request for Review for that submission.
- 1.5. The Manufacturer shall be responsible for ensuring that the Purchaser receives each submission made by the Manufacturer for Assurance Acceptance (as evidenced by the Manufacturer receiving a copy of the Request for Review countersigned by the Purchaser) and the date on which the Purchaser signs a copy of the Request for Review shall be the date on which, for the purposes of this paragraph 1, the Purchaser shall be deemed to have received the submission for Assurance Acceptance.
- 1.6. Within 20 Working Days of the date the Purchaser receives a submission from the Manufacturer for Assurance Acceptance (or such later date as notified to the Manufacturer in accordance with paragraph 1.7 below), the Purchaser shall review and comment on the information, drawing and/or document that has been submitted (or re-submitted) by the Manufacturer and return one copy of the Request for Review stamped or marked with one of the following:

"Category I — No Assurance Acceptance";

"Category II — Assurance Acceptance granted with comments"; or

"Category III — Assurance Acceptance granted".

- 1.7. Where the Purchaser, acting reasonably, considers that the complexity, detail, scope and/or nature of the drawings, documents and/or information submitted by the Manufacturer for Assurance Acceptance means that it may not be able to respond to the Manufacturer within 20 Working Days of receipt by the Purchaser of such submission, the Purchaser shall be entitled to an additional period of time to consider the submission, provided that the Purchaser notifies the Manufacturer in writing within seven Working Days of the date the Purchaser received the submission that the Purchaser is exercising its rights under this paragraph 1.7 to extend the period of time to consider such submission. Each notice served by the Purchaser pursuant to this paragraph 1.7 shall specify:
- a. the details of the relevant submission;
  - b. the additional period of time required by the Purchaser ; and
  - c. a description in reasonable detail as to the reasons why the additional time is required.
- 1.8. The Manufacturer shall undertake the following actions in relation to the information, drawing and/or document (as the case may be) that has been returned to it by the Purchaser in accordance with paragraph 1.6 and subject to the provisions of paragraph 1.13:
- a. if such information has been stamped "Category I — No Assurance Acceptance", the Manufacturer shall immediately review and revise the relevant drawing, documents and/or information, taking into account and incorporating the comments made by the Purchaser pursuant to paragraph 1.6 and shall re-submit such information for Assurance Acceptance by the Purchaser in accordance with this paragraph 1;
  - b. if such information has been stamped "Category II — Assurance Acceptance granted with comments", the Manufacturer shall be entitled to proceed on the basis of that drawing, documents and/or information as amended to incorporate the comments made by the Purchaser. The Manufacturer shall re-submit the amended drawing, documents and/or information to the Purchaser for Assurance Acceptance pursuant to paragraph 1.6; and
  - c. if such information has been stamped "Category III — Assurance Acceptance granted", the Manufacturer shall be entitled to proceed on the basis of drawings, documents and/or information submitted to the Purchaser.
- 1.9. If the Purchaser does not respond within the timeframe set out in paragraph 1.6, the Manufacturer shall be entitled to treat the information submitted to the Purchaser as "Category III – Assurance Acceptance granted" provided that the Purchaser has signed and returned a copy of the Request for Review to acknowledge receipt under paragraph 1.3 in respect of that submission for Assurance Acceptance.
- 1.10. Unless otherwise required by the Purchaser, the Manufacturer shall only be required to submit one example of any sample, pattern or model in any request for Assurance Acceptance.
- 1.11. The Purchaser shall be entitled, at any time and on reasonable notice (and in any event not less than two (2) Working Days from the date of such notice) to:
- a. request the Manufacturer to submit any further document, information, design, drawing, calculation, schedule, sample, pattern or model necessary to clarify, support and/or justify any submission for Assurance Acceptance; and/or

- b. (acting reasonably) require the Manufacturer and/or any of its key Sub-Contractors to attend a meeting to discuss any aspect of the drawings, documents and/or information submitted for Assurance Acceptance,

and the Manufacturer shall comply with any such request.

- 1.12. When considering which category of response to give to any submission by the Manufacturer for Assurance Acceptance, the Purchaser shall not comment adversely on such submission if and to the extent the content of such submission is in accordance with the Technical Requirements Specification, Applicable Laws, Industry and TFL Standards, good industry practice and the provisions of this Agreement. Where the content of any submission is not in accordance with the TRS, Applicable Laws, Industry Standards or TFL Standards, good industry practice and/or the provisions of this Agreement, the Manufacturer agrees to incorporate all comments made by the Purchaser before re-submitting any drawing, document or information for Assurance Acceptance.
- 1.13. Where indicated in this Agreement, the Manufacturer shall not proceed with such part of the project relating to the Assurance Acceptance without Assurance Acceptance having first been obtained. Where it is not stated that Assurance Acceptance must be obtained before action may be taken, the Manufacturer may proceed without Assurance Acceptance being granted, but it shall do so at its own risk.
- 1.14. No comment, stamping, marking or categorisation of any information, drawing or document shall diminish or relieve the Manufacturer from any of its obligations under this Agreement, nor shall such comment, stamping, marking or categorisation be a Variation nor shall it permit the Manufacturer to any costs, relief or compensation of any kind.
- 1.15. Unless expressly stated otherwise the Manufacturer shall not be entitled to amend any Assurance Accepted document in any manner or form without first obtaining Assurance Acceptance to such amendment.

## **2. TECHNICAL ASSURANCE PLAN**

- 2.1. General
  - a. During the Assurance Period, the Manufacturer shall in performing its obligations under this Agreement implement and manage a process of Progressive Assurance (as more fully described at paragraph 5 of this Schedule 1A) in order to demonstrate to the Purchaser that the Manufacturer is complying with the requirements of the TRS in respect of design, manufacture, testing, commissioning and supply of the Unit.
  - b. The Manufacturer shall provide to the Purchaser for Assurance Acceptance, within three months of the Commencement Date, a technical assurance plan in respect of the design, manufacture, testing, commissioning and supply of the Unit containing the information set out in paragraph 2.4 of this Schedule 1A.
- 2.2. Once the technical assurance plan referred to in paragraph 2.1.b has received Assurance Acceptance, it shall be the "**TAP**" for the purposes of this Agreement.
- 2.3. During the Assurance Period, the Manufacturer shall review and update the TAP from time to time, including, as a minimum, at the end of each Stage (as defined in paragraph 5.1.c below), so that the TAP shall satisfy at all times the requirements set out in this Schedule 1A. Where the Manufacturer has updated or otherwise amended the TAP, it shall submit the modified TAP to the Purchaser for Assurance Acceptance.

## 2.4. Technical Assurance Plan

- a. The Manufacturer shall ensure that the TAP describes the systems engineering techniques (including the engineering "V" life-cycle model prepared in accordance with paragraph 5.1 of this Schedule 1A) and the manner in which the concept of Progressive Assurance will be implemented by the Manufacturer to systematically manage the risks described in paragraph 5.1.a and provide the necessary assurance to the Purchaser.
- b. The Manufacturer shall ensure that the TAP consists of, describes or includes the following:
  - i. Verification and Validation Strategies (described in paragraph 5.1.f below);
  - ii. an engineering "V" life-cycle model and associated Stage Gate Reviews (described in paragraph 5.1.d below);
  - iii. a programme for the submission by the Manufacturer of the information and/or documentation that will be submitted to the Purchaser for Assurance Acceptance (described in paragraph 2.4.c below) The Manufacturer shall ensure that, to the fullest extent possible, the programme is structured to:
    - A. allow regular intervals between the submission of information and/or documents to the Purchaser;
    - B. take into account any timeframes and/or approval periods specified in any Applicable Laws and TfL Standards; and
    - C. be consistent with the Contract Programme; and
  - iv. an organisation chart setting out details of each key staff member of the Manufacturer who will be responsible for technical and Progressive Assurance, including, for each key staff member, their CV and details of qualifications and explanations as to how their experience is adequate for the competency requirements of the proposed role; and
  - v. the manner in which those employees are or will be independent from the Manufacturer's project team undertaking the design, manufacture, testing, commissioning and supply of the Unit.
- c. The information and/or documentation mentioned above shall include, or reference, as a minimum in paragraph 2.4.b(iii):
  - i. Engineering Safety Management (as described in paragraph 3);
  - ii. Electromagnetic Compatibility (as described in paragraph 4);
  - iii. Progressive Assurance (as described in paragraph 5);
  - iv. Reliability and Resilience (as described in paragraph 6);
  - v. Configuration Management (as described in paragraph 7);
  - vi. Technical Change Control (as described in paragraph 8);
  - vii. Systems Integration and Interface Management (as described in paragraph 9);
  - viii. Standards management (as described in paragraph 10);

- ix. Requirements management (as described in paragraph 11);
  - x. Human Factors (as described in paragraph 12);
  - xi. Testing and Commissioning (as described in paragraph 13);
  - xii. Interoperability (as described in paragraph 14);
  - xiii. Compatibility (as described in paragraph 15);
  - xiv. Design Assurance (as described in paragraph 16); and
  - xv. Document management.
- d. The Manufacturer shall ensure that the TAP is consistent and complies with all railway approval processes, all Applicable Laws, Industry Standards and TfL Standards and any Relevant Consents.
- e. The Manufacturer shall comply with the requirements the Railway Safety and Standards Board (RSSB) Standard RIS-1702-PLT issue One: September 2013.
- f. The Manufacturer shall audit its own internal engineering safety management activities and those of any Sub-Contractors or suppliers, as appropriate. The Manufacturer shall integrate such engineering safety management auditing within the overall quality management system for the Train Works and the results of such audits shall be submitted to the Purchaser for Assurance Acceptance. The Manufacturer shall confirm these arrangements in the Manufacturer's System Safety Plan ("**SSP**") and the programme described in paragraph 2.4.b.iii above.

