Schedules G – Scope and Performance Requirements

Scope and Performance Requirements

Per the documents set out in Schedule G of Amendment Deed No. 1, as amended by agreed Variations as at the date of Amendment Deed No. 2.

NSW GOVERNMENT | Transport for NSW

New Intercity Fleet Project

Schedule G – Scope and Performance Requirements

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TfNSW

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1. Introduction

1.1. Scope

(a)	This document specifies performance, management, submission and reporting requirements for the Supplier's Activities for the Project.		NIF_SPR_3
(b)	The purpose of the SPR is to enable delivery of the TfNSW objectives defined in this deed through definition of the performance requirements for the Supplier's Activities.		NIF_SPR_4
(c)	The SPR includes Appendices which must be complied with:		NIF_SPR_6
	(i)	Appendix 01 - Standards and Guidelines;	NIF_SPR_7
	(ii)	Appendix 02 - Rolling Stock Specification;	NIF_SPR_8
	(iii)	Appendix 03 - Simulator Specification;	NIF_SPR_9
	(iv)	Appendix 04 - Provided Facilities;	NIF_SPR_10
	(v)	Appendix 05 - Maintenance Services Specification;	NIF_SPR_11
	(vi)	Appendix 06 - Running Time and Energy Performance;	NIF_SPR_12
	(vii)	Appendix 07 - Schedule of Deliverables;	NIF_SPR_13
	(viii)	Appendix 08 - Authorised Engineering Organisation Services;	NIF_SPR_14
	(ix)	Appendix 09 - Environment and Sustainability;	NIF_SPR_15
	(x)	Appendix 10 - Initial Interface Protocols;	NIF_SPR_16
	(xi)	Appendix 11 - Initial Project Plans;	NIF_SPR_17
	(xii)	Appendix 12 - Concept Design;	NIF_SPR_18
	(xiii)	Appendix 13 - Pre-Agreed Variations; and	NIF_SPR_19
	(xiv)	Appendix 14 – Initial Project Deliverables.	NIF_SPR_956
(d)	The SPR is to be read as one document, with equal standing between the body of this document, and any Appendix.		NIF_SPR_20

1.2. Meanings and Interpretations

(a)	Unless the context requires otherwise, a reference to "Appendix" (or "appendix") or "Appendices" (or "appendices") in this SPR is a reference to an Appendix or the Appendices attached to this SPR, and a reference to this SPR includes all Appendices to it.	NIF_SPR_23
(b)	Unless the context requires otherwise, a reference to "Section" (or "section") in this SPR is a reference to that section in this SPR.	NIF_SPR_24

2. Management Requirements

(a)	The Supplier must develop, submit, implement and maintain Project Plans for all Supplier's Activities.	NIF_SPR_27
(b)	Not used.	NIF_SPR_28
(c)	The Supplier must avoid duplicated content between Project Plans.	NIF_SPR_29
(d)	Each Project Plan must describe how that Project Plan integrates with other Project Plans, including Significant Contractor project plans.	NIF_SPR_30
(e)	The Supplier must not depart from the commitments of the Initial Project Plans, included in Appendix 11 except as permitted by clause 9.3 of the Project Deed.	NIF_SPR_31
(f)	The Supplier must establish Project Plans as soon as necessary to carry out the Supplier's Activities, and in any case no later than the timeframes indicated in Appendix 07.	NIF_SPR_32

2.1. Project Management

(a)	The Supplier must comply with the project process and the organisational project-enabling process requirements of AS/NZS ISO/IEC 15288.	NIF_SPR_34
(b)	The Supplier must comply with the requirements and guidance of AS 4292.	NIF_SPR_35
(c)	The Supplier must establish a project team and supporting organisation to undertake all Supplier's Activities.	NIF_SPR_36
(d)	The Supplier must provide the necessary training for all Supplier's Personnel undertaking any of the Supplier's Activities.	NIF_SPR_37
(e)	The Supplier must develop, implement and maintain management systems in accordance with AS/NZS ISO 9001.	NIF_SPR_38

2.1.1. Project Management Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term a Project Management Plan that describes, as a minimum:		NIF_SPR_40
	(i)	how the Supplier will comply with the project management requirements of AS/NZS ISO/IEC 15288 sections 6.3.1 to 6.3.3;	NIF_SPR_41
	(ii)	how the Supplier will comply with the human resource management process requirements of AS/NZS ISO/IEC 15288 section 6.2.4;	NIF_SPR_42
	(iii)	how the Supplier will comply with the requirements of AS/NZS ISO 9001;	NIF_SPR_43

(iv)	how the Supplier will comply with the relevant requirements of this deed relating to project management;	NIF_SPR_44
(v)	how the Supplier will comply with the Delivery Program requirements in section 2.1.2;	NIF_SPR_45
(vi)	how the Supplier will comply with the information management requirements in section 2.1.3;	NIF_SPR_46
(vii)	qualifications, experience and authorities for each project management role;	NIF_SPR_47
(viii)	the processes required for the management of the Supplier's Activities;	NIF_SPR_48
(ix)	governance arrangements for all Supplier's Activities, including:	NIF_SPR_49
	A. risk management; and	NIF_SPR_909
	B. system safety;	NIF_SPR_910
(x)	the structure of the Project Plans and how all the Project Plans relate to each other (by way of a document tree);	NIF_SPR_50
(xi)	the development and implementation of each Project Plan, including the period of currency for each Project Plan;	NIF_SPR_51
(xii)	how and when the Supplier will baseline or re-baseline the Delivery Program;	NIF_SPR_52
(xiii)	how the requirements of Schedule D2 (Acceptance Criteria) will be achieved; and	NIF_SPR_53
(xiv)	business continuity arrangements for implementation during Force Majeure Events or incidents that affect, or have the potential to affect, the performance of the Supplier's Activities, including:	NIF_SPR_54
	A. the management of critical information and communication systems, including restoration and protection of data;	NIF_SPR_798
	B. the management of critical business processes including rail safety, work health and safety, operational performance, financial and accounting, human resources and payroll, information and communications technology and procurement; and	NIF_SPR_799
	C. the obligations of the Subcontractors in meeting the requirements of those business continuity arrangements.	NIF_SPR_800
(b)	The Project Management Plan must describe, for all Supplier's Activities how competency will be managed, including:	NIF_SPR_55
(i)	how the Supplier will comply with the requirements of the Rail Safety National Law;	NIF_SPR_56
(ii)	how the Supplier will comply with the requirements of the Rail Safety National Regulations;	NIF_SPR_921

	(iii)	how the Supplier will comply with the requirements and guidance of AS/NZS ISO 9001;	NIF_SPR_57
	(iv)	how the Supplier will comply with the requirements of AS 4292;	NIF_SPR_58
	(v)	how the Supplier will comply with the relevant requirements of this deed;	NIF_SPR_59
	(vi)	qualifications, experience and authorities of each competency management role;	NIF_SPR_60
	(vii)	recruitment, including identification, selection and induction of Supplier's Personnel;	NIF_SPR_61
	(viii)	identifying the competence requirements for tasks undertaken; and	NIF_SPR_62
	(ix)	training needs analysis, including ongoing assessment and development of Supplier's Personnel.	NIF_SPR_63
(c)	The Project Management Plan must include an organisation chart that defines the following:		NIF_SPR_64
	(i)	the Supplier's Representative; and	NIF_SPR_65
	(ii)	the hierarchy of the Supplier's Personnel responsible for management and supervision of the Supplier's Activities, including name, role, work location and employer.	NIF_SPR_66
(d)	The Project Management Plan must include the processes for managing Transition Out at the end of the Contract Term, describing how the Supplier will:		NIF_SPR_67
	(i)	comply with the project closing requirements of AS/NZS ISO/IEC 15288;	NIF_SPR_68
	(ii)	comply with the relevant requirements of this deed;	NIF_SPR_69
	(iii)	manage all legal arrangements pertinent to the Assets which will require transfer from the Supplier to TfNSW or authorised nominees, including:	NIF_SPR_70
		A. contracts;	NIF_SPR_802
		B. interfaces;	NIF_SPR_806
		C. agreements;	NIF_SPR_805
		D. warranties and guarantees;	NIF_SPR_804
		E. intellectual property rights; and	NIF_SPR_803
		F. supply and procurement arrangements; and	NIF_SPR_801
	(iv)	manage all configuration change, safety, environment, and quality actions to be closed out by the Supplier before the End Date;	NIF_SPR_71
	(v)	manage the Supplier's Activities being undertaken during the Transition Out period, including full details of:	NIF_SPR_72
		A. scope;	NIF_SPR_808

	B.	planned dates of work; and	NIF_SPR_809
	C.	options for handling the works during the transition out period.	NIF_SPR_810
(vi)	ensure all Assets are at the Target Condition by the End Date;		NIF_SPR_73
(vii)	manage the transition of the Assets from the Supplier to TfNSW and/or any authorised nominee, including:		NIF_SPR_74
	A.	notifying the location and condition of each Asset;	NIF_SPR_811
	B.	provision of training;	NIF_SPR_814
	C.	provision of Spares and Consumables; and	NIF_SPR_813
	D.	provision of Tools; and	NIF_SPR_812
(viii)	include a program detailing the timescales, and sequencing of actions needed to transition out by the End Date.		NIF_SPR_75

2.1.2. Delivery Program

(a)	The Supplier must develop, submit, implement, and maintain a Delivery Program in TfNSW's Primavera planning environment database:		NIF_SPR_77
	(i)	using Primavera P6 Professional Release 8.1 or later in .XER format;	NIF_SPR_78
	(ii)	that meets the scheduling requirements of this deed;	NIF_SPR_79
	(iii)	that meets the reporting requirements of this deed; and	NIF_SPR_80
	(iv)	that schedules all of the Supplier's Activities.	NIF_SPR_81
(b)	The Supplier must ensure that each update to the Delivery Program is archived within TfNSW's Primavera planning environment database.		NIF_SPR_948
(c)	TfNSW will provide the Supplier with TfNSW's Primavera planning environment database free-of-charge for up to ~~five~~seven users.		NIF_SPR_949
(d)	The Delivery Program must be structured such that the following can be distributed as stand-alone separate outputs:		NIF_SPR_82
	(i)	Rolling Stock Supply Works program;	NIF_SPR_83
	(ii)	Simulator Supply Works program;	NIF_SPR_84
	(iii)	MFI Works program;	NIF_SPR_85
	(iv)	Verification Program; and	NIF_SPR_86
	(v)	operational readiness program.	NIF_SPR_87
(e)	The Delivery Program must include:		NIF_SPR_88
	(i)	the work breakdown structure for all Supplier's Activities and Deliverables;	NIF_SPR_89

(ii)	all activities that require the involvement of TfNSW or a NSW Rail Entity;		NIF_SPR_90
(iii)	the timing for all inputs required from TfNSW or a NSW Rail Entity;		NIF_SPR_91
(iv)	activities and milestones associated with:		NIF_SPR_92
	A.	the supply of all Deliverables, including those in Appendix 07	NIF_SPR_815
	B.	the supply of all Assets, including AIS and PMS:	NIF_SPR_816
	C.	the award of all Significant Contracts;	NIF_SPR_817
	D.	all Delivery Milestones;	NIF_SPR_818
	E.	all Project Plans;	NIF_SPR_819
	F.	all Reviews of all Technical Packages;	NIF_SPR_820
	G.	all external engagements, including User Groups;	NIF_SPR_822
	H.	all Approvals;	NIF_SPR_823
	I.	Supplier hold points and witness points;	NIF_SPR_946
	J.	the Verification Program; and	NIF_SPR_821
	K.	operational readiness.	NIF_SPR_824
(v)	all critical path activities and any contingencies;		NIF_SPR_93
(vi)	predecessor and successor relationships for each activity and milestone;		NIF_SPR_94
(vii)	calendars identifying the working and non-working times;		NIF_SPR_95
(viii)	all time leads and lags, resources and other constraints; and		NIF_SPR_96
(ix)	the labour hours per activity.		NIF_SPR_97
(f)	The Delivery Program must enable TfNSW to plan its own activities.		NIF_SPR_98
(g)	The Delivery Program must report earned value in accordance with AS 4817.		NIF_SPR_99
(h)	The Supplier must obtain TfNSW's written approval before re-baselining the Delivery Program.		NIF_SPR_100
(i)	The Delivery Program must be printable as a Gantt chart on A3 sized paper with a minimum font size of 6.		NIF_SPR_101

2.1.3. Information Management

(a)	The Supplier must comply with the information management process requirements of AS/NZS ISO/IEC 15288 section 6.3.6.	NIF_SPR_103
(b)	The Supplier must comply with the information security requirements of AS ISO/IEC 27001.	NIF_SPR_104

(c)	The Supplier must upload and make available on the PDCS all submissions, information, data and records relating to the Supplier's Activities, including:	NIF_SPR_105
	(i) Delivery Phase Progress Report;	NIF_SPR_106
	(ii) Maintenance Phase Performance Report;	NIF_SPR_107
	(iii) Delivery Program;	NIF_SPR_108
	(iv) Technical Documents;	NIF_SPR_109
	(v) Project Plans;	NIF_SPR_110
	(vi) Technical Packages;	NIF_SPR_111
	(vii) a project risk register;	NIF_SPR_112
	(viii) a project hazard log;	NIF_SPR_113
	(ix) register of Submitted Documents as per paragraph 6.2 of Schedule B2 (Review Procedures);	NIF_SPR_114
	(x) correspondence, including:	NIF_SPR_115
	A. copies of notices given in accordance with this deed;	NIF_SPR_825
	B. copies of notices given to an Authority; and	NIF_SPR_827
	C. copies of notices and approvals received from an Authority; and	NIF_SPR_826
	(xi) Safety Management System documentation including:	NIF_SPR_116
	A. incident reporting and corrective action; and	NIF_SPR_829
	B. audit and review records.	NIF_SPR_830
(d)	All information and data uploaded onto the PDCS must be in both industry standard interchange format and the native file format.	NIF_SPR_117
(e)	The Supplier must arrange PDCS training with TfNSW's Representative.	NIF_SPR_118
(f)	Submission of, access to and any use of information and data on and via the PDCS must comply with the requirements of TfNSW standard 7TP-ST-140.	NIF_SPR_119

2.2. Authorisation and Accreditation

(a)	The Supplier must obtain and maintain AEO authorisation from the ASA for all of the engineering services defined in Appendix 08, as required for the Supplier's Activities.	NIF_SPR_121
(b)	The Supplier must obtain and maintain Accreditation for all the Supplier's Activities under the Rail Safety National Law.	NIF_SPR_122

2.2.1. Authorisation and Accreditation Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term an Authorisation and Accreditation Plan that describes, as a minimum:	NIF_SPR_124
	(i) how the Supplier will comply with the AEO requirements of the ASA during the Through Life Support Period;	NIF_SPR_125
	(ii) how the Supplier will comply with the requirements for Accreditation;	NIF_SPR_126
	(iii) how the Supplier will comply with the 'Major Projects Guidelines' published by ONRSR;	NIF_SPR_127
	(iv) how the Supplier will comply with other requirements of this deed, relating to Authorisations and Accreditation, including reporting requirements;	NIF_SPR_128
	(v) qualifications, experience and authorities for each Authorisation and Accreditation management role;	NIF_SPR_129
	(vi) how the Supplier will meet the obligations of this deed such that the Operator and NSW Rail Entities obtain the required variations to their existing Accreditations.	NIF_SPR_130
(b)	The Authorisation and Accreditation Plan must include a Safety Accreditation Strategy that describes, as a minimum:	NIF_SPR_132
	(i) how Accreditation will be obtained and maintained for all railway operations as applicable to the Supplier;	NIF_SPR_133
	(ii) the entity or entities that will hold Accreditation;	NIF_SPR_134
	(iii) the proposed staging and timing for obtaining Accreditation;	NIF_SPR_135
	(iv) the extent and potential source of any documentation, information, records and any other assistance the Supplier will require in connection with its Accreditation; and	NIF_SPR_136
	(v) the strategy and timing for liaison with ONRSR and other necessary stakeholders.	NIF_SPR_137
(c)	The Authorisation and Accreditation Plan must identify the specific entities that will produce and assure the engineering services required by Appendix 08, including:	NIF_SPR_138
	(i) when and how authorisation from the ASA for each of the engineering services will be obtained;	NIF_SPR_139
	(ii) how the integration between individual AEO's providing the engineering services required by this deed will be managed;	NIF_SPR_140
	(iii) how the required authorisation will maintained throughout the Through Life Support Period; and	NIF_SPR_141
	(iv) how the Supplier will ensure that all Subcontractors are competent to perform the activities subcontracted to them.	NIF_SPR_142
(d)	The Authorisation and Accreditation Plan must include an AEO authorisation strategy that describes, as a minimum:	NIF_SPR_143

(i)	the specific entities (including Supplier and Subcontractors) that will be accountable for using their systems and processes to produce and assure the required engineering services defined in Appendix 08;	NIF_SPR_144
(ii)	when and how authorisation from the ASA for each of the engineering services will be obtained;	NIF_SPR_145
(iii)	one authorisation is attained, the details of any conditions or actions associated with the AEO authorisation;	NIF_SPR_923
(iv)	how the engineering services will be assured in terms of engineering, quality, competency, configuration and systems engineering management, including the integration of processes across all AEO's;	NIF_SPR_146
(v)	how the Supplier will ensure that all Subcontractors are competent to perform the activities subcontracted to them and how the output of Subcontractors will be assured by an AEO;	NIF_SPR_147
(vi)	how the required authorisation will be maintained throughout the Through Life Support Period; and	NIF_SPR_148
(vii)	the strategy and timing for liaison with the Asset Standards Authority.	NIF_SPR_149

2.3. Quality Management

(a)	The Supplier must comply with the quality management process (section 6.2.5) and measurement process requirements (section 6.3.7) of AS/NZS ISO/IEC 15288.	NIF_SPR_151
(b)	The Supplier must comply with the requirements and guidance of AS/NZS ISO 9001.	NIF_SPR_152