### 3. **ENGINEERING SAFETY MANAGEMENT ("ESM")**

3.1. The Manufacturer shall submit to the Purchaser for approval the SSP which must detail the application of the ESM principles throughout the V-life cycle. The SSP shall, as a minimum, meet the requirements of this paragraph 3.

#### 3.2. **General Engineering Safety Management Requirements**

- a. The Manufacturer is responsible for ensuring the adequacy and safety of the elementary systems of the [Train Works], having regard to:
  - b. normal, degraded and emergency operating modes;
  - c. maintenance of the systems; and
  - d. the conditions and environment of the Crossrail railway.

3.3. The Manufacturer shall provide all necessary evidence of safety adequacy to the Purchaser or to others who reasonably require such evidence to secure safety authorisation to operate the railway in accordance with all railway safety legislation and Applicable Laws. To facilitate this, the Manufacturer shall be required to make presentations to the Purchaser to secure the Purchaser's acceptance of the evidence of engineering safety, prior to the Manufacturer seeking approval from the appropriate approval bodies.

#### 3.4. Engineering Safety Competency

The Manufacturer shall demonstrate, to the Purchaser 's satisfaction, that the individuals involved in the demonstration of the safety adequacy of the elementary systems are suitably qualified and experienced.

#### 3.5. Engineering Safety Manager

The Manufacturer shall appoint an appropriately experienced and competent engineering safety manager who shall be responsible for the management, coordination, quality control and assurance of the Manufacturer's engineering safety management activities (the "**Engineering Safety Manager**"). Prior to appointing the Engineering Safety Manager, the Manufacturer shall submit the CV of the Engineering Safety Manager to the Purchaser for the Purchaser's review, and, subject to the Purchaser's satisfaction, acceptance. The accepted Engineering Safety Manager will serve as the primary interface with the Purchaser on engineering safety matters.

#### 3.6. Competency of Engineering Safety Assessors:

- a. The Manufacturer shall ensure that only qualified and competent professional assessors undertake engineering safety assessment activities. The Manufacturer shall ensure that the Manufacturer's engineering safety organisation is explained in sufficient detail in the Manufacturer's SSP. The Manufacturer shall ensure that the SSP is sufficiently independent from the design and commercial delivery activities.
- b. The Manufacturer shall maintain an engineering safety staff competency matrix indicating the roles, responsibilities and records of competencies of each individual. Such matrix shall be made available by the Manufacturer for review by the Purchaser upon request.

#### 3.7. Application of Common Safety Method Regulation ("**CSM Regulation**")

- a. The Manufacturer shall demonstrate that the safety and adequacy of all systems, subsystems, etc shall be carried out in compliance with the CSM Regulation and the

Office of Rail and Road Guidance on the Application of the Common Safety Method on Risk Evaluation and Assessment (September 2010) as the same may be updated from time to time.

- b. For the majority of systems the risk estimation and "**ALARP**" justification shall be applied, following a recognised risk matrix approach. However, for high risk (e.g. where the unavailability of the system safety function is judged to be [potentially or] immediately life threatening), new/novel, complex or bespoke designs, the Manufacturer may be required by the CSM Regulation to undertake a full, in-depth, quantitative safety analysis.

### 3.8. Safety Authority

The role of "**Safety Authority**" shall be filled by the Railway Approvals Board – Crossrail ("**RABC**"). The terms of reference with which RABC shall be managed can be found in CRL1-RFL-O-GPS-CR001-50001.

### 3.9. Hazard Management

- a. The Manufacturer shall establish and keep updated a hazard log which shall record and manage all hazards and safety risks arising throughout the duration of this Agreement (the "**Hazard Log**").
- b. The Manufacturer shall use the Hazard Log in accordance with the Crossrail Hazard Management Procedure (CRL1-XRL-O8-GPD-CR001-50002) to track and manage those hazards which have been identified.
- c. The identified hazards shall be recorded in the Project Wide Hazard Record ("**PWHR**") which shall be provided by the Purchaser to the Manufacturer. The Manufacturer shall adopt and develop the PWHR as its principal engineering safety hazard management tool for the Train Works.
- d. The preliminary Crossrail PWHR is supported on the DOORS database which is managed by the web-based software platform named "Comply Serve" on behalf of Crossrail. On the Manufacturer's request, the Purchaser will provide the Manufacturer with the necessary process, procedure, access and training in order to use the "Comply Serve" platform.

### 3.10. Hazard allocation and the ALARP principle

- a. Where a hazard has been identified as the responsibility of the Manufacturer, the Manufacturer shall, in accordance with the terms of this Agreement, demonstrate that it has managed the risks associated with the hazard such that those risks are ALARP.
- b. Where a hazard has been identified as being the responsibility of a future duty holder, the Manufacturer shall reach agreement, acting reasonably, with that future duty holder to agree an appropriate strategy for managing the risks associated with the hazard such that those risks are ALARP. In the event that the Manufacturer identifies a hazard or hazard mitigation should be transferred to a future duty holder, these will be submitted to the Rolling Stock Hazard Review Panel managed by the Purchaser, for review and acceptance of transfer in accordance with the Rolling Stock Hazard Review Panel Terms of Reference (CR-MS-102-02-0002).

### 3.11. Product Safety Cases

- a. Where any system or sub-system cannot be demonstrated to be ALARP by the application of a recognised applicable standard, the Manufacturer shall develop a

product safety case which the Manufacturer shall submit to RABC for acceptance in accordance with the Purchaser's Product Acceptance Process (CR-MS-103-02-0046).

### 3.12. Management of interfaces

- a. The Manufacturer acknowledges and agrees that the management of interfaces is a particular issue affecting the safety of the rail industry. The Manufacturer shall therefore produce a description of each of the interfaces, including, where appropriate, those with infrastructure managers, other users of the Crossrail Infrastructure, neighbours of the Crossrail Infrastructure, neighbouring Railway Infrastructure and other delivery partners, and submit the same to the Purchaser for Assurance Acceptance by no later than four months after the Commencement Date.
- b. The Manufacturer shall demonstrate to the Purchaser that all the risks associated with the interfaces have been reduced to a level that is ALARP. The Manufacturer will perform and report on an interface hazard analysis ("**IHA**") to set out how the engineering safety implications at internal and external interfaces will be adequately addressed and managed. The IHA will involve all relevant interfacing contractors, third parties and the Purchaser.
- c. In each safety analysis and assessment conducted by the Manufacturer, the Manufacturer shall consider the interface between the design of the Unit and the Crossrail Infrastructure. In particular the Manufacturer shall ensure that the design of the Units shall not adversely affect the ability of (i) the railway undertaking to obtain a safety certificate in relation to operating the Unit on the Crossrail Infrastructure or (ii) the Infrastructure Manager of the Central Operating Section to obtain safety authorisation for the operation of the Central Operating Section.
- d. The Manufacturer shall provide to the Purchaser all necessary evidence of safety adequacy to assist the Purchaser or their nominated railway undertaking to secure authorisation to operate the railway in accordance with all Applicable Laws and TfL Standards. To facilitate this, the Manufacturer shall make presentations to the Purchaser and secure acceptance of the evidence of engineering safety from the Purchaser and the appropriate approvals bodies.

### 3.13. Independent safety auditing and assessment

- a. The Manufacturer shall, at its own cost, establish and implement independent safety auditing and assessments to ensure that its work and practices are in accordance with all Applicable Laws, Industry Standards and TfL Standards.
- b. The Manufacturer shall appoint a Notified Body ("**NoBo**") and Designated Body ("**DeBo**") to assess conformity of the systems and subsystems etc. with the applicable TSIs and NNTRs, and to prepare the necessary technical files to evidence this.
- c. The Manufacturer shall comply with the CSM Regulation for Risk Evaluation and Assessment to demonstrate the safety adequacy of the systems and subsystems etc. of the Train Works.
- d. The Manufacturer shall, as required by the CSM Regulation for Risk Evaluation and Assessment, appoint an Assessment Body to confirm whether the engineering safety assurance of the systems, subsystems etc. conforms and complies with the principles of the CSM Regulation.

- e. The Manufacturer shall make available to the Purchaser on a progressive basis, evidence of conformity with the TSIs and NNTRs to support safety assurance activities under the CSM Regulation.
- f. The Manufacturer will fully cooperate with the Assessment Body and provide the engineering safety evidence necessary to carry out any assessment and comply with any improvements to assure the Manufacturer's compliance with the CSM Regulation.
- g. The Manufacturer shall prepare and submit to the Purchaser an independent review relating to design and final engineering safety justification(s). The Manufacturer shall ensure that these design and final engineering safety arrangements are described in the Manufacturer's SSP.
- h. The Manufacturer shall formally report the findings of all reviews to the Purchaser within 30 days of any such review being completed.

#### **4. ELECTROMAGNETIC COMPATIBILITY**

- 4.1. The Manufacturer shall prepare an EMC management plan (the "**EMC Management Plan**") which shall describe the Manufacturer's approach to EMC and shall provide evidence to assure the Purchaser that:
  - a. the Units comply with all Applicable Laws and Industry Standards relating to EMC;
  - b. compatibility is achieved with Crossrail Infrastructure and neighbouring Railway Infrastructure (namely Docklands Light Railway, London Underground and Network Rail); and
  - c. the Units are not adversely impacted by the external EMC environment.
- 4.2. The Manufacturer shall ensure that the EMC Management Plan includes (without limitation) the following:
  - a. the Industry Standards to be adopted;
  - b. organisation of the EMC team including the position within the Manufacturer's organisation;
  - c. the arrangements for EMC surveys and coupling studies;
  - d. the proposals for an EMI hazard analysis and EMI hazard log addressing, as a minimum;
    - i. all Plant/Materials/Equipment/Systems, including that of others, that are susceptible to or are a source of EMI;
    - ii. the likely interference mechanisms;
    - iii. the likely consequences if interference takes place;
    - iv. the proposed EMI mitigation measures if required;
    - v. threats not covered by standards requiring additional tests;
  - e. details of the degraded modes and fault conditions to be assessed within the overall EMC strategy;
  - f. an EMC test plan to validate the EMC performance;

- g. arrangements for liaison and exchange of information with the Purchaser and its nominees, delivery partners and contractors developing the Crossrail Infrastructure;
  - h. support & collaboration with the signalling equipment supplier, as required, to achieve the overall plant EMC design and acceptance, including, the supply of data & information, cable routing, power quality requirements, earthing and bonding, equipment & antenna positioning, hazard identification & EMI suppression; and
  - i. arrangements for obtaining acceptance/approval from neighbouring Railway Infrastructure (namely, Docklands Light Railway, London Underground and Network Rail).
- 4.3. The Manufacturer shall submit an EMC technical file upon completion of all testing documenting the above activities and confirming EMC with the Purchaser and the infrastructure managers of neighbouring Railway Infrastructure.

## 5. PROGRESSIVE ASSURANCE

- 5.1. Engineering "V" Life-Cycle
- a. During the Assurance Period the Manufacturer shall implement systems engineering techniques to control and reduce the risks associated with the interaction between the Unit, the Central Operating Section and the other routes over which the Unit is required to run. The Manufacturer shall perform its obligations under this Agreement in a manner that minimises, to the extent reasonably practicable, such risks and facilitates the Take Over of the Unit by the Purchaser.
  - b. During the Assurance Period the Manufacturer shall implement an engineering "V" life-cycle model in accordance with BS EN 50126: 1999 (Railway Applications — The specification and demonstration of Reliability, Availability, Maintainability and Safety).
  - c. In complying with this paragraph 5.1 the Manufacturer shall conduct stage gate reviews ("**Stage Gate Reviews**") at the end of each of the stages that it has identified in its engineering "V" life-cycle model in respect of the design, manufacture, testing, commissioning, assembly and supply of the Unit to ensure that Progressive Assurance is being conducted effectively and to enable co-ordination with the Crossrail project.

As a minimum the Manufacturer shall conduct a Stage Gate Review at the end of each of the following stages (each a "**Stage**") in the order that they occur in the Contract Programme:

- i. Preliminary Design (as described in paragraph 16.6);
  - ii. Detailed Design (as described in paragraph 16.7);
  - iii. commencement of Infrastructure Testing of the Unit (as a complete train) on both applicable Network Rail infrastructure and the Crossrail Infrastructure;
  - iv. commencement of operation of the Unit under its own power on applicable Network Rail infrastructure and the Crossrail Infrastructure;
  - v. Take Over of the Unit
- d. As part of the systems engineering techniques implemented by the Manufacturer pursuant to paragraph 5.1.a, the Manufacturer shall, at the end of each Stage,

undertake as part of the Stage Gate Review an interdisciplinary review of each subsystem, so as to ensure its effective integration and/or interaction with the other subsystems and so that evidence is available to confirm, to the Purchaser's reasonable satisfaction, the completion of all of the deliverables and any outstanding issues for the relevant Stage.

- e. The Manufacturer shall prepare a progressive ESM report to confirm the status of engineering safety management activities is acceptable. The Manufacturer shall update the ESM report as necessary and present the ESM report as part of the Stage Gate Review.
- f. As part of the systems engineering techniques implemented by the Manufacturer pursuant to paragraph 5.1.a, the Manufacturer shall, at the end of each Stage, provide progressive verification and validation evidence to confirm the requirements listed in the TRS are being met.
- g. The Manufacturer shall notify the Purchaser in writing when it has completed a Stage Gate Review and upon receipt of such notice the Purchaser shall promptly arrange a close-out meeting with the Manufacturer to confirm that all relevant deliverables and outstanding issues (if any) have been completed to the reasonable satisfaction of the Purchaser.
- h. The Manufacturer shall assist the Purchaser with the integration of the Units and the Crossrail Infrastructure. Such assistance shall include as a minimum and without prejudice to clause 5.3 of the Agreement or the requirements of Part 1 of Schedule 1B (Management of Delivery):
  - i. the provision of requested information and data (including interface data) to the Purchaser;
  - ii. the review of information and data (including interface data) provided by the Purchaser, or the delivery partners; and
  - iii. attendance by the Manufacturer (and, where appropriate, any of its key Subcontractors) at meetings with any of the Purchaser, their nominated railway undertaking and the delivery partners.

## 6. RELIABILITY AND RESILIENCE

- 6.1. The Manufacturer shall ensure that all aspects of the design and manufacture of the Unit and its subsystems meet the required Mean Time Between Service Affecting Failure ("**MTBSAF**") and Shift Completion Rate, as described in the TRS. The Manufacturer shall provide to the Purchaser for Assurance Acceptance a Reliability, Availability and Maintainability Plan "**RAM Management Plan**" setting out how the Manufacturer will meet the RAM Predictions. The manufacturer will show how the RAM Management Plan complies with BS EN 50126:1999.
- 6.2. The Manufacturer shall, in support of the RAM objectives, include an MTBSAF prediction of the system which shall include the following:
  - a. demonstration of an understanding of the system's operational requirements in relation to RAM;
  - b. the effects of potential failures of the Goods;
  - c. corrective and preventive maintenance times and redundancies built into the design; and

- d. reliability performance at physical and functional interfaces between the Train Works and the Crossrail Infrastructure.
- 6.3. The Manufacturer shall, in preparing the RAM Management Plan, follow the approach of BS EN 50126:1999 "Railway applications - The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS)".
- 6.4. To support the achievement of RAM design targets, the Manufacturer shall identify in the RAM Management Plan requirements for reliability growth. This shall include establishing reliability growth plans for the system and for subsystems.
- 6.5. The Manufacturer shall ensure that the RAM Management Plan, as a minimum, describes the following:
- a. organisation of the RAM team including the position held by each individual within the Manufacturer's organisation;
  - b. management of RAM related interfaces with the Crossrail Infrastructure;
  - c. provisions and procedures for providing feedback to and interacting with other disciplines in the Manufacturer's team, e.g. safety engineering, design, maintenance and commissioning;
  - d. approach to condition monitoring opportunities to benefit RAM;
  - e. planned RAM assessments to demonstrate that the system's RAM requirements are met by the Manufacturer's design;
  - f. RAM methods to be used;
  - g. management of Subcontractors' RAM requirements, (including RAM Specifications);
  - h. identification of long lead spare Spares and Parts, critical to meeting the RAM targets;
  - i. validation of RAM requirements during manufacture, installation, commissioning and maintenance;
  - j. RAM Demonstration Plan, (high level strategy for this initial stage);
  - k. approach to development and procurement cost management;
  - l. record keeping of RAM assessments; and
  - m. high level Schedule for deliverables.
- 6.6. The Manufacturer shall submit any further revisions to the RAM Management Plan to the Purchaser for Assurance Acceptance.
- 6.7. Defect and Corrective Action Recording
- a. During the Assurance Period, the Manufacturer shall establish and implement a defect and corrective action recording system that records and enables the analysis of all relevant information and data created by the Manufacturer and/or its Subcontractors in performing its obligations under this Agreement.
  - b. The Manufacturer shall ensure that it records all actual or suspected errors, non-conformances, failures, defects, incidents and accidents arising in relation to, or in connection with, the Unit, and/or any other item of the Goods and/or any process

relating to the design, manufacture, testing, commissioning and supply of the Unit and/or any other item of the Goods together with details of any remedial actions taken by the Manufacturer and/or its Subcontractors.