2.3.1. Quality Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term a Quality Plan that describes, as a minimum:	NIF_SPR_154
(i)	how the Supplier will comply with the quality management requirements of AS/NZS ISO 9001;	NIF_SPR_155
(ii)	how the Supplier will comply with the relevant quality management requirements of this deed;	NIF_SPR_156
(iii)	qualifications, experience and authorities for each quality management role;	NIF_SPR_157
(iv)	processes for the quality management of Deliverables;	NIF_SPR_158
(v)	Supplier hold points and witness points;	NIF_SPR_159
(vi)	quality records used to control and assure the Supplier's Activities;	NIF_SPR_160

	(vii)	how inspection, witnessing, monitoring, recording and reporting will be undertaken; and	NIF_SPR_161
	(viii)	an audit schedule.	NIF_SPR_162

2.4. Risk Management

(a)		The Supplier must comply with:	NIF_SPR_164
	(i)	the project risk management requirements of 30-ST-164 Transport Enterprise Risk Management Standard, including the risk matrix;	NIF_SPR_165
	(ii)	the risk management process requirements of AS/NZS ISO/IEC 15288 section 6.3.4;	NIF_SPR_166
	(iii)	the principles and guidelines of AS/NZS/ISO31000, including Annex A (Attributes of Enhanced Risk Management); and	NIF_SPR_167
	(iv)	the relevant risk assessment techniques of ISO/IEC 31010.	NIF_SPR_168

2.4.1. Risk Management Plan

(a)		The Supplier must develop, submit, implement and maintain for the Contract Term a Risk Management Plan that describes, as a minimum:	NIF_SPR_170
	(i)	how the Supplier will comply with the principles and guidelines of AS/NZS/ISO31000, including Annex A (attributes of enhanced risk management);	NIF_SPR_171
	(ii)	how the Supplier will comply with the relevant risk management requirements of this deed;	NIF_SPR_172
	(iii)	how the Supplier will comply with the risk assessment techniques of ISO/IEC 31010;	NIF_SPR_173
	(iv)	qualifications, experience and authorities for each risk management role;	NIF_SPR_174
	(v)	how the Supplier will identify sources and types of risks including those related to section 2.4.2(b); and	NIF_SPR_175
	(vi)	how the Supplier will comply with the risk management reporting requirements of this deed.	NIF_SPR_176
(b)		The Risk Management Plan must describe the processes and timing for review and update of the project risk register required in accordance with section 2.4.2.	NIF_SPR_177

2.4.2. Project Risk Register

(a)		The Supplier must develop, submit, implement and maintain a project risk register for the Contract Term that evidences the:	NIF_SPR_179

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	(i)	identification of all risks as per section 5.4.2 of AS/NZS/ISO 31000;	NIF_SPR_180
	(ii)	analysis of all risks as per section 5.4.3 of AS/NZS/ISO 31000;	NIF_SPR_181
	(iii)	evaluation of all risks as per section 5.4.4 of AS/NZS/ISO 31000;	NIF_SPR_182
	(iv)	treatment of all risks as per section 5.5 of AS/NZS/ISO 31000; and	NIF_SPR_183
	(v)	traceability of treatment activities to evidence that treatments have been implemented.	NIF_SPR_184
(b)	The project risk register must, as a minimum, include risks relating to the following:		NIF_SPR_185
	(i)	safety;	NIF_SPR_186
	(ii)	compliance;	NIF_SPR_187
	(iii)	technical;	NIF_SPR_188
	(iv)	Delivery Schedule;	NIF_SPR_189
	(v)	financial;	NIF_SPR_190
	(vi)	Environment and sustainability;	NIF_SPR_191
	(vii)	interface;	NIF_SPR_192
	(viii)	operations;	NIF_SPR_193
	(ix)	maintenance;	NIF_SPR_194
	(x)	security;	NIF_SPR_195
	(xi)	reputation and community;	NIF_SPR_196
	(xii)	Subcontractors; and	NIF_SPR_197
	(xiii)	Approvals, Authorisation and Accreditation.	NIF_SPR_198
(c)	The project risk register may exclude safety risks if the project hazard log is managed separately from the project risk register.		NIF_SPR_199

2.5. Configuration Management

(a)	The Supplier must comply with the configuration management process requirements of section 6.3.5 of AS/NZS ISO/IEC 15288.	NIF_SPR_201
(b)	The Supplier must comply with the guidelines of AS ISO 10007.	NIF_SPR_202
(c)	The Supplier must not implement any configuration change that degrades the standard of Deliverables, including with regards to safety, reliability, availability, maintainability, sustainability, compliance, performance, aesthetics, customer amenity or crew amenity.	NIF_SPR_203

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2.5.1. Configuration Management Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term a Configuration Management Plan that describes, as a minimum:		NIF_SPR_205
	(i)	how the Supplier will comply with the guidelines of AS ISO 10007;	NIF_SPR_206
	(ii)	how the Supplier will comply with the relevant requirements of this deed relating to configuration management;	NIF_SPR_207
	(iii)	how the Supplier will align with T MU AM 04001 PL TfNSW Configuration Management Plan, including assurance gateways;	NIF_SPR_208
	(iv)	qualifications, experience and authorities for each configuration management role;	NIF_SPR_209
	(v)	how the Supplier will assess the impacts of configuration changes, including any impact assessment templates to be used;	NIF_SPR_210
	(vi)	how the Supplier will categorise and prioritise configuration changes, including the required timeframes for implementation;	NIF_SPR_211
	(vii)	how the Supplier will assure the configuration status of each Asset being offered for acceptance with respect to the relevant configuration baseline;	NIF_SPR_212
	(viii)	how the Supplier will determine what configuration audits are required;	NIF_SPR_213
	(ix)	how the Supplier will manage non-conforming configuration;	NIF_SPR_214
	(x)	how the Supplier will comply with the configuration management reporting requirements; and	NIF_SPR_215
	(xi)	identification of all items to be deposited into escrow in accordance with paragraph 3.2 of Schedule A3 (Intellectual Property).	NIF_SPR_924
(b)	The Configuration Management Plan must comply with the structure and content of AS ISO 10007 Annex A.		NIF_SPR_216

2.6. Work Health and Safety Management

(a)	The Supplier must implement a Safety Management System for the delivery of the Suppliers Activities.		NIF_SPR_218
(b)	The Safety Management System must comply with the requirements of:		NIF_SPR_219
	(i)	WHS Law;	NIF_SPR_220
	(ii)	Rail Safety National Law;	NIF_SPR_221
	(iii)	Rail Safety National Regulations; and	NIF_SPR_925
	(iv)	AS/NZS 4801, OHSAS 18001 or an equivalent standard.	NIF_SPR_222

(c)	The Supplier must provide all reasonable assistance requested by TfNSW and any NSW Rail Entities to enable compliance with their obligations under the WHS Law.	NIF_SPR_223
(d)	The Supplier must demonstrate the implementation of a positive safety culture through the Project Plans and by implementing programs to support a positive safety culture for all of the Supplier's Activities.	NIF_SPR_224

2.6.1. Safety Management Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term a Safety Management Plan that describes, as a minimum:	NIF_SPR_226
(i)	how the Supplier will comply with the safety requirements of the WHS Law;	NIF_SPR_227
(ii)	how the Supplier will comply with the safety requirements of the Rail Safety National Law;	NIF_SPR_228
(iii)	how the Supplier will comply with the safety requirements of the Rail Safety National Regulations;	NIF_SPR_926
(iv)	how the Supplier will comply with AS/NZS 4801, OHSAS 18001 or an equivalent standard;	NIF_SPR_229
(v)	how the Supplier will comply with the relevant safety management requirements of this deed;	NIF_SPR_230
(vi)	qualifications, experience and authorities for each work health and safety management role;	NIF_SPR_231
(vii)	how the Safety Management System will be developed and maintained; and	NIF_SPR_232
(viii)	how the Supplier will manage accidents and incidents.	NIF_SPR_233

2.7. Incident and Security Management

(a)	The Supplier must manage security preparedness and incident response capability throughout all of the Supplier's Activities.	NIF_SPR_235

2.7.1. Incident and Security Management Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term an Incident and Security Management Plan that describes, as a minimum:	NIF_SPR_237
(i)	how the Supplier will comply with the security and incident management requirements of the Rail Safety National Law;	NIF_SPR_238

(ii)	how the Supplier will comply with the security and incident management requirements of the Rail Safety National Regulations;	NIF_SPR_927
(iii)	how the Supplier will comply with the Australian Government National Counter-Terrorism Plan as published by the Australia-New Zealand National Counter-Terrorism Committee;	NIF_SPR_239
(iv)	how the Supplier will comply with the *State Emergency and Rescue Management Act 1989* (NSW);	NIF_SPR_240
(v)	how the Supplier will comply with the NSW Emergency Management Plan;	NIF_SPR_241
(vi)	qualifications, experience and authorities for each incident and security management role;	NIF_SPR_242
(vii)	how the Supplier will integrate with the Australian Government National Terrorism Public Alert System levels at each Provided Facility and the NIF Stabling Yards, including:	NIF_SPR_243
	A. security measures and arrangements for each of the levels; and	NIF_SPR_831
	B. procedures to communicate and respond to changes in each of the levels.	NIF_SPR_832
(viii)	incident preparedness identification and management measures including:	NIF_SPR_244
	A. policies and procedures to be used by Supplier's Personnel;	NIF_SPR_833
	B. equipment type and location;	NIF_SPR_835
	C. signage; and	NIF_SPR_836
	D. evaluating, testing and auditing of preparedness.	NIF_SPR_834
(ix)	procedures for notifying TfNSW and relevant Authorities, including the police, of an incident, including a security breach or terrorist attack; and	NIF_SPR_245
(x)	the incident and security management framework and protocols for the Provided Facilities and NIF Stabling Yards, including how Other Contractors, Subcontractors, staff and visitors to the Provided Facilities and NIF Stabling Yards will be managed.	NIF_SPR_916
(b)	The Incident and Security Management Plan must also describe as applicable to the Rolling Stock:	NIF_SPR_246
(i)	how authorisation will be managed to enable access by the Supplier's Personnel, TfNSW Personnel, and Operator Personnel to restricted items, including:	NIF_SPR_247
	A. Train CCTV data (local and remote access);	NIF_SPR_837
	B. Train event recorder data (local and remote access); and	NIF_SPR_839

	C.	the Train juridical recorder unit.	NIF_SPR_838
(ii)		the processes used to ensure the security and authenticity of any data retrieved and/or retained from the Assets to enable chain-of-custody of evidence to be demonstrated.	NIF_SPR_248

2.8. Systems Engineering Management

(a)	The Supplier must comply with the technical process requirements of AS/NZS ISO/IEC 15288.	NIF_SPR_250
(b)	The Supplier must comply with T MU AM 06006 ST Systems Engineering Standard.	NIF_SPR_251

2.8.1. Systems Engineering Management Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term a Systems Engineering Management Plan that describes, as a minimum:		NIF_SPR_253
	(i)	how the Supplier will comply with the technical process requirements of AS/NZS ISO/IEC 15288, including justification for any tailoring;	NIF_SPR_254
	(ii)	how the Supplier will comply with T MU AM 06006 ST;	NIF_SPR_255
	(iii)	how the Supplier will comply with the software development processes of AS/NZS ISO/IEC 12207;	NIF_SPR_256
	(iv)	qualifications, experience and authorities for each engineering management role;	NIF_SPR_257
	(v)	how the Supplier will ensure that all Assets are fit for purpose;	NIF_SPR_258
	(vi)	how the Supplier will manage the system integration activities, including identification of all key system interfaces for each Asset;	NIF_SPR_259
	(vii)	how the Supplier will integrate AS /NZS ISO / IEC 15288 with other referenced lifecycle standards such as AS/NZS ISO/IEC 12207 for software and EN 50126-1 for RAMS;	NIF_SPR_260
	(viii)	how the Supplier will produce the deliverables described in Appendix 07; and	NIF_SPR_261
	(ix)	how the Supplier will comply with the technical submission requirements of section 3.	NIF_SPR_262

2.8.2. Design Management

(a)	The Systems Engineering Management Plan must address design management activities including:	NIF_SPR_264

(i)	how the Supplier's Activities will be logically decomposed into self-contained Technical Packages that:	NIF_SPR_265
	A. can be reasonably reviewed by TfNSW as stand-alone Technical Packages;	NIF_SPR_840
	B. can be reasonably reviewed by TfNSW within the relevant Review Periods for the Technical Documents that are comprised in each Technical Package;	NIF_SPR_841
	C. consider boundaries such as key interfaces, Significant Contractor scopes, User Groups, and technical disciplines; and	NIF_SPR_842
	D. address all Assets, including all Tools.	NIF_SPR_843
(ii)	the ordering and timing of Technical Package submissions for each Review, considering interrelationships and dependencies between packages, and concurrent TfNSW review workload;	NIF_SPR_266
(iii)	the integration strategy that will apply to Technical Packages;	NIF_SPR_267
(iv)	how the Technical Packages aggregate to cover all technical aspects of the Supplier's Activities;	NIF_SPR_268
(v)	how the System Definition, Preliminary Design and Detailed Design will be created as a consistent and logical extension of the Concept Design;	NIF_SPR_269
(vi)	technical assurance and certification processes, including judgement of significance and other risk based decision processes for ensuring each Technical Package achieves all of its allocated requirements;	NIF_SPR_270
(vii)	criteria for deciding the type of Technical Documents that comprise each Technical Package;	NIF_SPR_271
(viii)	the list of Technical Documents that will comprise each Technical Package;	NIF_SPR_272
(ix)	processes and methodologies for the preparation and submission of each Technical Package;	NIF_SPR_273
(x)	how the design will be optimised in the event of subjective requirements, such as "maximise" or "minimise", including how criteria for trade-off studies will be developed;	NIF_SPR_274
(xi)	how Mock-Ups and prototypes, including those required by Appendix 02, will be used during the design;	NIF_SPR_275
(xii)	how product obsolescence will be considered and addressed by the design;	NIF_SPR_276
(xiii)	how the required design inputs will be determined for Technical Packages, including any information required from or to be obtained byTfNSW; and	NIF_SPR_277

(xiv)	how the Design Development Requirements and Review Procedures will be implemented, including how engineering changes will be managed during the Maintenance Phase.	NIF_SPR_278

2.8.3. Human Factors Integration

(a)	The Systems Engineering Management Plan must address human factors integration activities, including how the Supplier will comply with:	NIF_SPR_280
(i)	T HR HF 00001 ST - Human Factors Integration – Rolling Stock;	NIF_SPR_281
(ii)	T MU HF 00001 ST - Human Factors Integration – General Requirements; and	NIF_SPR_282
(iii)	T MU HF 00001 GU - AEO Guide to Human Factors Integration.	NIF_SPR_283

2.8.4. Requirements Management

(a)	The Supplier must manage 'requirements' in IBM® Rational® Dynamic Object Oriented Requirement System (DOORS®) database (V9 or later).	NIF_SPR_285
(b)	The DOORS® database must capture and manage 'requirements' including:	NIF_SPR_286
(i)	requirements stated within the SPR and its Appendices;	NIF_SPR_287
(ii)	commitments made within the Concept Design;	NIF_SPR_288
(iii)	commitments made within the Project Plans;	NIF_SPR_289
(iv)	requirements stated within referenced standards.	NIF_SPR_290
(c)	The DOORS® database must capture and manage 'derived requirements' including:	NIF_SPR_291
(i)	requirements stated in Supplier and Subcontractor specifications; and	NIF_SPR_292
(ii)	requirements introduced to mitigate and treat risks.	NIF_SPR_293
(d)	The DOORS® database must comply with schema standard T MU AM 06004 ST.	NIF_SPR_294
(e)	The DOORS® database must capture and manage bi-directional traceability between each 'requirement' and:	NIF_SPR_295
(i)	'derived requirements';	NIF_SPR_296
(ii)	architectural design (including functions, interfaces and components);	NIF_SPR_297
(iii)	Technical Documents;	NIF_SPR_298
(iv)	Verification Procedures;	NIF_SPR_299
(v)	Verification Reports; and	NIF_SPR_300

	(vi)	risks that are mitigated or treated by the 'requirement'.	NIF_SPR_301
(f)		The Supplier must provide TfNSW with read only online access to the Supplier's DOORS® Database and submit the DOORS® ~~database~~Database in *.~~ReqIF~~ReqIF or *.RIF format to TfNSW ~~with each Technical Package, and~~ for Review at any ~~other~~ time upon request by TfNSW.	NIF_SPR_302
(g)		The Systems Engineering Management Plan must address requirements management activities including:	NIF_SPR_303
	(i)	the process for allocating functional and non-functional requirements to Technical Packages;	NIF_SPR_304
	(ii)	the process for engaging stakeholders in requirements development;	NIF_SPR_305
	(iii)	the process for integrating and coordinating requirements management activities between the Supplier and its Subcontractors, including the use of any tools and templates;	NIF_SPR_306
	(iv)	the process for managing requirements that are contained within the Concept Design and referenced standards; and	NIF_SPR_307
	(v)	the processes for identifying and resolving requirements quality issues.	NIF_SPR_308

2.9. Reliability, Availability, Maintainability

(a)		The Supplier must comply with the reliability, availability and maintainability (RAM) requirements of EN 50126-1 for all Assets.	NIF_SPR_310
(b)		The Supplier must comply with the guidelines of CLC/TR EN 50126-3 for the Rolling Stock.	NIF_SPR_311

2.9.1. RAM Management Plan

(a)		The Supplier must develop, submit, implement and maintain for the Contract Term a RAM Management Plan for all Assets that describes, as a minimum:	NIF_SPR_313
	(i)	how the Supplier will comply with the RAM Programme requirements of EN 50126-1, including the RAM Programme outline guidance provided in EN 50126-1 Annex B;	NIF_SPR_314
	(ii)	how the Supplier will comply with the guidelines of CLC/TR EN 50126-3;	NIF_SPR_315
	(iii)	how the Supplier will comply with the relevant requirements of this deed relating to RAM management;	NIF_SPR_316
	(iv)	qualifications, experience and authorities for each RAM management role;	NIF_SPR_317

(v)	how the Supplier will apportion RAM requirements for all Assets and Asset sub-systems;	NIF_SPR_318
(vi)	the RAM assurance processes that will be used throughout the Design Life of the Assets;	NIF_SPR_319
(vii)	which of the tools listed in EN 50126-1 Annex B, and any other tools, that will be used for RAM tasks during each lifecycle phase and the corresponding outputs and deliverables; and	NIF_SPR_320
(viii)	how the EN 50126-1 lifecycle phases and processes will be integrated with the Systems Engineering Management Plan phases and processes.	NIF_SPR_321