- c. The Manufacturer shall ensure that the RAM Plan or the TAP describes the process for such defect and corrective action recording system to be implemented by the Manufacturer.

## **7. CONFIGURATION MANAGEMENT**

- 7.1. The Manufacturer shall establish, implement and maintain a configuration management system that complies with the requirements of ISO 10007:2003 (Quality management systems – Guidelines for configuration management).
- 7.2. The Manufacturer shall ensure that the TAP contains a strategy that describes the configuration management system proposed to be established and implemented by the Manufacturer in accordance with paragraph 7.1 ("**Configuration Management Strategy**").

## **8. TECHNICAL CHANGE CONTROL**

- 8.1. For the duration of this Agreement, the Manufacturer shall establish and implement a process ("**Technical Change Control Process**") that shall enable the Manufacturer to manage, in a structured manner, any change to the design solution, function and/or any technical aspect of the Unit or any item of Goods as a result of a Variation or otherwise. The TAP shall describe the Technical Change Control Process to be implemented by the Manufacturer.
- 8.2. The Manufacturer shall ensure that the Technical Change Control Process includes a process for the categorisation of technical changes which is consistent with the Unit Design Area Breakdown Structure.
- 8.3. Where a document, drawing and/or other information that has been granted Assurance Acceptance by the Purchaser requires amendment in connection with a Variation, a permitted Design change or other requirement of this Agreement, the Manufacturer shall make such amendments as it considers necessary and submit the amended drawing, document and/or information to the Purchaser for Assurance Acceptance.

## **9. SYSTEMS INTEGRATION AND INTERFACE MANAGEMENT**

- 9.1. During the Assurance Period, the Manufacturer shall establish and implement a systems integration management process that enables it to:
  - a. demonstrate compatibility of the Units, Parts and subsystems with all parts of the Crossrail Infrastructure and record all actions that are necessary to address any incompatibility; and
  - b. attend all meetings and provide all necessary information in order to satisfy the requirements of the Purchaser and fully participate, engage, and coordinate the relevant parties in attending such meetings and providing all necessary information.
- 9.2. Upon request, the Manufacturer shall provide information in relation to its systems integration and management process to the Purchaser for the purposes of Progressive Assurance.
- 9.3. The Manufacturer shall work iteratively with all relevant third parties, delivery partners and Crossrail contractors in order to manage all system interfaces with the Units.

## 10. STANDARDS MANAGEMENT

- 10.1. During the Assurance Period, the Manufacturer shall establish and implement a standards management process that shall include the following:
- a. the creation and maintenance of a matrix that lists all applicable Industry Standards and TFL Standards that apply to the performance by the Manufacturer of its obligations under this Agreement (the "**Standards Matrix**");
  - b. a process for establishing and managing the recording of any changes to Industry Standards, using the Standards Matrix to identify Industry Standards that have changed after a specified date and the version of each Industry Standard being complied with by the Manufacturer at any point in time; and
  - c. enables evidence of compliance by the Manufacturer with each of the Industry Standards listed in the Standards Matrix.
- 10.2. The Manufacturer shall include the standards management process it has established in accordance with this paragraph 10 as part of the TAP.

## 11. REQUIREMENTS MANAGEMENT

During the Assurance Period, the Manufacturer shall establish and implement a management system that records the Manufacturer's compliance with each of the requirements set out in the TRS and, where appropriate, to generate more detailed requirements to be used in the design of the Unit (the "**Requirements Management System**").

## 12. HUMAN FACTORS

The Manufacturer shall establish a human factors plan which describes the Manufacturer's approach to incorporating human factor requirements into the Design of the Unit, which shall comply with applicable Industry Standards and best practice.

## 13. TESTING AND COMMISSIONING

- 13.1. The Manufacturer shall submit to the Purchaser for Assurance Acceptance a testing and commissioning strategy (the "**Test Plan**") that, as a minimum, shall detail the following:
- a. the overall plan for testing and commissioning leading to Take Over;
  - b. the various phases of testing as further detailed in paragraphs 13.2 to 13.4 (the "**Tests**");
  - c. the testing sequence and logic, including the interface with others;
  - d. the processes for the management of the testing and commissioning activities.
- 13.2. The Test Plan submitted for Assurance Acceptance pursuant to paragraph 13.1 above shall include, in relation to the StaticTests, as a minimum the following detail
- a. the proposed systems and subsystems tests required;
  - b. the pass/fail criteria;
  - c. any proposed cross-acceptance from previous test results; and
  - d. the testing programme.

- 13.3. The Test Plan submitted for Assurance Acceptance pursuant to paragraph 13.1 above shall include, in relation to the Dynamic Tests, as a minimum the following detail:
- a. the proposed systems and subsystems tests required (e.g. gauging, braking, EMC, traction performance etc);
  - b. the pass/fail criteria;
  - c. any proposed cross-acceptance from previous test results; and
  - d. the testing programme.
- 13.4. The Test Plan submitted for Assurance Acceptance pursuant to paragraph 13.1 above shall include, in relation to the Infrastructure Tests, as a minimum the following detail:
- a. the commissioning testing required (e.g. signalling integration testing, gauging);
  - b. the pass/fail criteria;
  - c. any proposed cross-acceptance from previous testing; and
  - d. the test programme.

#### **14. INTEROPERABILITY**

- 14.1. The Manufacturer shall be the contracting entity under the Railways (Interoperability) Regulations 2011 and is responsible for demonstrating compliance with these regulations and any applicable technical standards for interoperability. The Manufacturer shall be responsible for gaining Authorisation to Place into Service (APIS) from the Office of Rail and Road by submitting a statement of compliance supported by a technical file which is signed by the NoBo and DeBo and which is supported by a safety report from an Assessment Body.

#### **15. COMPATIBILITY**

The Manufacturer shall comply with Railway Group Standard GE/RT8270 in demonstrating compatibility with both Network Rail infrastructure and the Crossrail Infrastructure. In accordance with this standard the Manufacturer shall be the "Proposer" for the introduction of the Unit and shall be responsible for gaining any effected parties to buy-in to the proposed change.

#### **16. DESIGN ASSURANCE**

- 16.1. The Manufacturer shall, throughout the Design phase, use Progressive Assurance to demonstrate to the reasonable satisfaction of the Purchaser that the proposed design of the Unit satisfies the requirements specified in the TRS.

##### 16.2. Design Management Plan

The Manufacturer shall prepare a Unit design management plan (the "**Design Management Plan**") which shall, as a minimum, contain:

- a. the Design strategy, which will describe how the Manufacturer will produce an integrated, assured, certified design;
- b. the design organisation the Manufacturer plans to put in place to undertake the Design;
- c. the Design Area Breakdown Structure;

- d. the Design Submission Programme as described in paragraph 16.5; and
  - e. the Design review and verification procedures and the link with the Stage Gate Reviews.
- 16.3. The Manufacturer shall submit the Design Management Plan to the Purchaser for Assurance Acceptance within four weeks from the Commencement Date and any further revisions to the Design Management Plan shall be submitted to the Purchaser for Assurance Acceptance.
- 16.4. Design Phases
- a. In order to ensure that the design of the Unit meets the Purchaser's requirements, the Manufacturer shall submit certain design information to the Purchaser in a two stage process as follows:
    - i. a Preliminary Design phase; and
    - ii. a Detailed Design Phase.
  - b. The detailed scope of each of the Preliminary Design Phase and the Detailed Design Phase is described below in paragraphs 16.6 and 16.7 respectively.
  - c. The permitted Design changes which may be notified by the Purchaser to the Manufacturer in accordance with Schedule 1B (Management of Delivery).
- 16.5. Design Submission Programme
- The Manufacturer shall submit to the Purchaser for Assurance Acceptance the Design Submission Programme which shall include, as a minimum, the following:
- a. a description of the mechanical and/or electrical systems and other subsystems covered by each Unit Design area; and
  - b. a programme for the preparation and completion of the design of the Units ("**Design Submission Programme**") which:
    - i. is consistent with the Contract Programme and indicates the proposed dates when the Manufacturer intends to submit the Preliminary Design Submissions and the Detailed Design Submissions to the Purchaser for Assurance Acceptance; and
    - ii. indicates the proposed duration of the Preliminary Design Phase and the Detailed Design Phase.
- 16.6. Preliminary Design Phase
- a. During the Preliminary Design Phase, the Manufacturer shall submit the relevant submissions ("**Preliminary Design Submissions**") to the Purchaser for Assurance Acceptance in accordance with the Design Submission Programme. The Preliminary Design Submissions shall include, as a minimum:
    - i. a list of the requirements to be adopted by the Manufacturer in undertaking the design of the Unit;
    - ii. a justification that the requirements specified in sub-paragraph i above are consistent with the TRS and all Applicable Laws, Industry Standards and TfL Standards that the Manufacturer proposes to comply with in designing, manufacturing, commissioning and testing the Unit;

- iii. a description of the overall concept of the design together with evidence that it satisfies the requirements specified in sub-paragraph i above;
  - iv. the manner in which the requirements specified in sub-paragraph i above will be verified;
  - v. an up-to-date list of the major equipment Subcontractors and any other important subcontractors or suppliers that will be involved in the design, manufacture, commissioning, testing and supply of the Unit;
  - vi. a summary of any new or novel technology to be utilised in the Units and evidence that such technology does not materially affect the risk of the Manufacturer being unable to perform its obligations under this Agreement; and
  - vii. a list of the principal interfaces with the Unit design.
- b. When the Preliminary Design Submissions have each been granted Assurance Acceptance by the Purchaser, the Parties shall hold a close-out meeting. Unless agreed by the Parties at the close-out meeting held pursuant to this paragraph 16.6, the Purchaser shall, no later than five Working Days after the completion of the close-out meeting, notify the Manufacturer in writing that the Preliminary Design Phase has been completed, together with any outstanding Purchaser comments to be addressed by the Manufacturer pursuant to the Assurance Acceptance process.

#### 16.7. Detailed Design Phase

- a. During the Detailed Design Phase the Manufacturer shall submit the submissions described in this paragraph 16.7 ("**Detailed Design Submissions**") to the Purchaser for Assurance Acceptance in accordance with the Design Submission Programme. The Detailed Design Submissions as a minimum shall include:
  - i. evidence that the design of the Unit satisfies the TRS, Applicable Laws, Industry Standards and Tfl Standards and the other requirements specified in this Agreement;
  - ii. design assurance documentation to the reasonable satisfaction of the Purchaser and, if part of the design is service-proven, previous service history to demonstrate that the part of the design is compatible with the intended application, where:
    - A. a component is an existing component in use in another application and has (where required for that use) obtained the Relevant Consents; and
    - B. the Manufacturer is able to demonstrate to the reasonable satisfaction of the Purchaser that the technical, safety and operational functions of the component in respect of the other application are the same as those specified in the TRS,
    - C. the Manufacturer shall be entitled to submit as supporting evidence to the assurance documentation any certificates, consents, approvals and/or other equivalent information provided by a NoBo or DeBo or a Competent Authority and/or any other evidence acceptable to the Purchaser (acting reasonably) in respect of that component.
  - iii. evidence that the Design and maintenance plan are compatible with each other.

- b. When each Detailed Design Submission has been granted Assurance Acceptance by the Purchaser, the Parties shall hold a close-out meeting. Unless agreed by the Parties at such close-out meeting, the Purchaser shall, no later than five Working Days after the close-out meeting, notify the Manufacturer in writing that the Detailed Design Phase has been completed.

## **17. UNIT LOG BOOK**

- 17.1. The Manufacturer shall produce and maintain a log book for the Unit, which shall be in both hard copy and electronic form, the format of which shall be agreed between the Parties prior to the Manufacturer commencing manufacture of the Unit and the content of which shall include, as a minimum, the following details:
  - a. build records including technical data such as reference sheets for build records, dimensional and setting checks and for signed-off inspection and Factory and Type Test documentation including EMC testing;
  - b. equipment serialisation of serial-numbered components (including mechanical, pneumatic and electrical items and any other items agreed between the Parties) and configuration charts;
  - c. reference sheets for functional test records;
  - d. reference sheets for Dynamic Test records;
  - e. reference sheets for commissioning test records and records of maintenance carried out by the Manufacturer prior to Take Over;
  - f. the status of modifications, mandatory modifications and any Variations, including records of Software version numbers;
  - g. certificates issued by any NoBo, DeBo or Assessment Body and the statements of compatibility;
  - h. records of Performance Failures;
  - i. records of any agreed derogations or concessions; and
  - j. work required to be carried out prior to provisional acceptance of a Unit.
- 17.2. The Manufacturer shall ensure that each reference sheet relating to testing in the Unit Log Book includes, as a minimum, the following information:
  - a. the date of each test;
  - b. the test procedure number and issue level for the relevant test; and
  - c. the result of that test.
- 17.3. The Manufacturer shall note in the Unit Log Book any preconditions that have been notified to it by the Purchaser.

# Technical Requirements Specification

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



# TECHNICAL REQUIREMENTS SPECIFICATION

## RAILHEAD PROFILING MACHINE

Document Number: CRL1-XRL-O8-RSP-CR001-50044

Document History:

Version:	0.1	1.0	2.0
Date:	03-2015	08-2015	02-2016
Reason for revision	First Draft	1 <sup>st</sup> issue resolving comments on v0.1	2 <sup>nd</sup> issue incorporating chosen technical solution
Prepared by:			
Checked by:			
Checked by:			
Approved by			
Authorised by:			

This document contains proprietary information. No part of this document may be reproduced without prior written consent from the chief executive of Crossrail Ltd.

## Change History

The following changes have been made to the requirements since the release of issue 1.0:

ID	Requirement	Summary of Change
TRS-RHP-25 ALTERED	The railhead profiling machine shall be capable of removing up to 3.5mm of metal from the rail crown over <del>1.2km</del> <u>1200m</u> of <u>track (plus additional work to blend to the adjacent unprofiled rail)</u> in a three hour working shift without affecting finish quality.	The requirement was reduced to 50m during the tender period following assessment of the need. The chosen bid is capable of meeting the original requirement, so it has been restored to the original, greater distance.
TRS-RHP-54 ALTERED	Noise levels measured <del>4m</del> <u>7.5m</u> from the <del>side of the track</del> <u>vehicle centreline</u> during <del>operation in open areas</del> <u>working</u> shall not exceed 75dB.	This requirement has been adapted to mandate the TSI noise limitations on working mode, which gives a clear method of demonstration.
TRS-RHP-109 ALTERED	The railhead profiling machine shall be capable of detecting and reporting surface cracks up to <del>52.7</del> <u>52.7</u> mm below the surface of the rail following work across a width of 30mm cross the railhead.	Following impact assessment, this requirement has been reduced to match the technical solution available.
TRS-RHP-117 DELETED	<del>Monitoring systems shall be capable of operation in 'running' and 'working' modes, where practicable.</del>	Following impact assessment, this requirement has been removed to match the technical solution available and prevent disproportionate cost.
TRS-RHP-147 DELETED	<del>The railhead profiling machine shall be capable of measuring and reporting surface roughness of wavelengths from 10-1000mm to an accuracy of 0.001 mm.</del>	Following impact assessment, this requirement has been removed to match the technical solution available and prevent disproportionate cost
TRS-RHP-177 NEW	The on train data recorder, provided to meet the requirements of GM/RT2472, shall additionally be capable of recording the following information: CBTC signalling indications to the driver CBTC signalling transmissions between the unit and the trackside infrastructure Information appropriate to support fault allocation between the trackside and onboard CBTC signalling equipment.	This requirement was included in a reference document, but has been brought into the main specification to reflect it's importance and ensure it is not overlooked through the V&V process.
TRS-RHP-180 NEW	The monitoring and reporting system shall be capable of assigning a work order reference to the data captured.	This requirement has been added at zero cost to ensure that the completed work can be referenced to the RFL maintenance management system.
TRS-RHP-69 ALTERED	Supporting Information: an acceleration rate of <del>0.4</del> <u>0.35</u> m/s/s is necessary to operate between passenger trains with acceptable impact on service.	Following impact assessment, the requirement has been reduced to match the technical solution offered to avoid disproportionate expense to demonstrate compliance.