2.10. System Safety Assurance

(a)	The Supplier must comply with the safety requirements of EN 50126-1 for all Assets.	NIF_SPR_323
(b)	The Supplier must comply with TS 20001 System Safety Standard for New or Altered Assets.	NIF_SPR_324
(c)	The Supplier must assess risk against the risk criteria defined in TfNSW Enterprise Management Standard 30-ST-164.	NIF_SPR_325
(d)	The Supplier must ensure that any hazards that are to be transferred to other entities, including NSW Rail Entities, are assessed in accordance with the risk assessment criteria and risk matrix of the respective entities.	NIF_SPR_326
(e)	The Supplier must comply with the requirements of EN 50128 for all software that may impact on a safety function.	NIF_SPR_327
(f)	The Supplier must obtain TfNSW's written approval of the format of the project hazard log.	NIF_SPR_957

2.10.1. System Safety Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term a System Safety Plan for all Assets that describes, as a minimum:	NIF_SPR_329
(i)	how the Supplier will comply with the requirements of TS 20001;	NIF_SPR_330
(ii)	how the Supplier will comply with the requirements of EN 50126-1;	NIF_SPR_331
(iii)	how the Supplier will comply with the guidelines of CLC/TR EN 50126-2;	NIF_SPR_332
(iv)	how the Supplier will comply with the relevant requirements of EN 50128;	NIF_SPR_333
(v)	how the Supplier will comply with the relevant requirements of EN 50129;	NIF_SPR_334

(vi)	how the Supplier will comply with the relevant requirements of this deed relating to the safety of systems for all Assets;	NIF_SPR_335
(vii)	qualifications, experience and authorities for each system safety management role;	NIF_SPR_336
(viii)	how the Supplier will do everything so far as is reasonably practicable, under the Rail Safety National Law, to ensure the safety of the Deliverables;	NIF_SPR_337
(ix)	how the project hazard log complies with the relevant requirements of the Rail Safety National Law and TS 20001;	NIF_SPR_338
(x)	the integration between the System Safety Plan and other Project Plans including the Systems Engineering Management Plan and the RAM Management Plan;	NIF_SPR_339
(xi)	how the Supplier will use the RISSB hazard register as an input to the hazard identification process; and	NIF_SPR_913
(xii)	how the Supplier will engage with the Operator and other NSW Rail Entities to identify hazards applicable to the Suppliers Activities.	NIF_SPR_914

2.10.2. Independent Safety Assessment

(a)	TfNSW will appoint an ISA to carry out a professional critical review of the safety assurance implementation and delivery for the project in accordance with ASA Standard TS 20001.	NIF_SPR_341
(b)	The Supplier must cooperate with the ISA in the execution of the assessment process, including providing reasonable access to documentation and Supplier's Personnel.	NIF_SPR_342
(c)	TfNSW will provide to the Supplier all relevant documentation prepared by the ISA.	NIF_SPR_343
(d)	The Supplier must review and address any issues identified by the ISA in a timely manner.	NIF_SPR_344
(e)	The Supplier must engage any other independent assessor or certifier required for assurance activities not covered by TS 20001 e.g. SIL assessor for EN50128/EN50129 activities.	NIF_SPR_345

2.11. Electromagnetic Compatibility

(a)	The Supplier must comply with the relevant listed standards under section 162 of the *Radiocommunications Act 1992* (Cth) for all Assets and Supplier's Activities.	NIF_SPR_347

2.11.1. EMC Management Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term an EMC Management Plan that describes, as a minimum:		NIF_SPR_349
	(i)	how the Supplier will comply with the relevant listed standards under section 162 of the *Radiocommunications Act 1992* (Cth);	NIF_SPR_350
	(ii)	how the Supplier will comply with the requirements of EN 50121-1;	NIF_SPR_351
	(iii)	how the Supplier will comply with the requirements of EN 50121-3;	NIF_SPR_352
	(iv)	how the Supplier will comply with the requirements of T HR SC 00006 ST;	NIF_SPR_353
	(v)	how the Supplier will comply with the relevant requirements of this deed relating to EMC;	NIF_SPR_354
	(vi)	qualifications, experience and authorities for each EMC management role;	NIF_SPR_355
	(vii)	the scope of EMC related activities for each of the Assets and the plan for performing these activities;	NIF_SPR_356
	(viii)	the scope and objectives of the EMC analysis and the EMC case;	NIF_SPR_357
	(ix)	the scope and objectives of the power supply system compatibility analysis report and the power supply system compatibility case as per EN 50388 Section 10.3; and	NIF_SPR_358
	(x)	the scope and objectives of the track detection systems compatibility analysis report and the track detection systems compatibility case as per EN 50238 Section 4.9.	NIF_SPR_359

2.12. Manufacturing and Procurement

(a)	The Supplier must comply with the implementation and integration process requirements of AS/NZS ISO/IEC 15288, as relevant to manufacturing and procurement of the Assets.		NIF_SPR_361
(b)	The Supplier must deliver all Assets in accordance with the requirements of this deed and the Delivery Program.		NIF_SPR_362

2.12.1. Manufacturing and Procurement Plan

(a)	The Supplier must develop, submit, implement and maintain for the Delivery Phase a Manufacturing and Procurement Plan for all Assets provided by the Delivery Activities that describes, as a minimum:		NIF_SPR_364
	(i)	how the Supplier will comply with the Implementation Process requirements (section 6.4.4) and the Integration Process requirements (section 6.4.5) of AS/NZS ISO/IEC 15288;	NIF_SPR_365

	(ii)	how the Supplier will comply with the relevant requirements of this deed relating to manufacturing and procurement;	NIF_SPR_366
	(iii)	qualifications, experience and authorities for each key manufacturing and procurement role;	NIF_SPR_367
	(iv)	the location(s) where manufacturing activities will be carried out for each Asset;	NIF_SPR_368
	(v)	the transportation and delivery strategy for each Asset;	NIF_SPR_369
	(vi)	how the Supplier will comply with customs and quarantine requirements of each jurisdiction; and	NIF_SPR_370
	(vii)	the manufacturing and procurement controls to provide visibility of progress towards delivery of each Asset.	NIF_SPR_371
(b)	The Manufacturing and Procurement Plan must also describe the following with respect to manufacturing and delivery of the Rolling Stock:		NIF_SPR_372
	(i)	overall manufacturing strategy including carbody assembly, commissioning, transportation and delivery;	NIF_SPR_373
	(ii)	details of the supply chain for all Rolling Stock systems including:	NIF_SPR_374
		A. key Subcontractors, including Significant Contractors;	NIF_SPR_844
		B. manufacturing location(s);	NIF_SPR_845
		C. transportation strategy; and	NIF_SPR_846
		D. assembly and commissioning strategy.	NIF_SPR_847
	(iii)	details of each manufacturing location, including as a minimum:	NIF_SPR_375
		A. scope for each manufacturing location;	NIF_SPR_848
		B. the known and predicted workload and manufacturing capacities;	NIF_SPR_849
		C. previous manufacturing experience and competence related to manufacturing scope; and	NIF_SPR_850
		D. if a new manufacturing location or scope, the plans for establishing manufacturing skills and processes.	NIF_SPR_851

2.13. Verification Management

(a)	The Supplier must develop, submit, implement and maintain the following in accordance with the requirements of this section:		NIF_SPR_377
	(i)	Verification Plan;	NIF_SPR_378
	(ii)	Verification Program;	NIF_SPR_379
	(iii)	Verification Procedures; and	NIF_SPR_380
	(iv)	Verification Reports.	NIF_SPR_381

(b) The Supplier must perform Verification Activities using Confirmed Verification Procedures. NIF_SPR_382

2.13.1. Verification Plan

(a) The Supplier must develop, submit, implement and maintain for the Contract Term a Verification Plan that describes, as a minimum: NIF_SPR_384

(i) how the Supplier will comply with the Rolling Stock testing requirements of the Asset Standards Authority suite of standards and EN50215; NIF_SPR_385

(ii) how the Supplier will comply with the relevant requirements of this deed; NIF_SPR_386

(iii) qualifications, experience and authorities for each verification management role; NIF_SPR_387

(iv) how the Supplier will use Verification Procedures to verify that each Asset complies with all applicable requirements of this deed and all applicable derived requirements, such as RAM, system safety, human factors and environmental requirements; NIF_SPR_388

(v) the verification processes that will be used across each lifecycle phase; NIF_SPR_389

(vi) a verification matrix for each Asset, with each matrix including: NIF_SPR_390

A. the verification method proposed for each applicable specific and derived requirement under this deed (e.g. "test", "inspection", "similarity", "analysis", "simulation", etc.); NIF_SPR_852

B. the traceability from each applicable specific and derived requirement to the Verification Procedure(s) proposed to verify compliance with the requirement. NIF_SPR_853

(vii) how the Supplier will obtain the required Network Access Rights to facilitate the Verification Program; NIF_SPR_391

(viii) how the Supplier will verify compliance with the Detailed Design; NIF_SPR_392

(ix) the qualification (type) testing regime that will be applied for each Asset, including first article inspections, factory-based testing, integration testing, installation testing, static and dynamic testing, performance, endurance, environmental, reliability testing and network interface testing; NIF_SPR_393

(x) the routine testing regime that will be conducted to verify each Asset conforms to the design standard proved in the qualification (type) tests; and NIF_SPR_394

(xi) how the Supplier will determine re-testing and/or regression testing scope associated with modifications to the Assets through the Delivery Phase and Maintenance Phase. NIF_SPR_395

2.13.2. Verification Program

(a)	The Supplier must develop, submit, implement and maintain a Verification Program that describes, as a minimum:		NIF_SPR_397
	(i)	the name, level and type of each Verification Activity;	NIF_SPR_398
	(ii)	the expected duration of each Verification Activity;	NIF_SPR_399
	(iii)	the sequence for conducting Verification Activities;	NIF_SPR_400
	(iv)	the location for conducting each Verification Activity, including any required Network Access Rights;	NIF_SPR_401
	(v)	the Asset(s) being assessed by each Verification Activity;	NIF_SPR_402
	(vi)	responsibilities for conducting the Verification Activities; and	NIF_SPR_403
	(vii)	any contingency.	NIF_SPR_404

2.13.3. Verification Procedure

(a)	All Verification Procedures must include the following as a minimum:		NIF_SPR_406
	(i)	the objective of the Verification Activity and the configuration item(s) being verified;	NIF_SPR_407
	(ii)	the level of Verification Activity (e.g. factory, integration, Car, Unit, etc.);	NIF_SPR_408
	(iii)	the type of Verification Activity (e.g. "test", "inspection", "similarity", "analysis", "simulation", etc.);	NIF_SPR_409
	(iv)	the specific and derived requirements under this deed being verified including traceability to the Verification Activity steps that verify the requirement;	NIF_SPR_410
	(v)	any referenced documents relevant to the conduct of the Verification Activity;	NIF_SPR_411
	(vi)	any preconditions, including relevant environmental conditions and associated stabilisation, to be met prior to commencement of the Verification Activity;	NIF_SPR_412
	(vii)	any constraints to be applied during the Verification Activity;	NIF_SPR_413
	(viii)	any test equipment required, operating procedures and interfacing requirements;	NIF_SPR_414
	(ix)	the Verification Activity personnel, competency and supervision requirements;	NIF_SPR_415
	(x)	the identification of hazards associated with conducting the Verification Activity including any safety controls in place to mitigate the risk;	NIF_SPR_416

(xi)	the procedure and sequence of verification including instructions for taking any measurements;	NIF_SPR_417
(xii)	the objective pass criteria for each Verification Activity step; and	NIF_SPR_418
(xiii)	any instructions or actions in the event of Verification Activity step failures.	NIF_SPR_419

2.13.4. Verification Report

(a)	All Verification Reports must include the following as a minimum:		NIF_SPR_421
	(i)	unambiguous identification of the Verification Procedure conducted;	NIF_SPR_422
	(ii)	unambiguous identification of the item(s) verified in the Verification Report;	NIF_SPR_423
	(iii)	confirmation that any required pre-conditions were satisfied;	NIF_SPR_424
	(iv)	place of Verification Activity;	NIF_SPR_425
	(v)	date, time and duration of the Verification Activity;	NIF_SPR_426
	(vi)	name and role of the person(s) carrying out and supervising the Verification Activity including signatures;	NIF_SPR_427
	(vii)	evidence of calibration for any test equipment used in the Verification Activity;	NIF_SPR_428
	(viii)	location and size of the batch from which any samples were taken, including any reference to the sampling plan or procedures used;	NIF_SPR_429
	(ix)	the pass / fail result achieved for each specific and derived requirement under this deed verified by the Verification Procedure;	NIF_SPR_430
	(x)	any deviations from, additions to or exclusions from the Verification method with justification;	NIF_SPR_431
	(xi)	actions taken or proposed if any Verification Activity steps failed;	NIF_SPR_432
	(xii)	marked-up Verification Procedure and any supporting data in raw and processed format; and	NIF_SPR_433
	(xiii)	signature of an authorised representative of the Supplier's organisation who is accountable for technical authority under the AEO accreditation confirming the Verification Report is an accurate and truthful record of the Verification Activity conducted.	NIF_SPR_434

2.14. Operational Readiness

(a)	The Supplier must plan and prepare all activities required to achieve the requirements of the Delivery Program.	NIF_SPR_436
(b)	The Supplier must manage the transition from Delivery Phase to Maintenance Phase.	NIF_SPR_437

2.14.1. Operational Readiness Plan

(a)	The Supplier must develop, submit, implement and maintain for the Delivery Phase an Operational Readiness Plan that describes:		NIF_SPR_439
	(i)	how the Supplier will comply with the Transition Process requirements as per section 6.4.7 of AS/NZS ISO/IEC 15288;	NIF_SPR_440
	(ii)	how the Supplier will comply with the relevant operational readiness requirements of this deed;	NIF_SPR_441
	(iii)	qualifications, experience and authorities for each operational readiness management role;	NIF_SPR_442
	(iv)	how the requirements of Schedule D2 (the Acceptance Criteria) will be achieved;	NIF_SPR_443
	(v)	how the Supplier will comply with the reporting requirements of this deed; and	NIF_SPR_444
	(vi)	how all Assets and relevant Supplier's Activities will be transferred and transitioned from the Delivery Phase to the Maintenance Phase.	NIF_SPR_445

2.14.2. Operational Readiness Training

(a)	The Supplier must submit to TfNSW's Representative for Review a training needs analysis that identifies the training needs required for the operation and maintenance of each Asset.		NIF_SPR_447
(b)	The Supplier must develop training packages that address the training needs identified in the training needs analysis, and as a minimum must:		NIF_SPR_448
	(i)	comply with the Australian vocational education and training (VET) Quality Framework;	NIF_SPR_449
	(ii)	utilise each Simulator as far as is practicable;	NIF_SPR_450
	(iii)	include assessment materials; and	NIF_SPR_451
	(iv)	facilitate safe, effective and efficient operation and maintenance of the Assets.	NIF_SPR_452
(c)	The Supplier must develop, submit, implement and maintain manuals as part of the training packages including:		NIF_SPR_453
	(i)	an Operations and Maintenance Manual for each Asset other than the Rolling Stock;	NIF_SPR_454

	(ii)	a Train Maintenance Manual for the Rolling Stock;	NIF_SPR_455
	(iii)	a Train Operating Manual for the Rolling Stock; and	NIF_SPR_456
	(iv)	a Train Presentation Manual for the Rolling Stock.	NIF_SPR_457
(d)	Each manual must be self-contained as far as practicable with all required processes and documentation to enable TfNSW's Personnel and the Supplier's Personnel to operate and/or maintain the Asset.		NIF_SPR_458
(e)	Each Operations and Maintenance Manual for an Asset must include:		NIF_SPR_459
	(i)	a description of the Asset and its' intended use;	NIF_SPR_460
	(ii)	safety precautions and identification of hazards and risks;	NIF_SPR_461
	(iii)	instructions for the operation of the Asset which must address:	NIF_SPR_462
		A. normal operations;	NIF_SPR_928
		B. task safety analyses; and	NIF_SPR_929
		C. fault finding and troubleshooting.	NIF_SPR_854
	(iv)	instructions for the maintenance of the Asset which must address:	NIF_SPR_463
		A. fault finding and troubleshooting;	NIF_SPR_855
		B. corrective and planned maintenance;	NIF_SPR_856
		C. installation, commissioning and testing;	NIF_SPR_857
		D. a schedule of Spares and Consumables to be used; and	NIF_SPR_859
		E. a schedule of Tools and equipment to be used.	NIF_SPR_858
(f)	The Train Operating Manual must address:		NIF_SPR_464
	(i)	normal operations;	NIF_SPR_465
	(ii)	degraded operations; and	NIF_SPR_466
	(iii)	response to accidents and incidents.	NIF_SPR_467
(g)	The Train Presentation Manual must address:		NIF_SPR_468
	(i)	the requirements of the NSW Trains Train Presentation Service Standards - New Intercity Fleet;	NIF_SPR_930
	(ii)	scope of cleaning activities and associated periodicities, including turnaround cleans, daily cleans, heavy cleans;	NIF_SPR_469
	(iii)	scope of vandalism repair and graffiti removal activities; and	NIF_SPR_470
	(iv)	approved cleaning materials and procedures.	NIF_SPR_471
(h)	The Supplier must obtain TfNSW's approval of the format, structure and scope of all training packages, including training aids, manuals and assessment methods.		NIF_SPR_472
(i)	The Supplier must grant the right to TfNSW to reproduce content provided in the training packages for its own training purposes.		NIF_SPR_473
(j)	The Supplier must conduct training:		NIF_SPR_474

TfNSW

(i) in the quantity and for those TfNSW nominated personnel provided in Table 1; NIF_SPR_475

(ii) at location(s)agreed with TfNSW; and NIF_SPR_476

(iii) in accordance with the Confirmed training packages. NIF_SPR_477

(k) The Supplier must provide all necessary training materials at each train-the-trainer session. NIF_SPR_478