**Contents**

- Change History .....2**
- 1 INTRODUCTION.....4**
- 1.1 Purpose ..... 4
- 1.2 Scope..... 4
- 1.3 Definitions ..... 4
- 2 SYSTEM CONTEXT .....5**
- 2.1 Interfacing Projects and Systems..... 6
- 3 REQUIREMENTS .....9**
- 3.1 Function..... 9
- 3.2 Monitoring & Reporting ..... 11
- 3.3 Performance ..... 13
- 3.4 Interfaces..... 14
- 3.5 Safety ..... 20
- 3.6 Fire ..... 21
- 3.7 Human Factors..... 22
- 3.8 RAM ..... 23
- 3.9 EMC..... 26
- 3.10 Environment..... 26
- 3.11 O&M Requirements..... 27
- 3.12 Standards and Procedures..... 28

# 1 INTRODUCTION

This requirements specification has been developed to list the capabilities a railhead profiling machine needs in order to be suitable for use on Crossrail infrastructure. The document has been produced in response to the Engineering Trains Fleet Strategy, which identifies the need for engineering trains.

## 1.1 Purpose

The purpose of the Technical Requirements Specification (TRS) is to transform stakeholder, business requirements and interface constraints and combine them into functional and performance requirements against which a railhead profiling machine must be designed and built.

Technical requirements define what the system must do in order to meet the capability and functionality required by the user(s) and business, but not the exact solution. The TRS defines the benchmark against which the solution will be verified.

The primary sources of requirements for the systems requirements are:

- The project requirements specification, which includes apportioned requirements from the Crossrail Programme Functional Requirements;
- User requirements from the Purchaser's Operational Concept for Works Trains
- Interfaces to other Crossrail systems such as signalling, track and civils
- Maintenance plans for infrastructure systems
- Specialist domain knowledge (RAM, system safety, HF, EMC, fire protection, etc.).

## 1.2 Scope

The scope of this document is limited to the railhead profiling vehicle and associated onboard equipment, its maintenance and operational support requirements.

The manufacturer shall, in meeting the requirements listed in the table in section 4 of this document, deliver the railhead profiling machine described in the technical solution pack: CRL1-RFL-O8-XWI-CR001-50002. The expected machine is the MG31 6-head (3 per rail) rail milling machine.

This proposal has been assessed against the requirements in section 4 and deemed to be compliant.

**NOTE: At the time of issue, it has not been determined whether ETCS is required to be fitted to engineering trains. Provision of ETCS is not included in the scope of this specification, but requirements to allow for future fitment have been included. Should it be determined that ETCS is required in order to operate safely over the boundary, it will be the subject of a separate instruction.**

## 1.3 Definitions

Abbreviation/Acronym	Definition
AWS	Automatic Warning System
COS	(Crossrail) Central Operating Section

Abbreviation/Acronym	Definition
COSHH	Control of Substances Hazardous to Health
CBTC	Communications Based Train Control System – Crossrail specific signalling system
DMI	Driver Machine Interface
ERTMS	European Rail Traffic Management System
ETCS	European Train Control System
EMC	Electromagnetic Compatibility
GSM-R	Railway communication system defined in the EIRENE specifications
HF	Human Factors
NNTR	Notified National Technical Rule
RAM	Reliability, Availability, Maintainability
RfL	Rail for London (Infrastructure Manager for Crossrail)
RIS	Rail Industry Standard
S&C	Switches and Crossings
TPWS	Train Protection and Warning System
TRS	Technical Requirements Specification
TSI	Technical Specification for Interoperability
Yellow Plant	Term used for Plant and Machinery

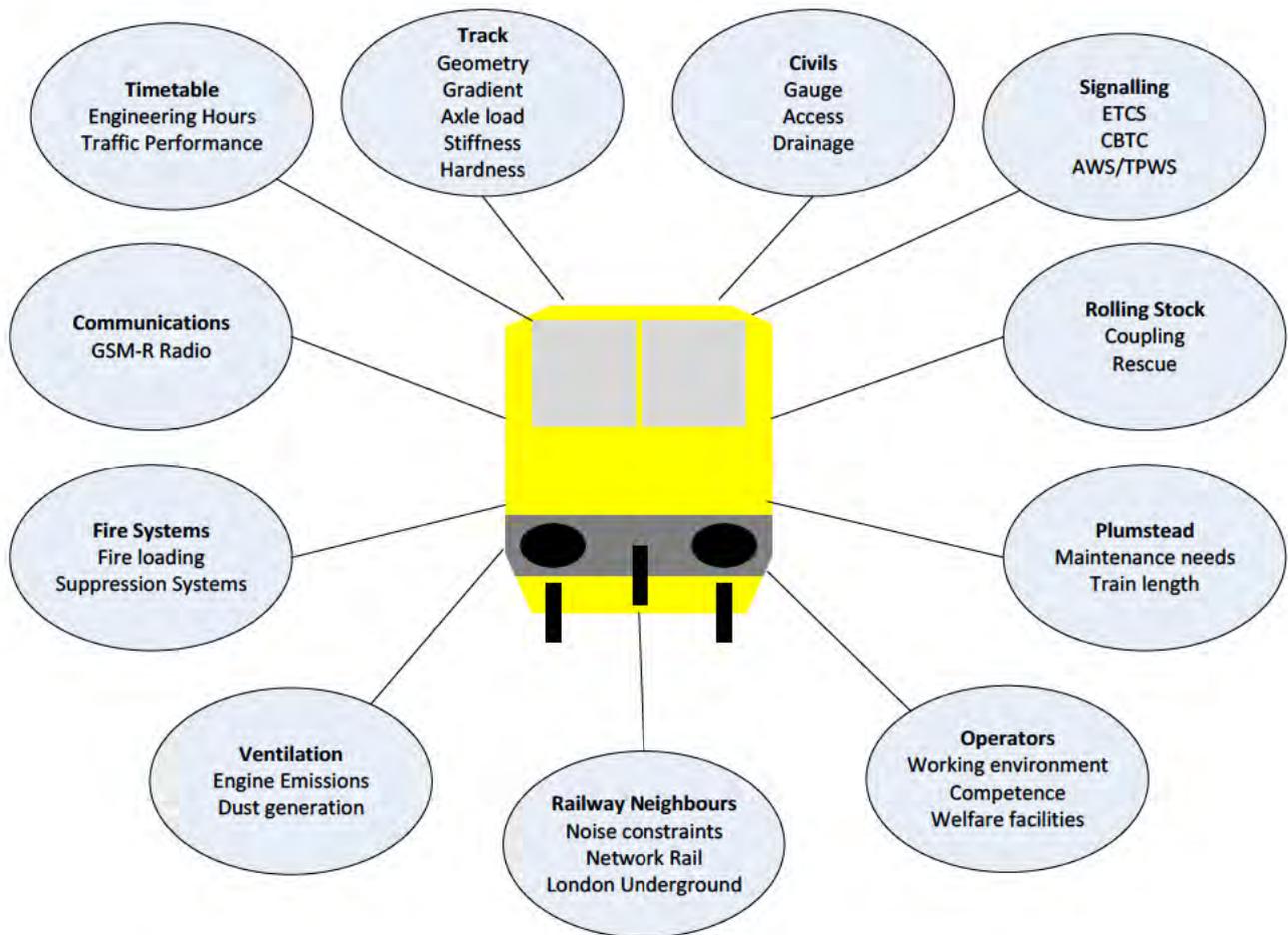
## 2 SYSTEM CONTEXT

The system context diagram provides a boundary within which the Plant and Machinery will operate. Every system/asset/organisation beyond the system boundary is managed through interface definition and linking associated requirements.

The context diagram below applies to the vehicle in either running or working mode.

Transit mode interfaces apply to all vehicles expected to operate in the Central Operating Section.

The diagram below lists all considerations for traffic operations that must be incorporated into the specifications for each vehicle. An underlying assumption is that the vehicles will be diesel powered and will not connect to the 25kV overhead supply during transit.



## 2.1 Interfacing Projects and Systems

Below is a description the major interface groups in the diagram above:

### 2.1.1 Track

In order to operate on the Crossrail infrastructure the vehicle axle load must be within the design limits. Additionally, the vehicle must be capable of operation on the Crossrail gradients and curves. The design of the track is mature and will not be influenced by the design of engineering trains. As such, this interface is managed as a constraint, where the track design is assumed to be fixed. Requirements are included for the vehicle to be compatible with the track, but no requirements are imposed on the track design to incorporate the engineering trains.

In order to re-profile the rails, the rail hardness and track stiffness are also important considerations.