Table 1: Train-the-Trainer Personnel

Trainee	Topics	No of Trainees / Courses
Train Crew trainers	Operation of the Trains in all expected configurations and conditions	20 trainees
Customer attendant trainers	Customer service attendant operation of the Trains in all expected configurations and conditions	10 trainees
Simulator trainers	Operation of the Simulators in all expected configurations and conditions	8 trainees
Mechanical control	Operation of the Trains in all expected configurations and conditions	1 course of up to 8 trainees
Station personnel trainers	Right of way sequence and separation and amalgamation procedures in all expected configurations and conditions	1 course of up to 8 trainees
Security personnel trainers	Use of tools and utilities to access information such as CCTV, event recorder and juridical recorder data	1 course of up to 8 trainees
Train presentation trainers	Presentation, decanting and provisioning in all expected configurations and conditions	2 courses
TfNSW emergency train recovery unit	Emergency recovery in all expected configurations and	10 trainees

TfNSW

	conditions, including use of the pony bogie.	
Emergency services personnel (including Police, Ambulance, Fire services and SES)	Emergency isolation, access, and egress in all expected configurations and conditions	10 trainees
TfNSW contract management personnel	Use of tools and utilities to access information such as CCTV, event recorder and juridical recorder data as well as the AIS, Performance Monitoring System	6 trainees

2.15. Asset Management

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term an Asset Management System in accordance with:		NIF_SPR_480
	(i)	the relevant requirements of this deed;	NIF_SPR_481
	(ii)	the requirements of AS ISO 55001; and	NIF_SPR_482
	(iii)	the guidelines of AS ISO 55002.	NIF_SPR_483

2.15.1. Asset Management Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term an Asset Management Plan that describes, as a minimum:		NIF_SPR_486
	(i)	how the Supplier will comply with the requirements of AS ISO 55001;	NIF_SPR_487
	(ii)	how the Supplier will comply with the guidelines of AS ISO 55002;	NIF_SPR_488
	(iii)	how the Supplier will comply with the relevant requirements of this deed;	NIF_SPR_489
	(iv)	qualifications, experience and authorities for each asset management role;	NIF_SPR_490
	(v)	the Asset Management Policy in accordance with the policy requirements of AS ISO 55001;	NIF_SPR_491
	(vi)	the Asset Management Strategy, including as a minimum:	NIF_SPR_492
		A. the overall scope of the Asset Management System;	NIF_SPR_493

	B.	the asset management objectives, including performance targets for all Assets;	NIF_SPR_494
	C.	the approach to Asset management activities in respect of planned maintenance, corrective maintenance, overhaul and cleaning;	NIF_SPR_495
	D.	the use of remote condition monitoring to manage Asset management activities;	NIF_SPR_496
	E.	the strategy for overhaul/heavy maintenance activities, including where significant maintenance will be sub-contracted;	NIF_SPR_497
	F.	the strategy for off-Train corrective maintenance activities, including on-site versus off-site investigation and repair;	NIF_SPR_498
	G.	the approach to achieving lowest whole of life costs for all Assets, while meeting business and operational requirements;	NIF_SPR_499
	H.	how continuous improvement will be applied to Asset management practices and processes;	NIF_SPR_500
	I.	the strategy for maintaining the Assets to modern standards;	NIF_SPR_501
	J.	how the Asset management activities will comply with the Environment and Sustainability Management Plan; and	NIF_SPR_502
	K.	how the Asset Information System and Performance Monitoring System will be integrated with the requirements of the Asset Management System.	NIF_SPR_503
(vii)		the technical maintenance plan for each Asset, including when preventative maintenance (including provisioning and decanting) and overhaul activities will be performed throughout the Design Life of the Assets;	NIF_SPR_504
(viii)		the processes and methods for all Asset management activities required by the technical maintenance plan detailing, as a minimum:	NIF_SPR_505
	A.	the procedure for performing the activity;	NIF_SPR_506
	B.	the Maintenance Location(s) or Provided Facility required to perform each activity;	NIF_SPR_507
	C.	resources, including Supplier's Personnel, equipment, Tools, Spares and Consumables required for performing each activity; and	NIF_SPR_508
	D.	hazards and controls associated with each activity.	NIF_SPR_509
(ix)		how each Maintenance Works Programs will be developed and implemented as required by this deed;	NIF_SPR_510

	(x)	the scope and timing of the Asset Condition Assessments, including how they will be conducted, documented and reported;	NIF_SPR_511
	(xi)	how the Performance Operating Standards and other corrective maintenance activities will be managed, including a description of the utilisation of mobile maintenance teams and NIF Stabling Yards;	NIF_SPR_512
	(xii)	how obsolescence will be monitored, managed and mitigated, including how the Supplier will comply with the obsolescence management requirements of Schedule D6 'Through Life Support' throughout the Through Life Support Period;	NIF_SPR_513
	(xiii)	how the Asset Management Plan will be adapted/scalable to reflect changes in utilisation of the Assets; and	NIF_SPR_911
	(xiv)	how the Supplier will comply with the reporting requirements of this deed.	NIF_SPR_514
(b)	The Asset Management Plan must describe the Spares and Consumables Strategy including, as a minimum:		NIF_SPR_515
	(i)	how a sufficient inventory of Spares and Consumables will be maintained to support the Maintenance Services;	NIF_SPR_516
	(ii)	plans for replenishing Spares and Consumables and repair strategies;	NIF_SPR_517
	(iii)	plans for storage of Spares and Consumables including off-site storage;	NIF_SPR_518
	(iv)	critical and long lead time components that will be held to ensure that Units are returned to service in less than one month upon receiving direction to undertake repair activities for the following Operational Damage scenarios (and any other scenarios of equivalent severity):	NIF_SPR_519
		A. T MU RS 01000 ST collision scenarios (excluding car body structural damage);	NIF_SPR_520
		B. buffer stop impacts up to 25km/h; and	NIF_SPR_521
		C. low speed derailment of a single Car (all bogies).	NIF_SPR_522
(c)	The Asset Management Plan must describe how the Supplier will comply with the Asset Information System requirements of section 2.16.		NIF_SPR_523
(d)	The Asset Management Plan must describe how the Supplier will comply with the Performance Monitoring System requirements of Schedule E2 (the Performance Regime).		NIF_SPR_524
(e)	The Asset Management Plan must describe how the Supplier will ensure the cleanliness of the Assets including:		NIF_SPR_931
	(i)	how the Supplier will develop the Train Presentation Manual; and	NIF_SPR_932
	(ii)	how it will comply with the cleaning requirements of Appendix 05.	NIF_SPR_933

(f)	The Asset Management Plan must describe how the Supplier with comply with the help desk requirements of Appendix 05, including:		NIF_SPR_525
	(i)	the physical location of the help desk function;	NIF_SPR_526
	(ii)	the interfaces between the help desk, the Assets and the Asset Information System; and	NIF_SPR_527
	(iii)	the interfaces between the help desk, the Operator and TfNSW.	NIF_SPR_528

2.15.2. Maintenance Works Program

(a)	Each Maintenance Works Program must:		NIF_SPR_951
	(i)	be consistent with the Asset Management Plan;	NIF_SPR_952
	(ii)	describe the Maintenance Services looking forward over a two year period from its date of issue; and	NIF_SPR_953
	(iii)	be sufficiently detailed to facilitate effective monitoring of the Supplier's performance of the Maintenance Services over that period.	NIF_SPR_954
(b)	The Supplier must prepare, submit for Review and implement a Maintenance Works Program not less than 40 Business Days prior to the commencement of each Maintenance Year.		NIF_SPR_955

2.16. Asset Information System

(a)	The AIS must comply with the requirements of T MU AM 02001 ST Asset Information Management.	NIF_SPR_530
(b)	The AIS must include the 'Asset Register' defined in T MU AM 02001 ST.	NIF_SPR_531
(c)	The AIS should be a modular enterprise management system available as a commercial off-the-shelf system, customised to meet the relevant requirements of this deed.	NIF_SPR_532
(d)	The AIS must provide TfNSW direct access to monitoring, review, ad-hoc enquiry, searching and custom report generation facilities for current and historical information at any time.	NIF_SPR_533
(e)	The AIS must have external network interfaces to TfNSW and NSW Rail Entities systems in a format to be agreed with TfNSW.	NIF_SPR_534
(f)	The AIS must generate, as far as practicable, the content of the Maintenance Phase Performance Report.	NIF_SPR_535
(g)	The AIS must store current and the complete historical record of all asset information in a secured environment for the Through Life Support Period.	NIF_SPR_536
(h)	The AIS must include the FRACAS.	NIF_SPR_915

2.16.1. AIS Information Requirements

(a)	The AIS must categorise Asset information as per the requirements of the Configuration Management Plan and the Asset Management Plan.		NIF_SPR_538
(b)	The AIS must include Asset information for all Assets including:		NIF_SPR_539
	(i)	the Rolling Stock;	NIF_SPR_540
	(ii)	the Simulators;	NIF_SPR_541
	(iii)	the Maintenance Facility Equipment;	NIF_SPR_542
	(iv)	the Maintenance Facility;	NIF_SPR_543
	(v)	Spares;	NIF_SPR_544
	(vi)	Tools; and	NIF_SPR_545
	(vii)	any other items required to perform the Maintenance Services.	NIF_SPR_546
(c)	The AIS must store the following information and data:		NIF_SPR_547
	(i)	all information defined in T MU AM 02001 ST;	NIF_SPR_548
	(ii)	Asset metering data relevant to each Asset;	NIF_SPR_549
	(iii)	information transmitted remotely from the Rolling Stock to the AIS in accordance with Appendix 02; and	NIF_SPR_550
	(iv)	any other information required to perform the Maintenance Services.	NIF_SPR_551
(d)	The AIS must hold supporting information including:		NIF_SPR_552
	(i)	Technical Documents;	NIF_SPR_553
	(ii)	training packages; and	NIF_SPR_554
	(iii)	any other supporting information required to support the Asset Management System.	NIF_SPR_555

2.16.2. AIS Data Population

(a)	The Supplier must ensure that the AIS is populated with all Asset management information for all Assets as required by this deed and T MU AM 02001 ST.	NIF_SPR_557
(b)	The Supplier must ensure that all Asset management information provided for MFC Works in accordance with Schedule C1 and Schedule C2 of this deed is incorporated into the AIS when the information becomes available.	NIF_SPR_558

2.16.3. AIS Utilisation

(a)	The Supplier must comply with the requirements of the 'operator and maintainer' as defined in T MU AM 02001 ST.	NIF_SPR_560

(b)	The Supplier must ensure that all Maintenance Services are planned, controlled, recorded and monitored by the AIS.	NIF_SPR_561
(c)	The Supplier must ensure that each Fault and/or Failure for any Assets is recorded in the AIS within 24 hours of detection or notification of that relevant Fault and/or Failure.	NIF_SPR_562
(d)	The Supplier must ensure that all asset management activities are recorded in the AIS within 24 hours of completion of the activity.	NIF_SPR_563

2.17. Environment and Sustainability Management

(a)	The Supplier must comply with the requirements of the Environmental Law.	NIF_SPR_942
(b)	The Supplier must comply with the requirements of AS/NZS/ISO 14001.	NIF_SPR_943
(c)	The Supplier must comply with the environmental and sustainability requirements of this deed, including Appendix 09.	NIF_SPR_565

2.17.1. Environment and Sustainability Management Plan

(a)	The Supplier must develop, submit, implement and maintain for the Contract Term an Environment and Sustainability Management Plan that describes, as a minimum:	NIF_SPR_567
(i)	how the Supplier will comply with the requirements of the Environmental Law;	NIF_SPR_944
(ii)	how the Supplier will comply with the requirements of AS/NZS/ISO 14001;	NIF_SPR_945
(iii)	how the Supplier will comply with the environment and sustainability requirements of this deed, including Appendix 09;	NIF_SPR_568
(iv)	how the Supplier will support the objectives of Appendix 09;	NIF_SPR_936
(v)	qualifications, experience and authorities of each environment and sustainability management role;	NIF_SPR_569
(vi)	how the Supplier will comply with the environment and sustainability management reporting requirements, including the pollution reporting requirements under sections 147 and 148 of the *Protection of the Environment Operations Act 1997* (NSW); and	NIF_SPR_570
(vii)	the process for identifying and procuring suitable products with low life cycle environmental and social impacts.	NIF_SPR_937

3. Design

3.1. Design Stages

(a)	The Supplier must develop and complete the design through the following Design Stages:		NIF_SPR_573
	(i)	System Definition Review;	NIF_SPR_574
	(ii)	Preliminary Design Review;	NIF_SPR_575
	(iii)	Detailed Design Review;	NIF_SPR_576
	(iv)	Test Readiness Review; and	NIF_SPR_577
	(v)	System Verification Review.	NIF_SPR_578
(b)	The Supplier must submit Technical Packages for Review in accordance with the Systems Engineering Management Plan. .		NIF_SPR_579

3.2. System Definition Review

(a)	The System Definition Review must achieve the following objectives:		NIF_SPR_581
	(i)	the 'Stakeholder Requirements Definition Process' of AS/NZS ISO/IEC 15288 has been completed;	NIF_SPR_582
	(ii)	the 'Requirements Analysis Process' of AS/NZS ISO/IEC 15288 has been completed;	NIF_SPR_583
	(iii)	'Phase 1: Concept' of EN 50126-1 has been completed;	NIF_SPR_584
	(iv)	'Phase 2: System definition and application conditions' of EN 50126-1 has been completed;	NIF_SPR_585
	(v)	'Phase 3: Risk analysis' of EN 50126-1 has been completed;	NIF_SPR_586
	(vi)	'Phase 4: System requirements' of EN 50126-1 has been completed;	NIF_SPR_587
	(vii)	'Phase 5: Apportionment of system requirements' of EN 50126-1 has been completed;	NIF_SPR_588
	(viii)	all Supplier's Activities defined as required for SDR in the Project Plans have been completed;	NIF_SPR_589
	(ix)	all requirements of this deed relating to SDR have been achieved;	NIF_SPR_590
	(x)	the requirements of this deed have been understood by the Supplier and any ambiguities resolved;	NIF_SPR_591
	(xi)	all Initial Project Plans are being implemented;	NIF_SPR_592
	(xii)	input from User Groups and other stakeholders has been addressed to the satisfaction of TfNSW;	NIF_SPR_593

(xiii) the System Definition is a consistent and logical development of the Concept Design; and NIF_SPR_594

(xiv) all Technical Documents and Project Plans required for SDR, including those defined in Appendix 07, have been submitted and Confirmed (as applicable). NIF_SPR_595

(b) TfNSW will consider the System Definition Review to be complete when: NIF_SPR_596

(i) all objectives described in section 3.2(a) have been achieved; and NIF_SPR_597

(ii) the Supplier has submitted a System Definition Review certificate signed by an authorised representative of the Supplier who is accountable for technical authority under the AEO accreditation, stating that all the objectives of System Definition Review have been achieved. NIF_SPR_598

3.3. Preliminary Design Review

(a) The Preliminary Design Review must achieve the following objectives: NIF_SPR_600

(i) the 'Architectural Design Process' of AS/NZS ISO/IEC 15288 has been completed; NIF_SPR_601

(ii) all required inputs to support completion of 'Gate 2 – Initial design complete' of T MU AM 04001 PL have been Submitted and Confirmed (as applicable); NIF_SPR_602

(iii) all Supplier's Activities defined as required for PDR in the Project Plans have been completed; NIF_SPR_603

(iv) all requirements of this deed relating to PDR have been achieved; NIF_SPR_604

(v) the operating environment of the Assets has been understood by the Supplier and any ambiguities resolved; NIF_SPR_605

(vi) all Confirmed Project Plans are being maintained and implemented; NIF_SPR_606

(vii) input from User Groups and other stakeholders has been addressed to the satisfaction of TfNSW; NIF_SPR_607

(viii) the Preliminary Design is a consistent and logical development of the system definition and Concept Design; and NIF_SPR_608

(ix) all Technical Documents and Project Plans required for PDR, including those defined in Appendix 07, have been submitted and Confirmed (as applicable). NIF_SPR_609

(b) TfNSW will consider the Preliminary Design Review to be complete when: NIF_SPR_610

(i) TfNSW has considered the System Definition Review to be complete in accordance with section 3.2(b); NIF_SPR_611

	(ii)	all objectives described in section 3.3(a) have been achieved; and	NIF_SPR_612
	(iii)	the Supplier has submitted a Preliminary Design Review certificate signed by an authorised representative of the Supplier who is accountable for technical authority under the AEO accreditation, stating that all the objectives of Preliminary Design Review have been achieved.	NIF_SPR_613

3.4. Detailed Design Review

(a)	The Detailed Design Review must achieve the following objectives:		NIF_SPR_615
	(i)	'Phase 6: Design and implementation' of EN 50126-1 has been completed;	NIF_SPR_616
	(ii)	all required inputs to support completion of 'Gate 3 – For construction' of T MU AM 04001 PL have been Submitted and Confirmed (as applicable);	NIF_SPR_617
	(iii)	all Supplier's Activities defined as required for DDR in the Project Plans have been completed;	NIF_SPR_618
	(iv)	all requirements of this deed relating to DDR have been achieved;	NIF_SPR_619
	(v)	all Confirmed Project Plans are being maintained and implemented;	NIF_SPR_620
	(vi)	all Technical Documents and Project Plans required for DDR, including those defined in Appendix 07, have been Submitted and Confirmed (as applicable);	NIF_SPR_621
	(vii)	input from User Groups and other stakeholders has been addressed to the satisfaction of TfNSW;	NIF_SPR_622
	(viii)	the Detailed Design is a consistent and logical development of the Preliminary Design, System Definition and Concept Design; and	NIF_SPR_623
	(ix)	all hazards have been mitigated SFAIRP by the design.	NIF_SPR_624
(b)	TfNSW will consider the Detailed Design Review to be complete when:		NIF_SPR_625
	(i)	TfNSW has considered the Preliminary Design Review to be complete in accordance with section 3.3(b);	NIF_SPR_626
	(ii)	all objectives described in section 3.4(a) have been achieved; and	NIF_SPR_627
	(iii)	the Supplier has submitted a Detailed Design Review certificate signed by an authorised representative of the Supplier who is accountable for technical authority under the AEO accreditation, stating that all the objectives of Detailed Design Review have been achieved.	NIF_SPR_628

3.5. Test Readiness Review

(a)	The Test Readiness Review must achieve the following objectives:		NIF_SPR_630
	(i)	the 'Implementation Process' of AS/NZS ISO/IEC 15288 has been completed;	NIF_SPR_631
	(ii)	the 'Integration Process' of AS/NZS ISO/IEC 15288 has been completed;	NIF_SPR_632
	(iii)	'Phase 7: Manufacturing' of EN 50126-1 has been completed;	NIF_SPR_633
	(iv)	'Phase 8: Installation' of EN 50126-1 has been completed;	NIF_SPR_634
	(v)	all required inputs to support completion of 'Gate 4 – Ready for testing' of T MU AM 04001 PL have been submitted and Confirmed (as applicable);	NIF_SPR_635
	(vi)	all Supplier's Activities defined as required for TRR in the Project Plans have been completed;	NIF_SPR_636
	(vii)	all requirements of this deed relating to TRR have been achieved;	NIF_SPR_637
	(viii)	all Confirmed Project Plans are being maintained and implemented;	NIF_SPR_638
	(ix)	all Technical Documents and Project Plans required for TRR, including those defined in Appendix 07, have been Submitted and Confirmed (as applicable); and	NIF_SPR_639
	(x)	all hazards have been mitigated SFAIRP.	NIF_SPR_640
(b)	TfNSW will consider the Test Readiness Review to be complete when:		NIF_SPR_641
	(i)	TfNSW has considered the Detailed Design Review to be complete in accordance with section 3.4(b);	NIF_SPR_642
	(ii)	all objectives described in section 3.5(a) have been achieved; and	NIF_SPR_643
	(iii)	the Supplier has submitted a Test Readiness Review certificate signed by an authorised representative of the Supplier who is accountable for technical authority under the AEO accreditation, stating that all the objectives of Test Readiness Review have been achieved.	NIF_SPR_644

3.6. System Verification Review

(a)	The System Verification Review must achieve the following objectives:		NIF_SPR_646
	(i)	the 'Verification Process' of AS/NZS ISO/IEC 15288 has been completed;	NIF_SPR_647
	(ii)	the 'Transition Process' of AS/NZS ISO/IEC 15288 has been completed;	NIF_SPR_648
	(iii)	'Phase 9: System validation' of EN 50126-1 has been completed;	NIF_SPR_649

	(iv)	'Phase 10: System acceptance' of EN 50126-1 has been completed;	NIF_SPR_650
	(v)	all required inputs to support completion of 'Gate 5 – Asset acceptance' of T MU AM 04001 PL have been submitted and Confirmed (as applicable);	NIF_SPR_651
	(vi)	all Supplier's Activities defined as required for SVR in the Project Plans have been completed;	NIF_SPR_652
	(vii)	all requirements of this deed relating to SVR have been achieved;	NIF_SPR_653
	(viii)	the Detailed Design has been realised;	NIF_SPR_654
	(ix)	all Confirmed Project Plans are being maintained and implemented;	NIF_SPR_655
	(x)	all Technical Documents and Project Plans required for SVR, including those defined in Appendix 07, have been Submitted and Confirmed (as applicable); and	NIF_SPR_656
	(xi)	all hazards have been mitigated SFAIRP.	NIF_SPR_657
(b)	TfNSW will consider the System Verification Review to be complete when:		NIF_SPR_658
	(i)	TfNSW has considered the Test Readiness Review to be complete in accordance with section 3.5(b);	NIF_SPR_659
	(ii)	All objectives described in section 3.6(a) have been achieved; and	NIF_SPR_660
	(iii)	the Supplier has submitted a System Verification Review certificate signed by an authorised representative of the Supplier who is accountable for technical authority under the AEO accreditation, stating that all the objectives of System Verification Review have been achieved.	NIF_SPR_661

3.7. Technical Packages

(a)	The Supplier must decompose the technical submissions into logical Technical Packages.	NIF_SPR_663
(b)	The Technical Packages must address all Assets.	NIF_SPR_664
(c)	The Supplier must submit Technical Packages in a logical review sequence.	NIF_SPR_665
(d)	The Technical Packages must remain consistent in scope between Reviews.	NIF_SPR_666
(e)	The submission of each Technical Package for each Review must include:	NIF_SPR_667
	(i) an updated project risk register, identifying changes;	NIF_SPR_668
	(ii) an updated project hazard log, identifying changes;	NIF_SPR_669

(iii)	all Technical Documents required by the Project Plans;		NIF_SPR_670
(iv)	all Technical Documents required to demonstrate design compliance with each of the specific and derived requirements under this deed (PDR/DDR);		NIF_SPR_671
(v)	all Technical Documents required to verify compliance with each of the specific and derived requirements under this deed (SVR);		NIF_SPR_672
(vi)	all relevant photographs, Mock-Ups, samples, models, and prototypes;		NIF_SPR_673
(vii)	all relevant Approvals;		NIF_SPR_674
(viii)	all relevant independent review / certification reports;		NIF_SPR_675
(ix)	a requirements traceability matrix in MS Excel compatible format capturing the traceability between:		NIF_SPR_676
	A.	contract requirements (including referenced requirements) and derived system requirements (SDR); and	NIF_SPR_860
	B.	requirements and Technical Documents (DDR).	NIF_SPR_861
(x)	a verification matrix in MS Excel compatible format, capturing:		NIF_SPR_677
	A.	the verification method for each requirement (SDR);	NIF_SPR_862
	B.	the Technical Documents including Verification Procedures, proposed to verify the requirement (DDR); and	NIF_SPR_863
	C.	the Technical Documents, including Verification Reports, that provide objective quality evidence that the requirement has been satisfied (SVR).	NIF_SPR_864
(xi)	a Technical Report.		NIF_SPR_678

3.8. Technical Reports

(a)	Each Technical Report must, within the context of the Technical Package:		NIF_SPR_680
	(i)	identify the scope, key external interfaces and progress towards completion of Technical Package;	NIF_SPR_681
	(ii)	identify all relevant deed requirements including derived requirements;	NIF_SPR_682
	(iii)	identify all relevant non-compliances and describe the proposed solution;	NIF_SPR_683
	(iv)	identify all relevant Approvals;	NIF_SPR_684
	(v)	describe and justify all key assumptions;	NIF_SPR_685
	(vi)	describe and justify all key constraints;	NIF_SPR_686

	(vii)	include reference to all Technical Documents;	NIF_SPR_687
	(viii)	distinguish between Existing Contract Information and New Contract Information;	NIF_SPR_688
	(ix)	identify all stakeholders and specialists consulted;	NIF_SPR_689
	(x)	describe and justify all key decisions made including trade-offs and optimisations;	NIF_SPR_690
	(xi)	describe all key risks created and/or controlled;	NIF_SPR_691
	(xii)	identify all judgements of significance made;	NIF_SPR_692
	(xiii)	identify all requirements claimed to have been verified;	NIF_SPR_693
	(xiv)	summarise the results of any independent review / certification;	NIF_SPR_694
	(xv)	describe and justify all changes from the previously submitted Technical Package or Concept Design; and	NIF_SPR_695
	(xvi)	address all outstanding comments received from TfNSW on previously submitted Technical Packages, including a cross-reference to the resolution within the Technical Package being submitted.	NIF_SPR_696
(b)		The Technical Report must be signed off by an authorised representative of the Supplier who is accountable for technical authority under the AEO accreditation, confirming validity and accuracy of the Technical Report and Technical Package.	NIF_SPR_697
(c)		The Supplier must provide any other information reasonably requested by TfNSW to complete the Review of any submitted Technical Package.	NIF_SPR_698

4. Reporting Requirements

4.1. Scope

(a)	During the Delivery Phase, the Supplier must develop and submit a Delivery Phase Performance Report (DPPR) to TfNSW every month, no later than five Business Days after the end of each month.	NIF_SPR_701
(b)	Upon commencement of the Maintenance Phase, the Supplier must develop and submit a Maintenance Phase Performance Report (MPPR) to TfNSW every month, no later than five Business Days after the end of each month.	NIF_SPR_702
(c)	During the Contract Term, the Supplier must develop and submit an Annual Performance Review Report (APRR) to TfNSW, no later than ten Business Days after the end of each Financial Year.	NIF_SPR_703
(d)	The Supplier must provide any Contract Information reasonably requested by TfNSW if such Contract Information is deemed necessary by TfNSW to completely review a submitted progress or performance report.	NIF_SPR_704
(e)	The Supplier must obtain TfNSW's approval of the proposed DPPR and MPPR format.	NIF_SPR_705

4.2. Delivery Phase Performance Report

(a)	The DPPR must, as a minimum, address and detail the status and progress of the Supplier's Activities with respect to the Delivery Phase in the previous month compared with the progress projected under the Delivery Program for that month, and the progress required in order to achieve Acceptance in accordance with the dates in Schedule D1 'Delivery Schedule'.	NIF_SPR_707
(b)	The DPPR must commence with an executive summary.	NIF_SPR_708
(c)	The DPPR must address Delivery Activities, including:	NIF_SPR_709
	(i) the status and progress of Deliverables, including:	NIF_SPR_710
	A. all Assets (including Tools and Spares);	NIF_SPR_865
	B. all Technical Packages;	NIF_SPR_866
	C. all Mock-Ups; and	NIF_SPR_868
	D. all Approvals.	NIF_SPR_867
	(ii) photographic evidence of progress where relevant and possible;	NIF_SPR_711
	(iii) significant changes in circumstances affecting the Supplier's Activities, including Variations; and	NIF_SPR_712
	(iv) the status of each proposed Significant Contract.	NIF_SPR_947
(d)	The DPPR must address progress, including:	NIF_SPR_713

	(i)		the status and progress towards completion, including actual / forecasted:	NIF_SPR_714
		A.	dates of Delivery Milestones;	NIF_SPR_869
		B.	dates of Provisional Acceptance for all Units and Simulators;	NIF_SPR_870
		C.	dates requiring Network Access Rights and Crew;	NIF_SPR_871
		D.	the Date of MFI Practical Completion;	NIF_SPR_872
		E.	the Date of Final Acceptance for all Units and Simulators;	NIF_SPR_873
		F.	the Date of Fleet Acceptance; and	NIF_SPR_874
		G.	date of completion for all Assets (such as Tools) not covered by Schedule D2 (the Acceptance Criteria).	NIF_SPR_875
	(ii)		status of operational readiness activities;	NIF_SPR_715
	(iii)		delays, including the cause of delay, and actions planned and/or underway to recover the Delivery Program to meet Schedule D1 (the Delivery Schedule); and	NIF_SPR_716
	(iv)		significant changes in circumstances affecting the Delivery Program, including Variations.	NIF_SPR_717
(e)	The DPPR must address risk, including:			NIF_SPR_718
	(i)		a description of each significant risk to the Project objectives described in clause 4.1 of this deed;	NIF_SPR_719
	(ii)		the cause and potential consequences of each significant risk; and	NIF_SPR_720
	(iii)		the actions planned and underway to treat each significant risk.	NIF_SPR_721
(f)	The DPPR must address health and safety, including:			NIF_SPR_722
	(i)		leading safety indicators and proactive actions; and	NIF_SPR_723
	(ii)		lagging safety indicators for all sites, including:	NIF_SPR_724
		A.	details of injuries and near misses;	NIF_SPR_876
		B.	lost time injuries; and	NIF_SPR_877
		C.	medically treated injuries.	NIF_SPR_878
(g)	The DPPR must address Supplier's Personnel, including:			NIF_SPR_725
	(i)		for each Supplier's location:	NIF_SPR_726
		A.	minimum, maximum, and average number of Supplier's Personnel on-site;	NIF_SPR_879
		B.	average number of apprentices and trainees; and	NIF_SPR_880
		C.	total hours worked per site.	NIF_SPR_881

	(ii)	significant changes in circumstances affecting Supplier's Personnel.	NIF_SPR_727
(h)	The DPPR must address compliance, including:		NIF_SPR_728
	(i)	the status and progress of:	NIF_SPR_729
		A. Reviews;	NIF_SPR_882
		B. audits and any Remedial Directions; and	NIF_SPR_883
		C. Authorisation and Accreditation.	NIF_SPR_884
	(ii)	verification metrics;	NIF_SPR_730
	(iii)	quality metrics addressing key non-conformances identifying actions planned and underway to treat the non-conformance; and	NIF_SPR_731
	(iv)	significant changes in circumstances affecting compliance, including with regards to Significant Contractors.	NIF_SPR_732
(i)	The DPPR must detail any inputs required from TfNSW in the next monthly reporting period.		NIF_SPR_733
(j)	The DPPR must include:		NIF_SPR_734
	(i)	an updated Delivery Program;	NIF_SPR_735
	(ii)	an updated project risk register, identifying changes;	NIF_SPR_736
	(iii)	an updated project hazard log, identifying changes;	NIF_SPR_737
	(iv)	~~an updated DOORS® Database, identifying changes; and~~Not Used; and	NIF_SPR_738
	(v)	an updated organisation chart, identifying changes.	NIF_SPR_739

4.3. Maintenance Phase Performance Report

(a)	The MPPR must, as a minimum, address and detail the status and progress of the Supplier's Activities with respect to the Maintenance Phase in the previous month.		NIF_SPR_741
(b)	The MPPR must commence with an executive summary.		NIF_SPR_742
(c)	The MPPR must address Availability, including:		NIF_SPR_743
	(i)	histogram of Availability performance for Units; and	NIF_SPR_744
	(ii)	plan to achieve Required Availability.	NIF_SPR_745
(d)	The MPPR must address reliability, including:		NIF_SPR_746
	(i)	Reliability Rate (MDBF) for Units;	NIF_SPR_747
	(ii)	plan to achieve Required Reliability;	NIF_SPR_748
	(iii)	total number of kilometres travelled by all Accepted Units;	NIF_SPR_749

	(iv)	histogram of Fault type for Units; and	NIF_SPR_750
	(v)	histogram of Failure type for Units.	NIF_SPR_751
(e)	The MPPR must report the Service Payment payable for the preceding Service Payment Period in accordance with the requirements of clause 25 of this deed.		NIF_SPR_752
(f)	The MPPR must address availability and utilisation of the Assets, including:		NIF_SPR_753
	(i)	availability and utilisation of the Simulators;	NIF_SPR_754
	(ii)	availability and utilisation of the wash plant; and	NIF_SPR_755
	(iii)	availability and utilisation of the wheel lathe.	NIF_SPR_935
(g)	The MPPR must address planned maintenance, including:		NIF_SPR_757
	(i)	maintenance due and not completed (i.e. overdue) on each Asset, including cleaning;	NIF_SPR_758
	(ii)	risk assessment and recovery plan for overdue maintenance; and	NIF_SPR_759
	(iii)	summary of any Asset management procedure changes.	NIF_SPR_760
(h)	The MPPR must address unplanned maintenance, including:		NIF_SPR_761
	(i)	summary of unplanned maintenance on each Asset;	NIF_SPR_762
	(ii)	reference to failure investigations for unexpected Defects and Recurrent Defects, that identify the:	NIF_SPR_763
		A. containment actions;	NIF_SPR_885
		B. root cause;	NIF_SPR_886
		C. risk assessment;	NIF_SPR_887
		D. corrective actions; and	NIF_SPR_889
		E. preventative actions.	NIF_SPR_888
	(iii)	any AM Services:	NIF_SPR_764
		A. in progress;	NIF_SPR_890
		B. completed within the Time to Complete; and	NIF_SPR_891
		C. not completed within the Time to Complete.	NIF_SPR_892
(i)	The MPPR must address configuration changes, including:		NIF_SPR_765
	(i)	design configuration updates, operational updates, operational downloads, or physical retrievals in accordance with Schedule E4 (the Schedule of Rates):	NIF_SPR_766
		A. in progress;	NIF_SPR_893
		B. completed within the Time to Complete; and	NIF_SPR_894
		C. not completed within the Time to Complete.	NIF_SPR_895

	(ii)	Modification status including:		NIF_SPR_767
		A.	Assets modified;	NIF_SPR_896
		B.	Assets to be modified;	NIF_SPR_897
		C.	planned completion date; and	NIF_SPR_899
		D.	exceeding the Time to Complete under the Configuration Management Plan.	NIF_SPR_898
	(iii)	Variations.		NIF_SPR_768
(j)	The MPPR must address risk, including:			NIF_SPR_769
	(i)	a description of each significant risk to the Project objectives described in clause 4.1 of this deed;		NIF_SPR_770
	(ii)	the cause and potential consequences of each significant risk;		NIF_SPR_771
	(iii)	the actions planned and underway to treat the significant risk;		NIF_SPR_772
	(iv)	Spares required but unavailable;		NIF_SPR_773
	(v)	significant changes in the supply chain (including Obsolescence); and		NIF_SPR_774
	(vi)	changes to subcontracting arrangements.		NIF_SPR_775
(k)	The MPPR must address health and safety, including:			NIF_SPR_776
	(i)	leading safety indicators and proactive actions; and		NIF_SPR_777
	(ii)	lagging safety indicators for all Maintenance Locations and the Commissioning Facility, such as:		NIF_SPR_778
		A.	details of injuries and near misses;	NIF_SPR_900
		B.	lost time injuries; and	NIF_SPR_901
		C.	medically treated injuries.	NIF_SPR_902
(l)	The MPPR must address Supplier's Personnel, including:			NIF_SPR_779
	(i)	for each Maintenance Location and the Commissioning Facility:		NIF_SPR_780
		A.	minimum, maximum, and average number of Supplier's Personnel on-site;	NIF_SPR_903
		B.	average number of apprentices and trainees; and	NIF_SPR_905
		C.	total hours worked per site.	NIF_SPR_906
	(ii)	significant changes in circumstances affecting Supplier's Personnel.		NIF_SPR_781
(m)	The MPPR must address compliance, including:			NIF_SPR_782
	(i)	the status and progress of:		NIF_SPR_783
		A.	Technical Documents requiring update; and	NIF_SPR_907
		B.	audits and any Remedial Directions; and	NIF_SPR_908

	(ii)	compliance with environment and sustainability management requirements.	NIF_SPR_784
(n)	The MPPR must detail any inputs required from TfNSW in the next reporting period.		NIF_SPR_785
(o)	The MPPR must include the following, if changes have occurred:		NIF_SPR_786
	(i)	an updated project risk register, identifying changes;	NIF_SPR_787
	(ii)	an updated project hazard log, identifying changes;	NIF_SPR_788
	(iii)	an updated organisation chart, identifying changes; and	NIF_SPR_789
	(iv)	an update to the current Maintenance Works Program, identifying changes.	NIF_SPR_790