### 2.1.2 Civils

The major aspect of civil compatibility is gauge. Gauge has been included in the civils “group” although all fixed infrastructure can impact on the gauge. The platform screen in particular has a strong influence on the structure gauge. As with track, the civils assets are constraints on the design of the engineering trains. Requirements describing those constraints are included in this specification.

### 2.1.3 Signalling

Crossrail maintenance trains must be capable of operating in running mode in traffic hours. As such, they must have all Crossrail signalling systems installed consisting of CBTC on the central section, and AWS/TPWS on the eastern section.

Additionally, ETCS may be required to manage the transitions, and will eventually be required on the western section at the point where the legacy signalling is decommissioned (currently estimated at 2026).

**NOTE: At the time of issue, it has not been determined whether ETCS is a definite requirement for engineering trains. Provision of ETCS is not included in the scope of this specification, but requirements to allow for future fitment have been included. Should it be determined that ETCS is required in order to operate safely over the boundary, this will be the subject of a separate instruction.**

Additionally, to capture meaningful data on the maintenance activities, the signalling system in the tunnel section must be capable of providing accurate positional data to monitoring instruments and data recorders installed on the train. Because of the complex nature of these interfaces, it is not appropriate to list all the signalling requirements. Separate interface specifications have been developed to capture the requirements relating to signalling systems.

### 2.1.4 Plumstead

Maintenance trains will be stabled and maintained at Plumstead. Plumstead is limited in the amount of space that can be provided. Trains longer than 180m will not be able to enter the depot. To facilitate stabling of more than one train on each road, maintenance trains should be no more than 80m long.

### 2.1.5 Operators

Because of the length of time operators may be out on the network, welfare facilities need to be provided onboard each train. Workstations need to be designed in accordance with HF good practice to minimise the risk of injury to operators or operational errors.

### 2.1.6 Railway Neighbours

Crossrail has a large number of close neighbours. The predominant neighbour is Network Rail, whose infrastructure the engineering trains must be capable of operating on. Additionally the Crossrail tunnels run through several noise sensitive areas.

### 2.1.7 Rolling Stock

The maintenance fleet needs to be capable of being rescued by another maintenance unit. As such they must all be fitted with the same coupling system, which is currently understood to be a standard screw coupling.

### 2.1.8 Ventilation

There are two aspects to the interface with the ventilation system. Firstly, concentrations of vehicle emissions must be kept within the limits set by COSHH for the various harmful constituents of diesel exhaust emissions.

The second part of the interface is fire safety. The ventilation system has been designed to exhaust the heat and smoke from a fire of 8.8MW from the tunnel, and the passenger trains are designed to prevent any onboard fire growing beyond 8.8MW for 30 minutes. Maintenance vehicles are also expected to be able to meet this requirement according to the Crossrail maintenance principles, although this is likely to require active fire suppression.

### 2.1.9 Communications

Engineering trains will need to be fitted with GSM-R radio in order to communicate with the control centre.

### 2.1.10 Timetable

There are two aspects to this interface. Firstly, the maintenance trains must be capable of operating in transit at a level of performance that does not cause delay to a following passenger train. As such, they must have reasonable braking and acceleration rates as well as a maximum speed sufficient to not delay a following train.

The second aspect of this requirement is that the timetable dictates the time available for maintenance work. This drives the performance requirements necessary to complete the task without delaying the morning service.

### 3 REQUIREMENTS

ID	Requirement Text	Rationale	Supporting Information
TRS-RHP-1	<b>3.1 Function</b>		
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.		Rail roughness is quoted in microns at differing wavelengths as follows: 27 dB re 1 micron on the 1/3 octave centred on a wavelength of 2m, decreasing by 15 dB per tenfold reduction in wavelength. Wavelengths of greater than 500mm are considered to be addressed through track alignment rather than profiling.
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.		The 0o point is the point at which a tangent to both (the left and right) rails would touch the target profile. The xo point on the of the target rail is the point at which the normal to a tangent on the target rail profile lies at an angle of xo to the plane of the track (or the line that is tangent to both rails).
TRS-RHP-20	The finished rail profile shall be within a tolerance of +/-0.1mm of the target profile.		
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.

ID	Requirement Text	Rationale	Supporting Information
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.	To prevent the need for additional machines for S&C beyond hand-tools.	
TRS-RHP-23	The railhead profiling machine shall collect 98% of removed metal and debris from the track prior to handback.	To prevent the need for follow-up cleaning activities. Engineering hours constraints do not allow time for cleaning post works.	
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.	To allow the vehicle to be used for preventative work without unnecessary consumption of rail.	
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.
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.	To allow the vehicle to be used for defect and severe RCF rectification during engineering hours.	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.
TRS-RHP-66	The railhead profiling machine shall be capable of powering small plant and power tools outside the vehicle.	Electrical power to these pieces of equipment removes the need to have petrol powered tools in the tunnels.	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.

ID	Requirement Text	Rationale	Supporting Information
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.
TRS-RHP-140	The railhead profiling machine shall be capable of transporting at least 5 workers to site in addition to the driver.		
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.
<b>TRS-RHP-106</b>	<b>3.2 Monitoring &amp; Reporting</b>		
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.	To allow the completed work to be quickly verified to allow speedy handback.	Measurements should be capable of being taken every 5mm up to a vehicle speed of 5km/h, and every 100mm at running speed.
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.	To allow the completed work to be quickly verified to allow speedy handback.	Measurements should be capable of being taken every 5mm up to a vehicle speed of 5km/h, and every 100mm at running speed.
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.	To confirm that any defects have successfully been removed from the rail prior to handback.	5mm is the depth at which speed restrictions will need to be applied.

ID	Requirement Text	Rationale	Supporting Information
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.
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.	To provide an audit trail for the captured data.	
TRS-RHP-120	Data output shall be displayed to the operator in the cab.		
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.	To enable the maintenance database to be kept up to date.	
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.
TRS-RHP-90	Secondary means of removing data from the vehicle shall be provided through physical connection.		
TRS-RHP-180	The monitoring and reporting system shall be capable of assigning a work order reference to the data captured.	To enable the maintainer's maintenance management system to link to the results of the work.	

ID	Requirement Text	Rationale	Supporting Information
TRS-RHP-114	The sampling rate for data capture shall be configurable to maintain the distance between samples.	To allow monitoring equipment to be used in transit as well as operation.	Above 10km/h sampling distances can be up to every 5m.
TRS-RHP-116	The monitoring and reporting system shall have the capability to provide a printout of the completed work to facilitate handback.	To facilitate handback to traffic	
TRS-RHP-118	Monitoring systems shall display and report before, after and target measurements, where available.	To facilitate handback to traffic	
TRS-RHP-119	Monitoring systems shall provide alarms/alerts where measurements exceed a pre-configured tolerance.	To prevent handback of assets in an unsafe condition.	Tolerances will initially be set based on standards, but should be configurable to enable future change.
<b>TRS-RHP-3</b>	<b>3.3 Performance</b>		
TRS-RHP-28	The machine shall be capable of operating in transit (running mode) at a speed of at least 80km/h.	To operate in between passenger trains without affecting services.	
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.	To operate in between passenger trains without affecting services.	Timetable information indicates an acceleration rate of 0.35m/s/s is necessary to operate between passenger trains with acceptable impact on service.
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.
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.

ID	Requirement Text	Rationale	Supporting Information
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.		
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.
<b>TRS-RHP-4</b>	<b>3.4 Interfaces</b>		
<b>TRS-RHP-11</b>	3.4.1 Signalling		

ID	Requirement Text	Rationale	Supporting Information
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>
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>To assist in failure diagnosis and prevent the train attempting to transition onto the central section with a failed CBTC unit</p>	<p>The indication must be physically separate to the DMI and only needs to indicate CBTC health by displaying a light.</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>
TRS-RHP-60	<p>The railhead profiling trains shall be fitted with Automatic Warning System (AWS) and Train Protection and Warning System (TPWS).</p>		
TRS-RHP-71	<p>Signalling systems shall not prevent vehicles operating in reverse at slow speed in possessions.</p>	<p>To allow railhead profiling machines to reverse/carry out more than one pass.</p>	

ID	Requirement Text	Rationale	Supporting Information
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.	For the signalling system to operate without reliance on trackside train detection.	
TRS-RHP-177	The on train data recorder, provided to meet the requirements of GM/RT2472, shall additionally be capable of recording the following information: CBTC signalling indications to the driver CBTC signalling transmissions between the unit and the trackside infrastructure Information appropriate to support fault allocation between the trackside and onboard CBTC signalling equipment.		The onboard signalling equipment does not have recording equipment compliant with the requirements of GMRT2472.
TRS-RHP-72	A speed display, showing primarily mph, shall be provided in the cab, becoming active upon isolation of the onboard signalling equipment.	To facilitate use outside of Crossrail without reliance upon the ETCS and CBTC systems.	
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.
<b>TRS-RHP-12</b>	3.4.2 Track		
TRS-RHP-38	The railhead profiling machine shall be capable of working on gradients of 4%.		

ID	Requirement Text	Rationale	Supporting Information
TRS-RHP-39	The vehicle shall achieve route availability (RA) 5 as defined in GE/RT8006 where possible.	The track is designed for 23t axle load. Requirement is imposed to maximise vehicle flexibility	If not possible, a worst case axle load of 22 tonnes can be accepted.
TRS-RHP-40	Reprofiling shall be achieved through the following trackside equipment without need to remove or make adjustment to it, and without affecting finish quality: Check rails & derailment containment Track Crossings & RRV access points Axle counters Track lubricators Friction Modifiers Balises	To minimise the need for staff on the track and improve overall access requirements.	
TRS-RHP-45	Reprofiling shall be achieved without need to clean the rail before reprofiling.	To minimise staff presence on track.	Railhead lubrication will be used throughout Crossrail.
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.
TRS-RHP-138	The railhead profiling machine shall be capable of meeting the functional requirements on the resilient track formation used on Crossrail.	Floating Track Slab, resilient sleepers and pad thicknesses could all affect the stability of the rail.	The track for the central section is described in C122-OVE-R4-RGN-CRG01-00004 v3.0 Track & Alignment - RIBA Stage E Reference Design Report

ID	Requirement Text	Rationale	Supporting Information
TRS-RHP-141	The total length of the railhead profiling train shall be no more than 80m.	To facilitate flexible stabling in Plumstead.	
<b>TRS-RHP-13</b>	3.4.3 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.
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.
TRS-RHP-32	The railhead profiling machine shall be capable of reprofiling through platforms and other structures without compromise to finish quality.		
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.
<b>TRS-RHP-14</b>	3.4.4 Power		

ID	Requirement Text	Rationale	Supporting Information
TRS-RHP-137	Railhead profiling shall be achievable in third and fourth rail areas.	To maximise the vehicle value and flexibility.	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.
TRS-RHP-144	Railhead profiling shall be achievable under live or isolated overhead electrification.		
<b>TRS-RHP-15</b>	3.4.5 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.
TRS-RHP-74	Engine emissions shall, as a minimum meet the European category 3b (Euro 3b) limits defined in the European emissions standards.	Requirement included to not prevent an existing machine being modified.	Additionally, for newly built vehicles, engine emissions shall meet Euro 4 regulations.
TRS-RHP-75	Newly built vehicles shall be capable of being upgraded to cat 5 engines without significant modification to the vehicle.	To reduce obsolescence. Cat 5 engines are not currently available but likely to be introduced a few years after commissioning.	As standards are revised, existing engines may become obsolete.
<b>TRS-RHP-16</b>	3.4.6 Rolling Stock		
TRS-RHP-35	The railhead profiling machine shall be fitted with a standard screw coupler, drawhook and side buffers.	To enable rescue by locomotive or other engineering train in the event of breakdown.	Defined in GN/GM 2690

ID	Requirement Text	Rationale	Supporting Information
TRS-RHP-160	The railhead profiling machine shall be capable of 80km transit prior to starting a shift.	To maximise usability outside of Crossrail.	
<b>TRS-RHP-17</b>	3.4.7 Comms		
TRS-RHP-37	The vehicle shall be fitted with GSM-R voice radio.		
TRS-RHP-167	The Unit shall have provision for future fitment of two AVI tags per Unit fitted on opposite sides		maximum dimensions of 300mm long x 100mm wide x 50mm deep; and maximum weight 100g
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		
<b>TRS-RHP-19</b>	3.4.8 Drainage		
TRS-RHP-55	The vehicle shall not use water or other fluid as a coolant, fire prevention or to reduce dust contamination.	Maximise sleeper life and reduce drainage maintenance requirements.	The regular use of water spraying in the tunnel environment is likely to contaminate the sleeper mountings.
<b>TRS-RHP-5</b>	<b>3.5 Safety</b>		

ID	Requirement Text	Rationale	Supporting Information
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.		
TRS-RHP-105	The supplier shall support Rail for London in developing a safe system of work for both operations and maintenance.	To ensure that the vehicles can be operated safely within the Crossrail environment.	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.
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.
<b>TRS-RHP-18</b>	<b>3.6 Fire</b>		
TRS-RHP-42	The vehicle shall be fitted with a fire suppression system NOT using White Powder or CO2.		AFFF or water are preferred fire suppression agents.
TRS-RHP-61	Fire detection systems shall provide an input into the signalling system.	To provide immediate indication to the control room.	Format of the interface to be agreed with the CBTC signalling supplier.

ID	Requirement Text	Rationale	Supporting Information
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.
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.
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.
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.
<b>TRS-RHP-6</b>	<b>3.7 Human Factors</b>		
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.	Shift length could be up to 8 hours including time to transit to and from site, with up to 6 staff on board. No other facilities will be available to staff during this time.	

ID	Requirement Text	Rationale	Supporting Information
TRS-RHP-56	Welfare/toilet facilities shall be fitted with retention tanks with sufficient storage to operate for 5 shifts between emptying/filling.	Waste cannot be discharged in the tunnels.	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.
TRS-RHP-54	Noise levels measured 7.5m from the track centreline during working shall not exceed 75dB.	This is the same as the target for stationary noise generated by a locomotive stated in the Rolling Stock - Noise TSI. The vehicle will generally be working at night. Many parts of the network are in noise sensitive areas.	This requirement should be demonstrated in accordance with section 5 of EN ISO 3095
TRS-RHP-79	Operating tasks designed in accordance with HF principles, allowing for 5th percent female to 95th percent male usage.		
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.
<b>TRS-RHP-7</b>	<b>3.8 RAM</b>		
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.		
TRS-RHP-81	No single point of failure shall prevent completion of maintenance tasks or handback into passenger service, where practicable.		

ID	Requirement Text	Rationale	Supporting Information
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.
TRS-RHP-84	Technical support shall be provided for maintenance and operations queries.		
TRS-RHP-85	Maximum Active Repair Time for any line replaceable unit (LRU) shall not exceed 13 hours.		
TRS-RHP-153	Line replaceable units shall be capable of being replaced at the Plumstead maintenance facility.	To minimise lost time in the event of component failure	The Plumstead shed contains a maintenance pit, overhead crane, various manipulators, jacks and fork-lift access to the sides.
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.
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.
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.

ID	Requirement Text	Rationale	Supporting Information
TRS-RHP-88	The supplier shall minimise the need for special tools and equipment, and shall provide any necessary for maintenance or operation.		
TRS-RHP-49	The railhead profiling machine shall have a minimum design life of 25 years.		
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>

ID	Requirement Text	Rationale	Supporting Information
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.
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.
TRS-RHP-142	Secondary means of removing vehicle data shall be provided through USB connection.		
TRS-RHP-130	Systems shall be designed to be modular and use commonly available (COTS) parts where practicable.	To improve spares availability.	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
<b>TRS-RHP-8</b>	<b>3.9 EMC</b>		
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.
<b>TRS-RHP-91</b>	<b>3.10 Environment</b>		

ID	Requirement Text	Rationale	Supporting Information
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.		
TRS-RHP-148	Where practical, vehicles shall be capable of providing auxiliary power without use of the main engine when stabling.	To reduce noise and emissions during lengthy stabling time.	During service, the train may be required to operate between passenger trains and hold in sidings to wait for the end of service.
TRS-RHP-150	Means of detecting and preventing leaking fluid shall be provided in the event of a hydraulic failure.		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. Spill kits should be available to enable spilled fluids to be contained and removed.
<b>TRS-RHP-9</b>	<b>3.11 O&amp;M Requirements</b>		
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
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 <a href="http://www.raildex.com/">http://www.raildex.com/</a> )
TRS-RHP-98	A recovery/rescue manual shall be provided.	To enable a failed unit to be cleared.	Documentation should be provided in xml format (printable to pdf) and compatible with portable readers compliant with Raildex (see <a href="http://www.raildex.com/">http://www.raildex.com/</a> )

ID	Requirement Text	Rationale	Supporting Information
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.
<b>TRS-RHP-10</b>	<b>3.12 Standards and Procedures</b>		
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.
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.
TRS-RHP-149	Design and build of the vehicles shall be compliant with the European Machinery Directive for both operation and maintenance.		
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
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'.

ID	Requirement Text	Rationale	Supporting Information
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.		<p>The manufacturer will act as the 'Proposer' as defined in GE/RT8270.</p> <p>Compatibility files must be produced and signed off by the relevant IM representative.</p> <p>"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.</p>