4.4. Annual Performance Review Report

(a)	The APRR must, as a minimum, address and detail the performance of the Supplier's Activities over the previous Financial Year.		NIF_SPR_792
(b)	The APRR must include the findings of the Asset Condition Assessments performed during the previous Financial Year.		NIF_SPR_793
(c)	The APRR must report on the status of all Project Bonds, including rating and value.		NIF_SPR_794
(d)	The APRR must report on sustainable procurement as described in Appendix 09 section 1.8.2.		NIF_SPR_912
(e)	The APPR must report on how the Supplier, and their Subcontractors, are complying with the UN Global Compact and the UN Guiding Principles on Business and Human Rights, including:		NIF_SPR_938
	(i)	any positive works undertaken throughout the year for the Supplier's Activities;	NIF_SPR_939
	(ii)	identifying any incidents and areas of concern throughout the year for the Supplier's Activities; and	NIF_SPR_940
	(iii)	be signed and dated by the Supplier and all Subcontractors of the Supplier.	NIF_SPR_941

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Schedule G – Scope and Performance Requirements

Appendix 01 – Standards and Guidelines

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Table of Contents

1. Overview and scope

1.1. General

(a)	This Appendix provides a listing of standards and guidelines referenced within the Scope and Performance Requirements and its appendices.	NIF_App01_3
(b)	This document intends to capture all standards and guidelines referenced within this SPR, and may not represent a comprehensive list of standards or guidelines required to perform the Supplier's Activities under this deed.	NIF_App01_4
(c)	Legal Requirements are not listed within this Appendix.	NIF_App01_5
(d)	Subject to clause 28 of this deed, the Supplier must comply with the current version of all referenced standards and guidelines as amended from time to time.	NIF_App01_8

1.2. List of referenced standards and guidelines

Document	Title
30-ST-164	TfNSW Enterprise Risk Management (TERM) Standard
7TP-ST-140	Records Management Standard
AS 1428.1	Design for access and mobility – General requirements for access – New building work
AS 1428.2	Design for access and mobility - Enhanced and additional requirements - Buildings and facilities
AS 2080	Safety glazing for land vehicles
AS 2670.4	Evaluation of human exposure to whole-body vibration - Guidelines for the evaluation of the effects of vibration and rotational motion on passenger and crew comfort in fixed-guideway transport systems
AS 4292	Railway Safety management
AS 4806.2	Closed circuit television (CCTV) - Application guidelines
AS 4817	Project performance measurement using Earned Value
AS 7513.3	Railway Rolling Stock – Interior Environment - Passenger Rolling Stock
AS 7523.3	Rollingstock Emergency Equipment - Passenger
AS 7527.3	Railway Rolling Stock - Event Recorder - Part 3: Passenger Rolling Stock
AS 7533.3	Railway Rolling Stock - Driving Cabs - Part 3 - Passenger
AS ISO 10007	Quality management systems – Guidelines for configuration management
AS ISO 55001	Asset management - Management systems - Requirements
AS ISO 55002	Asset management - Management systems - Guidelines for the application of ISO 55001
AS ISO/IEC 27001	Information technology - Security techniques - Information security management systems - Requirements
AS/NZS 4586	Slip resistance classification of new pedestrian surface materials
AS/NZS 4801	Occupational health and safety management systems - Specification with guidance for use

AS/NZS ISO 9001	Quality management systems - Requirements
AS/NZS ISO/IEC 12207	Systems and software engineering - Software life cycle process
AS/NZS ISO/IEC 15288	Systems and software engineering - System life cycle process
AS/NZS/ISO 14001	Environmental management systems - Requirements with guidance for use
~~BS 6853~~	~~Code of practice for fire precautions in the design and construction of passenger carrying trains~~
AS/NZS/ISO 31000	Risk management – Principles and guidelines
BS 8903	Principles and framework for procuring sustainably guide
CLC/TR EN 50126-2	Railway applications - The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS) -- Part 2: Guide to the application of EN 50126-1 for safety
CLC/TR EN 50126-3	Railway applications - The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS) -- Part 3: Guide to the application of EN 50126-1 for rolling stock RAM
DSAPT	Disability Standards for Accessible Public Transport 2002 incorporating Amendment 2010 (No. 1)
DTRS-A-000-SY-006	DTRS - Alphanumerical Detailed Design
EIRENE Version 15	EIRENE System Requirement Specification version 15
EIRENE Version 7	EIRENE Functional Requirement Specification version 7
EN 12299	Railway Applications - Ride Comfort For Passengers - Measurement And Evaluation
EN 13848-1	Railway applications - Track – Track geometry quality - Part 1: Characterisation of track geometry
EN 13848-2	Railway applications - Track - Track geometry quality - Part 2: Measuring systems - Track recording vehicles
EN 14752	Railway Applications - Body Side Entrance Systems for Rolling Stock
EN 15152	Railway Applications - Front Windscreens for Train Cabs
EN 15227	Railway Applications - Crashworthiness Requirements for Railway Vehicle Bodies
EN 15663	Railway Applications - Definition Of Vehicle Reference Masses
EN 16185-1	Railway Applications - Braking Systems Of Multiple Unit Trains - Part 1: Requirements And Definitions
EN 16286-1	Railway Applications - Gangway Systems Between Vehicles - Part 1: Main Applications
EN 45502-2-1:2004	Active Implantable Medical Devices - Part 2-1: Particular Requirements For Active Implantable Medical Devices Intended To Treat Bradyarrhythmia (cardiac Pacemakers)
EN 45502-2-2:2008	Active Implantable Medical Devices - Part 2-2: Particular Requirements for Active Implantable Medical Devices Intended to Treat Tachyarrhythmia (includes Implantable Defibrillators)
EN 45545-6	Railway Applications — Fire Protection On Railway Vehicles — Part 6: Fire Control And Management Systems
EN 50121-1	Railway Applications — Electromagnetic Compatibility — Part 1: General
EN 50121-3-1	Railway Applications — Electromagnetic Compatibility — Part 3-1: Rolling Stock — Train and Complete Vehicle

EN 50121-3-2	Railway Applications – Electromagnetic Compatibility – Part 3-2: Rolling Stock – Apparatus
EN 50125-1	Railway Applications – Environmental Conditions For Equipment – Part 1: Rolling Stock And On-Board Equipment
EN 50126-1	Railway Applications – the Specification and Demonstration of Reliability, Availability, Maintainability and Safety (rams) – Part 1: Basic Requirements and Generic Process
EN 50128	Railway Applications – Communication, Signalling and Processing Systems – Software for Railway Control and Protection Systems
EN 50129	Railway Applications – Communication, Signalling And Processing Systems – Safety Related Electronic Systems For Signalling
EN 50215	Railway Applications – Rolling Stock – Testing of Rolling Stock on Completion of Construction and Before Entry Into Service
EN 50238	Railway Applications – Compatibility Between Rolling Stock And Train Detection Systems
EN 50388	Railway Applications – Power Supply and Rolling Stock – Technical Criteria for the Coordination Between Power Supply (substation) and Rolling Stock to Achieve Interoperability
EN 50463-4	Railway Applications – Energy Measurement on Board Trains – Part 4: Communication
~~EN 55011~~	~~Industrial, Scientific and Medical Equipment - Radio-frequency Disturbance Characteristics - Limits and Methods of Measurement~~
EN 60268-16	Sound System Equipment – Part 16: Objective Rating Of Speech Intelligibility By Speech Transmission Index
EP 03 00 00 01 TI	Rectifier transformer & rectifier characteristics.
GM/RT 2100	Structural Requirements for Railway Vehicles
~~IEC 60601-1-2~~	~~Medical Electrical Equipment - Part 1-2: General Requirements For Basic Safety And Essential Performance - Collateral Standard: Electromagnetic Disturbances - Requirements And Tests~~
IEC 61287-1	Railway applications – Power converters installed on board rolling stock – Part 1: Characteristics and test methods
ISO 14064-1	Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals
ISO 14064-2	Greenhouse gases – Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements
ISO 14064-3	Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions
ISO 2631-4	Mechanical vibration and shock – Evaluation of human exposure to whole-body vibration – Part 4: Guidelines for the evaluation of the effects of vibration and rotational motion on passenger and crew comfort in fixed-guideway transport systems
ISO 3381	Railway applications – Acoustics – Measurement of noise inside railbound vehicles
ISO 8573.1	Compressed air – Part 1: Contaminants and purity classes
ISO/IEC 31010	Risk Management – Risk Assessment Techniques
OHSAS 18001	Occupational Health and Safety Management Systems – Requirements
RIS-2790-RST	Rail Industry Standard for Compatibility of Rail Vehicle Couplings and Interconnectors

RSS-002	Stabling Locations & Maintenance Centres
T HR CI 12200 ST	Access Roads
T HR EL 90003 ST	Heavy Rail 1500V dc Equipment Current Ratings
T HR HF 00001 ST	Human Factors Integration – Rolling Stock
T HR RS 00000 ST	Minimum Operating Standards for Rolling Stock – General Requirements
T HR RS 00100 ST	Minimum Operating Standards for Rolling Stock – General Interface Standards
T HR RS 00117 ST	Electric Circuits and Equipment for Passenger Rolling Stock
T HR RS 00126 ST	Electronic Equipment Supplied for Passenger Rolling Stock
T HR RS 00164 ST	Cable for Passenger Rolling Stock
T HR RS 00200 ST	Minimum Operating Standards for Rolling Stock – Common Interface Requirements
T HR RS 00600 ST	Minimum Operating Standards for Rolling Stock – Multiple Unit Train Specific Interface Standards
T HR RS 00840 ST	Driver safety systems
T HR RS 00850 ST	Rolling stock 1500 V dc overhead power supply interface requirements
T HR RS 00860 ST	Communication system
T HR RS 00880 ST	Automatic equipment identification
T HR RS 00890 ST	Reflective delineators
T HR RS 01701 ST	Mounting and Installation of Electrical Equipment
T HR RS 08001 ST	Interior Climate Comfort for Passenger Rolling Stock
T HR RS 10001 ST	Electric Auxiliary Power Supply and Battery Systems for Electric Rolling Stock
T HR RS 11119 ST	Interface between Electrical Rolling Stock and Overhead Power Supply (1500V)
T HR RS 12001 ST	Interior and Exterior Lighting for Passenger Rolling Stock
T HR RS 17010 ST	Passenger Rolling Stock Fire Safety
T HR RS 20003 SP	Passenger Rolling Stock Driver Safety Systems
T HR SC 00006 ST	Rolling Stock Signalling Interface Requirements
T HR TE 41001 ST	Packet Switched Networks Wired – Local. Metropolitan, and Wide Area Networks
T HR TE 41002 ST	Wireless Data Communications in LIPD Class Licensed Bands
T HR TE 81001 ST	Telecommunications Equipment – Physical Interfaces and Environmental Conditions
T HR TE 81002 ST	Telecommunications Equipment Network Management
T MU AM 02001 ST	Asset Information Management
T MU AM 04001 PL	TfNSW Configuration Management Plan
T MU AM 06004 ST	Requirements Schema
T MU AM 06006 ST	Systems Engineering Standard
T MU HF 00001 GU	AEO Guide to Human Factors Integration
T MU HF 00001 ST	Human Factors Integration – General Requirements
T MU RS 01000 ST	Structural Integrity and Crashworthiness of Passenger Rolling Stock
T MU RS 17001 ST	Environmental Conditions for Rolling Stock
T MU RS 17002 ST	Prohibited and Restricted Materials

TS 0002 TI	Infrastructure Engineering Manual – Curve and Gradient Diagrams Volume 1
TS 20001	System Safety Standard for New or Altered Assets
TS TOC.2	Train Operating Conditions Manual – Division Pages
UNIFE Manual Railway Industry Substance List	Union des Industries Ferroviaires Européennes (the Association of the European Rail Industry) Manual Railway Industry Substance List
	Design Guidelines for the Upgrade and Construction of New and Existing Train Stabling Yards and Turnback Sidings
	TfNSW External Livery Principles
	TfNSW Internal Decal Approach
	NSW Trains Train Presentation Service Standards - New Intercity Fleet
	National Code of Practice for CCTV Systems for Mass Passenger Transport for Counter-Terrorism

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New Intercity Fleet Project

Schedule G – Scope and Performance Requirements

Appendix 02 – Rolling Stock Specification

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Table of Contents

1. Introduction

(a)	This Appendix describes the Scope and Performance Requirements for the Trains.	NIF_RSS_2
(b)	For the purposes of this Appendix, references to the term 'Train' mean a single Unit and any possible combination of Units up to the maximum Train length, including through the insertion of intermediate Cars.	NIF_RSS_3

2. Train-wide requirements

2.1. Train formation and length

(a)	The Initial Fleet must comprise:		NIF_RSS_637
	(i)	~~34~~55 long Trains, each comprised of one Short Unit and one Long Unit (**Long Train**); and~~;~~	NIF_RSS_638
	(ii)	~~21.5 short Trains, each comprised of two Short Units (**Short Train**).~~1 Short Unit.	NIF_RSS_639
(b)	Each Short Unit must consist of four Cars.		NIF_RSS_652
(c)	Each Long Unit must consist of six Cars.		NIF_RSS_653
(d)	Each Unit must be equipped with a Crew cab at each terminal end.		NIF_RSS_6
(e)	Each Short Train must not exceed 164 m between coupling faces.		NIF_RSS_7
(f)	Each Short Train must not exceed 158 m measured from the leading edge of the Crew cab door to the trailing edge of the rear passenger bodyside door.		NIF_RSS_607
(g)	Each Long Train must not exceed 204 m between coupling faces.		NIF_RSS_8
(h)	Each Unit must allow the insertion of intermediate Cars up to a maximum Unit length of 164 m.		NIF_RSS_9

2.2. Payload

(a)	Each Train must carry the reference masses of a "long distance train" in accordance with EN 15663 except as otherwise tailored by this Appendix.		NIF_RSS_19
(b)	The "normal payload" must be as per section 6.1 of EN 15663 plus standing passengers at a density of 160 kg/m^2 (2 passengers / m^2).		NIF_RSS_20
(c)	The "exceptional payload" for standing areas (as per section 6.1 of EN 15663) must be:		NIF_RSS_21
	(i)	480 kg/m^2 (6 passengers / m^2) in end saloon and vestibule standing areas; and	NIF_RSS_708
	(ii)	320 kg/m^2 (4 passengers / m^2) in all other standing areas.	NIF_RSS_709
(d)	The standing area calculation (as per section 5 of EN 15663) must consider tip up seats as normal seats with an associated projected area.		NIF_RSS_649

2.3. Passenger capacity

(a)	Each Short Train must provide capacity for at least 650 seated and 345 standing passengers at normal payload.	NIF_RSS_13

(b)	Each Long Train must provide capacity for at least 820 seated and 410 standing passengers at normal payload.	NIF_RSS_14

2.4. Network interface

(a)	Each Train must comply with T HR RS 00000 ST – General requirements.	NIF_RSS_23
(b)	Each Train must comply with T HR RS 00100 ST – General interface standards as per 'Medium Electric' rolling stock outline and 'Electric multiple unit train – intercity'.	NIF_RSS_24
(c)	Each Train must comply with T HR RS 00200 ST – Common interface requirements.	NIF_RSS_25
(d)	Each Train must comply with T HR RS 00600 ST – Multiple unit train specific interface standards.	NIF_RSS_26
(e)	Each Train must comply with T HR RS 00840 ST – Driver safety systems.	NIF_RSS_27
(f)	Each Train must comply with T HR RS 00850 ST – Rolling stock 1500 V dc overhead power supply interface requirements.	NIF_RSS_28
(g)	Each Train must comply with T HR RS 00860 ST – Communication system.	NIF_RSS_29
(h)	Each Train must comply with T HR RS 00880 ST – Automatic equipment identification.	NIF_RSS_30
(i)	Each Train must comply with T HR RS 00890 ST – Reflective delineators.	NIF_RSS_31
(j)	Each Train must comply with T HR RS 00100 ST – General interface standards as per 'Sub Medium' rolling stock outline.	NIF_RSS_780

2.5. Electromagnetic compatibility

(a)	Each Train must comply with EN 50121-3-1.	NIF_RSS_33
(b)	Electrical and electronic equipment on each Train must comply with EN 50121-3-2.	NIF_RSS_34
(c)	Each Train must be compatible with the overhead power supply harmonics described in EP 03 00 00 01 TI section 10.	NIF_RSS_35
(d)	Each Train must comply with the requirements of AS 7513.3 section 10.	NIF_RSS_36
(e)	Each Train must not interfere with active implantable medical devices that comply with EN ~~55011~~45502-2-1:2004 and ~~IEC 60601-1~~EN 45502-2-2:2008.	NIF_RSS_608

2.6. Signalling compatibility

(a)	Each Train must comply with T HR SC 00006 ST - Rolling Stock Signalling Interface Requirements.	NIF_RSS_38
(b)	Each Train must enable the Driver to reset any isolation of equipment triggered by the 50 Hz line detector from the Driver's workstation.	NIF_RSS_39

2.7. Electrical standards & safety

(a)	Each Train must comply with T HR RS 00117 ST Electric Circuits and Equipment for Passenger Rolling Stock.	NIF_RSS_41
(b)	Each Train must comply with T HR RS 00126 ST Electronic Equipment Supplied for Passenger Rolling Stock.	NIF_RSS_42
(c)	Each Train must comply with T HR RS 00164 ST Cable for Passenger Rolling Stock.	NIF_RSS_43
(d)	Each Train must comply with T HR RS 01701 ST Mounting and Installation of Electrical Equipment.	NIF_RSS_44
(e)	Each Train must have electrical isolation and earthing facilities to protect maintenance persons working on high voltage or low voltage equipment and circuits.	NIF_RSS_45
(f)	All electrical isolation and earthing facilities must be able to be locked and tagged in the protected position.	NIF_RSS_46
(g)	If high voltage cables cross an intercar interface, protection must be provided, such that in the event of Car separation, all high voltage power is cut off.	NIF_RSS_48

2.8. Operating speed and ride

(a)	Each Train must achieve the running times described in Appendix 06 corresponding to limitations on total current drawn from the overhead wire.	NIF_RSS_50
(b)	Each Train must have a maximum operating service speed of 160 km/h.	NIF_RSS_51
(c)	Each Train must comply with RSU 120 (T HR RS 00100 ST) cant deficiency and rate of change requirements for operation at XPT/High speed boards.	NIF_RSS_52
(d)	Each Train must achieve a ride comfort index of no greater than 2 when tested in accordance with EN 12299 (Mean Comfort Complete Method) under all payload conditions over the following test routes: 1. Gosford - Morisset – Gosford; 2. Penrith - Katoomba – Penrith.	NIF_RSS_53

(e)	Each Train must have sufficient separation of modes of vibration of the carbody structure, bogie suspension, body-bogie attachments and all other body- and bogie-mounted equipment to avoid occurrence of resonance in all operating conditions including 110% overspeed.	NIF_RSS_54
(f)	Each Train must comply with the requirements of ISO 2631-4 (AS 2670.4).	NIF_RSS_55

2.9. Noise

(a)	Each Train must not exceed the following internal noise requirements when measured in accordance with ISO 3381 under the conditions defined below: Train condition: 1. For stationary tests, all systems are operating at maximum capacity (i.e. air compressors operating, HVAC in maximum cooling mode, static inverter fans operating etc.), Crew windows closed and all Crew and passenger doors closed. 2. For dynamic tests, all systems are operating in normal mode (i.e. HVAC in normal cooling mode, traction inverter fans operating, static inverter fans operating etc.) and Crew windows closed all Crew and passenger doors closed. 3. Intermittent noises – Horn operating, brakes applying/releasing, compressor starting or stopping or air drier discharging etc. for less than 5 seconds. Measurement locations: 1. Crew cab: 800 ± 10 mm above Driver's seat cushion. 2. Saloon: 1200 ± 10 mm above floor in passenger seating positions, and 1600 mm ± 10 mm above floor in passenger standing positions, as per ISO 3381.	NIF_RSS_57
(b)	Crew cab: Stationary – All systems operating: 65 dB(A) LpAFmax	NIF_RSS_58
(c)	Crew cab: Stationary – Intermittent noises: 85 dB(A) LpAFmax	NIF_RSS_59
(d)	Crew cab: At 80 km/h accelerating/braking/coasting in open air: 70 dB(A) LpAFmax	NIF_RSS_60
(e)	Crew cab: Up to maximum operating service speed, accelerating/braking/coasting in open air: 76 dB(A) LpAFmax	NIF_RSS_61
(f)	Crew cab: At 80 km/h accelerating/braking/coasting in tunnels: 78 dB(A) LpAFmax	NIF_RSS_62
(g)	Saloon: Stationary – All systems operating: 65 dB(A) LpAFmax	NIF_RSS_63
(h)	Saloon: Stationary – Intermittent noises: 80 dB(A) LpAFmax	NIF_RSS_64

(i)	Saloon: At 80 km/h accelerating/braking/coasting in open air: 70 dB(A) LpAFmax	NIF_RSS_65
(j)	Saloon: Up to maximum operating service speed accelerating/braking/coasting in open air: 76 dB(A) LpAFmax	NIF_RSS_591
(k)	Saloon: At 80 km/h accelerating/braking/coasting in tunnels: 78 dB(A) LpAFmax	NIF_RSS_66
(l)	Each Train must comply with the requirements of AS7513.3 section 2.1 Clause 7 for internal tonal noise.	NIF_RSS_592
(m)	Each Train must comply with the external noise requirements of RSU 150 (T HR RS 00100 ST).	NIF_RSS_67

2.10. Environmental conditions

(a)	Each Train must satisfy all requirements of this Appendix throughout the full range of climatic and environmental operating conditions reasonably expected in the area covered by the Network, without degrading its life expectancy or suffering any permanent damage.		NIF_RSS_69
(b)	As a minimum, each Train must comply with EN 50125-1:		NIF_RSS_70
	(i)	For altitude (clause 4.2), each Train must comply for class A3;	NIF_RSS_71
	(ii)	For temperature (clause 4.3), each Train must comply for class TX except that the temperature range may be considered from -11 °C to +50 °C;	NIF_RSS_72
	(iii)	For hail (clause 4.7), each Train must comply for hail stone diameter of at least 40 mm;	NIF_RSS_73
	(iv)	For snow (clause 4.7), each Train must comply for class "S1"; and	NIF_RSS_74
	(v)	For solar radiation (clause 4.9), each Train must comply for a class "R2".	NIF_RSS_75
(c)	Each Train must continue to comply with the requirements of this Appendix at reduced speed when exposed to floodwater up to 50 mm above rail level.		NIF_RSS_76
(d)	Each Train must continue to comply with the requirements of this Appendix and not sustain damage or degradation when exposed to ballast of 75 mm equivalent diameter striking any equipment fitted to the underframe of the Train at maximum operating service speed.		NIF_RSS_77
(e)	Each Train must continue to comply with the requirements of this Appendix and not sustain damage or degradation when exposed to the current and future projected environmental conditions outlined in T MU RS 17001 ST Environmental Conditions for Rolling Stock.		NIF_RSS_78

2.11. Platform interface

(a)	The width of each Train must be maximised within the "Medium Electric" Rolling Stock Outline Dimensions T HR RS 00100 ST (RSU110 figure 7) such that gaps are minimised at the train-platform interface.	NIF_RSS_80

2.12. Station dwell time

(a)	The Supplier must assume for calculation purposes that the station dwell time is defined as the total time from wheel stop to wheel start.	NIF_RSS_82
(b)	The Supplier must assume for the purposes of calculation that there are no door obstructions, no platform constraints, passengers are evenly distributed along the train and platform, no allowance for collection of luggage, all passengers are able bodied and the train to platform gap has no effect on passenger flow.	NIF_RSS_83
(c)	Each Train must meet the following station dwell time scenario requirements:	NIF_RSS_84
(i)	Maximum station dwell time of 60 seconds, Train at normal payload 50% of passengers alighting and 50% passengers boarding.	NIF_RSS_85
(ii)	Maximum station dwell time of 30 seconds, Train at normal payload 25% of passengers alighting and 25% passengers boarding.	NIF_RSS_86

2.13. Washplant

(a)	The Short Train and each Unit must be compatible to be washed with existing washplants (as described in Attachment A of this Appendix) without any detrimental effect to the Unit or washplant.	NIF_RSS_89
(b)	Each Train must prevent the Train powering above 3.5 km/h when inside a washplant.	NIF_RSS_90

2.14. Fire Safety

(a)	Each Train must comply with ~~the requirements and guidance provided in BS 6853 for fire precautions in the design and construction of category 1b passenger carrying train~~T HR RS 17010 ST - Passenger Rolling Stock Fire Safety.	NIF_RSS_92
(b)	Cars must have a peak heat release rate of less than 30 MW when calculated via the Duggan Method. Materials that in total make up less than 0.7 m² of total surface area within a Car may be exempted from the peak heat release rate calculation.	NIF_RSS_93

2.15. Human factors

(a)	Each Train must comply with T HR HF 00001 ST - Human Factors Integration – Rolling Stock.	NIF_RSS_95
(b)	Each Train must comply with T MU HF 00001 ST - Human Factors Integration – General Requirements.	NIF_RSS_96
(c)	Each Train must comply with the *Disability Discrimination Act 1992* (Cth) and *Disability Standards for Accessible Public Transport 2002* incorporating Amendment 2010 (No. 1) (**DSAPT**).	NIF_RSS_97
(d)	Hearing loop coverage must be provided in all areas of each Car type.	NIF_RSS_654
(e)	Each Train must be equipped with a boarding ramp near each Crew cab.	NIF_RSS_774
(i)	Each boarding ramp must be able to be operated ergonomically and safely by a single person.	NIF_RSS_775
(ii)	Each boarding ramp must not exceed 7.5 kg.	NIF_RSS_776
~~(d)~~(iii)	Each Train must secure access to the boarding ramps.	NIF_RSS_777

2.16. Design Life

(a)	The Supplier must assume that the Train will operate on the Network for 250,000km per year based on at least 19 hours per day, and in certain cycles up to 24 hours per day for seven days per week.	NIF_RSS_99
(b)	Each Unit must have a Design Life of 35 years when maintained in accordance with the requirements of the Asset Management Plan and utilised in accordance with this Appendix.	NIF_RSS_100

2.17. Crashworthiness and structural integrity

(a)	Each Train must comply with T MU RS 01000 ST with crashworthiness design Category C-I (heavy rail).	NIF_RSS_102

2.18. Vandal resistance

(a)	Each Train must be resistant to vandalism and graffiti.	NIF_RSS_104
(b)	The interior bodyside windows (including bodyside door windows) and glazed surfaces must incorporate a means to mitigate vandalism by etching or scratching.	NIF_RSS_105
(c)	Each Train must be fitted with equipment to provide indication of graffiti attack within the toilet. Such graffiti attack indication must be integrated	NIF_RSS_106

with the TMS and CCTV system so that TfNSW can identify offenders as they move from the area.

2.19. Security

(a)	The Train exterior must be designed to prevent a trespasser from climbing onto a Train or train surfing.	NIF_RSS_108
(b)	Each Train must be free from areas where hazardous or malicious items may be concealed.	NIF_RSS_109
(c)	Each Train must provide a means to control access to restricted areas/functions for user groups including; Drivers, guards, customer service assistants, presentation staff and maintenance staff.	NIF_RSS_111
(d)	Each Train must control access to the Crew cab using smart card technology.	NIF_RSS_115
(e)	Each Train must record the identity of staff accessing the Train using the smart card.	NIF_RSS_116
(f)	The Supplier must obtain TfNSW's written approval for the proposed access controls.	NIF_RSS_112
(g)	Each Train must be protected from unauthorised tampering.	NIF_RSS_110
(h)	All fasteners in passenger areas of each Train must be concealed as far as practicable.	NIF_RSS_113
(i)	Any passenger accessible fasteners inside each Train must require special tooling to remove.	NIF_RSS_114

2.20. Maintenance

(a)	Each Train must operate without planned maintenance at a Maintenance Facility for at least 60 days.	NIF_RSS_118

2.21. Future proofing

(a)	Each Train must have provision for Automatic Train Operation (ATO) with Grade of Automation 2 (GoA 2).	NIF_RSS_120
(b)	Each Train must provide spare capacity for future upgrades and modifications not otherwise specified within this Appendix, including but not limited to:	NIF_RSS_121
	(i) 10% AC auxiliary power capacity	NIF_RSS_122
	(ii) 15% battery capacity	NIF_RSS_123
	(iii) 15% autocoupler electrical connections	NIF_RSS_124

	(iv)	15% intercar jumper capacity	NIF_RSS_125
	(v)	15% data storage capacity	NIF_RSS_126
	(vi)	15% event recorder (each I/O type)	NIF_RSS_127
	(vii)	10% Train Management System (each I/O type)	NIF_RSS_128
	(viii)	15% power distribution panel capacity	NIF_RSS_129
	(ix)	15% power cable capacity	NIF_RSS_130
	(x)	15% data cable capacity	NIF_RSS_131
	(xi)	15% control cable cores	NIF_RSS_132
(c)	Each Train must be capable of modification to a maximum operating service speed of 130 km/h.		NIF_RSS_133

3. Base systems

3.1. Bodyshell and structure

(a)	Each Train must comply with T MU RS 01000 ST for P-II vehicles (heavy rail multiple unit trains).	NIF_RSS_136
(b)	Each Train must use materials that are resistant to damage or fade caused by exposure to sunlight such that there are no visible signs of photo-degradation for at least 10 years.	NIF_RSS_138
(c)	Each Train must redirect water so that it does not fall onto passengers or Crew at doorways and window openings.	NIF_RSS_139

3.1.1. Livery and labelling

(a)	Each Train must adhere to the TfNSW External Livery Principles for 'NSW Trains'.	NIF_RSS_636
(b)	Each Train must adhere to the TfNSW Internal Decal Approach for 'Trains' or 'NSW Trains' as relevant.	NIF_RSS_618
(c)	The Supplier must provide a schedule of finishes for each Train including all aspects of external and internal material types and finishes visible or accessible to passengers or Crew.	NIF_RSS_141
(d)	The Supplier must obtain TfNSW's written approval of the schedule of finishes for each Train.	NIF_RSS_142
(e)	The Supplier must provide a schedule of decals for each Train including all aspects of the internal and external decals, lettering, signs and labelling.	NIF_RSS_143
(f)	The schedule of decals must be consistent with those currently provided on TfNSW's existing fleets and include location of decals, and any instructions and information systems required for passengers to interact with the Trains.	NIF_RSS_150
(g)	The Supplier must obtain TfNSW's written approval of the schedule of decals for the Train.	NIF_RSS_151
(h)	Signage, advertising materials and decals must be secured in a manner that allows their successful repeat application and removal without specialised techniques, significant effort, or damaging the attachment surface(s).	NIF_RSS_152
(i)	Signage, advertising materials and decals must be resistant to vandalism.	NIF_RSS_153
(j)	Each Train must provide low-level emergency signs to indicate the route to the nearest emergency exit.	NIF_RSS_154
(k)	Emergency signs must be photo luminescent.	NIF_RSS_155

(l)	Supplier or sub-supplier names, logos or slogans must not be visible on the exterior or the interior of any Train without TfNSW's written approval.	NIF_RSS_156
(m)	Each Train must include large format decals on the exterior of passenger bodyside doors to indicate the location(s) for wheelchairs, bikes and luggage.	NIF_RSS_655

3.1.2. Lifting and jacking

(a)	The Unit must enable lifting or jacking without damage with the bogies attached, for the purposes of:	NIF_RSS_158
	(i) maintenance; and	NIF_RSS_159
	(ii) re-railing with the bogies attached.	NIF_RSS_160
(b)	The Unit should be compatible with the Rail Emergency Train Recovery Unit (RETRU) pony bogie.	NIF_RSS_161
(c)	If the RETRU pony bogie is not compatible with the Unit, the Supplier must provide a compatible pony bogie for the purpose of standard recovery in the event of a broken wheel, broken axle, seized bearing or seized drive train.	NIF_RSS_162

3.1.3. Exterior body steps

(a)	Each Train must provide steps at all Crew and emergency access and egress bodyside door positions to enable persons to enter or exit the Car safely from/to platform level, rail level and a maximum of 450 mm below rail level from either side of the Train.	NIF_RSS_164

3.2. Windows

(a)	All windows and glazing, other than windscreens, must comply with the requirements of AS 2080.	NIF_RSS_166
(b)	The passenger and crew windows must meet the following parameters:	NIF_RSS_167
	(i) Luminous transmittance > 50%	NIF_RSS_168
	(ii) Infrared rejection level > 60%	NIF_RSS_169
	(iii) UV rejection level > 99%	NIF_RSS_170
	(iv) Reflectance (interior and exterior) < 7%	NIF_RSS_171
	(v) Direct solar heat transmission < 30%	NIF_RSS_172
	(vi) Total solar energy rejection > 53%	NIF_RSS_173
(c)	Passenger windows must not be able to be opened.	NIF_RSS_174

(d)	Windscreens must meet the requirements of EN 15152.	NIF_RSS_175
(e)	The Train windscreens must be fitted with wipers, washers and demisters operable from the Driver's seated position.	NIF_RSS_176
(f)	Each Train must provide a windscreen washing system to provide the Driver with a clear, unobstructed view, by removing dirt, dead insects and other similar materials.	NIF_RSS_177

3.3. Gangway

(a)	The intermediate coupling between Cars must be fitted with a gangway system compliant with EN 16286-1.	NIF_RSS_179
(b)	Each Train must mitigate the risk of persons falling within the Train-platform interface at gangway locations.	NIF_RSS_180
(c)	The gangway system must not look like a passenger doorway when viewed externally from a platform by people with vision impairment.	NIF_RSS_181
(d)	The gangway system must include internal and external drainage to prevent the accumulation of liquids.	NIF_RSS_182

3.4. Coupling system

(a)	Each terminal end of each Unit must be fitted with an automatic coupler compatible with Scharfenberg Type 10.	NIF_RSS_184
(b)	Each terminal end of each Unit must be capable of coupling to a standard AAR 10A contoured coupler using an adapter coupling.	NIF_RSS_185
(c)	The adapter coupling must be deployable by one Crew member at any location on the Network in accordance with National Standard for Manual Tasks and Hazardous Manual Tasks Code of Practice.	NIF_RSS_186
(d)	The Unit must provide secure storage for the adapter coupling at each terminal end.	NIF_RSS_187
(e)	The adaptor coupling must be sufficiently rated to enable a locomotive or other train fitted with an AAR 10A contoured coupler to recover a Train with exceptional payload on all track geometry within the Network at 25km/h.	NIF_RSS_188
(f)	The coupling system must comply with GM/RT 2100 Issue 5 (with the exception of section 8.3 'Design requirements for buffers') and RIS-2790-RST Issue 1.	NIF_RSS_189
(g)	The 'limiting track geometries' referred to in section 2.1.1.3 of RIS-2790-RST Issue 1 must be as specified in T HR RS 00200 ST Static vehicle/vehicle swing test (RSU 285).	NIF_RSS_190
(h)	The coupling system must be sufficient to recover a Train with an exceptional payload.	NIF_RSS_191

3.4.2. Coupling performance

(a)	The Units and Trains must be capable of being coupled and uncoupled with passengers on board in station environments on a frequent basis in accordance with the Train Plan.	NIF_RSS_193
(b)	The Driver must be able to couple a Unit to another Unit from a Driver's workstation without assistance from any other person.	NIF_RSS_194
(c)	Each Train must automatically confirm that within two minutes whether the requirements of the Minimum Operating Standards are met following coupling or uncoupling of two Serviceable Units.	NIF_RSS_195
(d)	The Driver must be able to uncouple the Units of a Train from either intermediate Driver's workstation unassisted when the Train is at standstill.	NIF_RSS_196
(e)	The Driver must be able to determine whether or not two or more Units are mechanically, pneumatically and electrically coupled from any Driver's workstation.	NIF_RSS_197
(f)	The Units of a Train must be able to be mechanically, pneumatically and electrically uncoupled when the Train has no electrical or pneumatic energy (dead train recovery).	NIF_RSS_198
(g)	The automatic coupler must protect electrical and pneumatic connections from the ingress of water, dirt, and waste or debris of any kind when uncoupled.	NIF_RSS_199

3.5. Bogies

(a)	The bogie must remain stable up to the 110% of the maximum operating service speed in all degrees of freedom under normal, degraded, worn and expected fault and failure conditions.	NIF_RSS_201
(b)	The bogie fitted to the Units must have been designed and tested to an internationally recognised standard such as EN 15827.	NIF_RSS_202
(c)	The bogie fitted to the Units must be in successful use up to the maximum operating service speed on a comparable rail network.	NIF_RSS_203
(d)	If air springs are used as the means of secondary suspension, in the event of depressurisation of the air suspension system each Train must immediately alert the Driver, deflate any other air springs on the same bogie and inform the Driver of the maximum safe operating speed.	NIF_RSS_204
(e)	The maximum safe operating speed under deflated air suspension conditions must not be less than 80 km/h.	NIF_RSS_205
(f)	In the event of an air spring deflating, the Car must remain level in the transverse direction when stationary on tangent track.	NIF_RSS_206

3.6. Brakes

(a)	Each Train must have a braking system that complies with EN 16185-1 except as otherwise tailored by this appendix.	NIF_RSS_208
(b)	Reference to EN 15273 (Rolling Stock Gauge) within EN 16185-1 must be replaced with T HR RS 00100 ST (RSU110 figure 7) – RailCorp "Medium Electric" Rolling Stock Outline Dimensions.	NIF_RSS_209
(c)	Each Train must incorporate an electro-dynamic brake with both regenerative and rheostatic modes as per section 5.3 of EN 16185-1.	NIF_RSS_210
(d)	The rheostatic mode must be fully rated such that the Train can use full dynamic braking when operating to the running times described in Appendix 06, on a non-receptive network.	NIF_RSS_211
(e)	Each Train must automatically perform brake blending in accordance with the hierarchy defined in section 5.9.1 of EN 16185-1.	NIF_RSS_212
(f)	Each Train must have an automatic holding brake in accordance with section 5.9.2.2 and 5.11.2 of EN 16185-1.	NIF_RSS_213
(g)	Each parking brake referred to in section 5.11.4 of EN 16185-1 must perform in accordance with section 6.2 of RSU 641 (T HR RS 00600 ST).	NIF_RSS_214
(h)	Each Train must automatically apply the parking brake upon deactivation of the Driver's workstation.	NIF_RSS_215
(i)	Each Train must only allow release of parking brake throughout the Train from an active Driver's workstation.	NIF_RSS_216
(j)	Each Train must compensate for payload during service brake and emergency brake applications.	NIF_RSS_217
(k)	Each Train must achieve the braking performance set out in section 6.1 of RSU 641 (T HR RS 00600 ST).	NIF_RSS_218
(l)	The passenger alarm system and associated functionality referred to in sections 5.8.2.2.3, 5.9.2.3 and 5.12.2.2 of EN 16185-1 is not required for the brake system.	NIF_RSS_219
(m)	Enhancement of wheel-rail adhesion referred to in section 5.16 of EN 16185-1 is not required for the brake system.	NIF_RSS_220

3.6.1. Combined controller

(a)	Each Train must have a combined traction and brake controller as per section 5.9.2.1.3 in EN 16185-1.	NIF_RSS_222
(b)	The combined traction and brake control lever must operate conversely to section 5.8.2.1.2 and 5.9.2.1.3 in EN 16185-1, that is, the control range for traction is towards the Driver and the control range for braking is away from the Driver.	NIF_RSS_223

3.7. Traction

(a)	Each Train must be rated to meet the service profile defined in Appendix 06.	NIF_RSS_225
(b)	Each Train must enable the Driver to select the forward or reverse direction of travel.	NIF_RSS_226
(c)	Each Train must automatically restrict the current drawn from and returned to the overhead wire against configurable limits based on location information.	NIF_RSS_227
(d)	Each Train must enable the Driver to override the location information based overhead wire limits, for use in exceptional situations to recover the Train.	NIF_RSS_228
(e)	Each Train must comply with IEC 61287-1, where the Supplier is responsible for all "User" defined requirements for the power converters that are not defined in this appendix or in the standard.	NIF_RSS_229
(f)	Each Train must compensate for payload during powering.	NIF_RSS_230

3.7.1. Wheel slip/slide protection

(a)	Each Train must minimise wheel slip and wheel slide in all environmental and payload conditions.	NIF_RSS_232

3.8. Electrical auxiliary power

(a)	Each Train must comply with T HR RS 10001 ST.	NIF_RSS_234
(b)	Each Train must provide 240 V ac power within each car compatible with existing TfNSW cleaning equipment.	NIF_RSS_593
(c)	Each Train must restrict access to the 240 V ac power to authorised personnel.	NIF_RSS_594
(d)	Each Train must enable the Crew to stable the Train from the Crew cab.	NIF_RSS_634
(e)	Each Train must enable the Crew to prepare the Train to be Serviceable after seven days of stabling from an initial 80% state of charge of the batteries.	NIF_RSS_635

3.9. Air supply

(a)	Each Train must maintain the air supply to purity class 1:3:1 in accordance with ISO 8573.1 including when supplying air to an immobilised vehicle via the terminal end main reservoir (MR) / brake pipe (BP) interface.	NIF_RSS_236

(b)	Each Train must be capable of receiving air from a hauling vehicle with lower air quality than ISO 8573.1 purity class 1:3:1 when connected to the hauling vehicle via the terminal end MR / BP interface without contaminating the Train's pneumatic systems.	NIF_RSS_237

3.10. Main power

(a)	Each Train must meet the requirements of T HR RS 11119 ST.	NIF_RSS_240
(b)	Each Train must meet the requirements and limits of section 9 of T HR EL 90003 ST for "8-car sets".	NIF_RSS_241

3.11. Doors

3.11.1. Selective Door Control

(a)	Each Train must have an automatic Selective Door Operation (SDO) system to enable the door system to interface safely with platforms shorter than the length of the Train.	NIF_RSS_244
(b)	A passenger bodyside door must be SDO-enabled when a Unit is at standstill and the passenger bodyside door is completely alongside a safe point of egress (e.g. a platform), refer section 5.1.3 of EN 14752.	NIF_RSS_245
(c)	Each Train must allow the Crew to manually select individual doors to be enabled and/or disabled from a Crew workstation.	NIF_RSS_246

3.11.2. Bodyside doors – general

(a)	Each Train must enable bodyside doors to be manually 'closed and locked'.	NIF_RSS_248
(b)	The bodyside door strength must be based on the vehicle overturning case, refer section 4.2.1.4 of EN 14752.	NIF_RSS_249
(c)	The bodyside door closing warning must be repeated when a door reopens after detecting an obstacle, refer section 5.2.1.3.2 of EN 14752.	NIF_RSS_250
(d)	The bodyside doors must operate without failure, without false obstructions, and within the performance requirements of this Appendix at any platform within the Network.	NIF_RSS_251

3.11.3. Passenger bodyside doors

(a)	The passenger bodyside doors must comply with EN 14752 except as tailored otherwise in this Appendix.	NIF_RSS_253

(b)	Each Train must enable Crew to 'open' all [redacted] passenger bodyside doors on either or both sides of the Train from any Crew cab.	NIF_RSS_254
(c)	Each Train must enable Crew to 'open' ~~all~~ [redacted] a local passenger bodyside ~~doors on each side of the Train from any Car~~door via ~~a~~an adjacent secure Crew-only accessible panel.	NIF_RSS_255
(d)	Each Train must enable the Crew to immediately 'open' doors that are in the process of closing without completing the closing cycle.	NIF_RSS_256
(e)	Each Train must enable Crew to 'release' all [redacted] passenger bodyside doors on either or both sides of the Train from any Crew cab, refer section 5.1.2 of EN 14752.	NIF_RSS_257
(f)	~~Each Train must enable Crew to 'release' all [redacted] passenger bodyside doors on either or both sides of the Train from any Car vestibule via a secure Crew-only accessible panel.~~Not Used	NIF_RSS_258
(g)	Note: The term 'release' is used rather than 'enable' from EN14752 to mean "a door released by the Crew to permit opening by a passenger using the local door button".	NIF_RSS_259
(h)	Each Train must enable Crew to 'close and lock' all open/released passenger bodyside doors on either or both sides of the Train from any Crew cab.	NIF_RSS_260
(i)	Each Train must enable Crew to 'close and lock' ~~all open/released~~a local passenger bodyside ~~doors on each side of the Train from any Car vestibule~~door via ~~a~~an adjacent secure Crew-only accessible panel.	NIF_RSS_261
(j)	Each Train must automatically 'close' any ~~open~~'released' passenger ~~body side doors after~~ bodyside door 240 seconds after it has been operated via the local passenger door control button.	NIF_RSS_262
(k)	The passenger bodyside door unrestricted passage width must be at least 1700 mm, refer section 4.1.1.1 of EN 14752.	NIF_RSS_263
(l)	The passenger bodyside doors must be fitted with external and internal door buttons for passenger "open" function that are accessible to all users, refer section 4.3.1 of EN 14752 and DSAPT.	NIF_RSS_264
(m)	The passenger bodyside doors must only be released under the control of the Crew (not automatically) as per section 5.1.1 of EN 14752.	NIF_RSS_265
(n)	The passenger bodyside doors must include windows to enable able-bodied and wheelchair passengers to view the platform.	NIF_RSS_266
(o)	The passenger bodyside doors must provide an internal visual and audible warning prior to door movement.	NIF_RSS_267
(p)	The passenger bodyside doors must have the following functionality upon detection of an obstruction as per section 5.2.1.4 of EN 14752:	NIF_RSS_269
	(i) on first detection, the affected doors must fully re-open for one second before attempting to close again;	NIF_RSS_582
	(ii) if an obstruction is detected on the second attempt to close, the affected doors must re-open by at least 200 mm between	NIF_RSS_585

abutting edges for one second before attempting to close again;

(iii) if an obstruction is detected on the third attempt to close, the affected doors must re-open by at least 200 mm between abutting edges for one second before attempting to close again (and a passenger must be able to push the door back further); and — NIF_RSS_584

(iv) if an obstruction is detected on the fourth attempt to close, the door must fully re-open and remain in this state until the Crew initiates the 'close and lock' sequence again. — NIF_RSS_583

3.11.4. Intercar access doors

(a) The intercar access doors must be electrically powered for opening and closing cycles. — NIF_RSS_620

(b) The intercar access doors must enable able-bodied and wheelchair passengers to gain access to adjacent Cars. — NIF_RSS_621

(c) The intercar access doors must include windows to maximise the view through to adjacent cars for able-bodied and wheelchair passengers. — NIF_RSS_622

(d) The intercar access doors on either side of each gangway must simultaneously open on local pushbutton request from inside or outside the gangway location. — NIF_RSS_623

(e) The intercar access doors must automatically re-close 15 seconds after opening. — NIF_RSS_624

(f) The intercar access doors must comply with the obstacle detection requirements of EN 14752 section 5.2.1.4. — NIF_RSS_625

(g) Each Train must enable the Crew to lock open all intercar access doors throughout the Train from any active Crew cab. — NIF_RSS_626

(h) Each Train must enable the Crew to release all locked open intercar access doors throughout the Train from any active Crew cab. — NIF_RSS_627

(i) Each Train must enable the Crew to isolate the intercar access doors on any Car from any active Crew cab. — NIF_RSS_628

(j) Each Train must enable the Crew to isolate the intercar access doors on any Car locally. — NIF_RSS_629

3.11.5. Crew bodyside doors

(a) Each Crew cab must have a Crew cab bodyside door on each side of the Car that complies with EN 14752 (except as tailored otherwise in this Appendix). — NIF_RSS_271

(b)	The Crew cab bodyside door unrestricted passage width must be at least 660 mm, refer section 4.1.1.1 of EN 14752.	NIF_RSS_272

3.11.6. Crew cab internal door

(a)	The Crew cab must have an internal door that provides rapid egress from the Crew cab to the passenger saloon.	NIF_RSS_276
(b)	The Crew cab internal door must provide security against unauthorised access into the Crew cab.	NIF_RSS_277
(c)	The Crew cab internal door must comply with section 6.5 of Railway Group Standard GM/RT 2100.	NIF_RSS_279
(d)	The Crew cab internal door must be self-closing, but capable of being latched or locked in the fully open position for cleaning or emergency access.	NIF_RSS_280
(e)	The Crew cab internal door must not open inward towards the Crew cab.	NIF_RSS_281

3.11.7. End detrainment system

(a)	The front of each Crew cab must be fitted with an end detrainment system that can be used for controlled evacuation when the Train is stationary.	NIF_RSS_283
(b)	Throughout the end detrainment system deployment process, all parts of the Train, including the end detrainment system, must remain within the static rolling stock outline for "Medium Electric" rolling stock (RSU 110 as defined in T HR RS 00100 ST) with the exception of the lower boundary.	NIF_RSS_286
(c)	The end detrainment system must enable safe Train to track egress and Unit to Unit transfer of a passenger on an emergency services stretcher.	NIF_RSS_287
(d)	The end detrainment system must be able to be deployed for Train to track egress within two minutes by an unassisted passenger.	NIF_RSS_288
(e)	The end detrainment system must enable passengers to safely transfer from Unit to track at a rate of at least 600 unassisted passengers in a 10 minute period.	NIF_RSS_285
(f)	The end detrainment system must be able to be deployed for Unit to Unit transfer within 10 minutes by a single unassisted passenger without requiring track level access.	NIF_RSS_289
(g)	The end detrainment system must enable passengers to safely transfer from Unit to Unit at a rate of at least 600 unassisted passengers in a 10 minute period.	NIF_RSS_284
(h)	Each Train must provide a visual indication in the Crew cab that the end detrainment system is available for use (ready for deployment).	NIF_RSS_290
(i)	The end detrainment system must be able to be safely restored to its un-deployed state within 15 minutes by no more than two authorised	NIF_RSS_291

persons such that the Train satisfies the requirements of the Minimum Operating Standards.

3.11.8. Emergency egress & access

(a)	An emergency egress device must be provided at each passenger bodyside door as well as any interior doors including the Crew cab internal door, refer 4.3.2.1 for EN 14752.	NIF_RSS_595
(b)	The emergency egress device must only open a door when the Train is at a standstill, and the emergency egress function is not inhibited, refer section 5.5 of EN 14752.	NIF_RSS_293
(c)	The emergency egress device must be protected against accidental operation by a non-detachable, re-usable protective cover, refer section 5.5 of EN 14752.	NIF_RSS_294
(d)	Each Train must provide a local visual and audible alarm when the protective cover of an emergency egress device has been opened.	NIF_RSS_295
(e)	The local visual and audible alarm must automatically cease when the protective cover is closed.	NIF_RSS_296
(f)	Each Train must inhibit the emergency egress device for a period of 20 seconds after the protective cover has been opened to allow the Crew time to assess the situation and permit or inhibit egress.	NIF_RSS_297
(g)	Each Train must provide a remote visual and audible alarm to Crew and activate the adjacent passenger intercom if the protective cover of the emergency egress device has been opened for more than three seconds.	NIF_RSS_298
(h)	Each Train must provide a local visual and audible alarm when an emergency egress device is activated, refer section 5.5 of EN 14752.	NIF_RSS_299
(i)	Each Train must provide a visual and audible alarm to Crew when an emergency egress device is activated, refer section 5.5 of EN 14752.	NIF_RSS_300
(j)	Each Train must enable the Crew to inhibit emergency egress for 30 minutes following the opening of a protective cover.	NIF_RSS_301
(k)	Each Train must enable the Crew to cancel the inhibition of emergency egress.	NIF_RSS_302
(l)	Each Car must have at least one emergency access device on each side.	NIF_RSS_656
(m)	The emergency access device must not permit access to the Train when stabled.	NIF_RSS_303
(n)	The passenger bodyside door emergency access and egress device must not require a key or other equipment to operate.	NIF_RSS_268
(o)	The intercar access doors must incorporate an emergency egress device to enable egress from the saloon to the gangway.	NIF_RSS_630
(p)	The intercar access doors must incorporate an emergency access device to enable access from the gangway to the saloon.	NIF_RSS_631

(q)	The intercar access doors must enable access to, and egress from, the Car in the event the Car is on its side.	NIF_RSS_632
(r)	The Crew cab internal door emergency egress device must not require a key or other equipment to operate.	NIF_RSS_586
(s)	The Crew cab bodyside door emergency access device must require a service key to operate it, refer section 5.5.3.2.1 of EN 14752.	NIF_RSS_273
(t)	~~Each Train must provide secure storage for an emergency ladder with stowed dimensions of 500 mm x 300 mm x 1200 mm and weight of 40 kg.~~Not Used	NIF_RSS_304

3.11.9. Door-traction interlock

(a)	Each Train must continuously indicate to the Crew any bodyside door that is not 'closed and locked'.	NIF_RSS_306
(b)	Each Train must prevent traction power being applied if any bodyside door (including Crew cab doors) is not 'closed and locked' as per section 5.2.2.1 of EN 14752, except as set out in section 3.11.9 (c).	NIF_RSS_307
(c)	Each Train must enable traction power to be applied without bodyside doors being 'closed and locked' by using a manual override, intended to be activated by the Driver in exceptional situations to recover the Train.	NIF_RSS_308
(d)	Each Train must provide an audible indication to the Crew similar to that used on existing TfNSW rolling stock once all passenger bodyside doors are 'closed and locked'.	NIF_RSS_309

3.12. Heating, Ventilation and Air Conditioning

(a)	Each Train must comply with T HR RS 08001 ST for Service Type B.	NIF_RSS_311
(b)	A Driver must be able to close the passenger fresh air intake dampers from the Driver's workstation to limit the intake of external smoke and fumes.	NIF_RSS_312
(c)	The passenger fresh air intake dampers must automatically re-open five minutes after the last close request by the Driver.	NIF_RSS_313
(d)	Each Train at design mass in working order must establish interior climate comfort levels from a stabled condition within [redacted] minutes for all environmental conditions.	NIF_RSS_314

3.13. Lighting

(a)	Each Train must comply with T HR RS 12001 ST.	NIF_RSS_316

(b)	Each Train must provide access step lights at the Crew cab that may be switched on by the Crew accessing the Train from rail level or a maximum of 450mm below rail level.	NIF_RSS_317

3.14. Communications

(a)	Each Train must comply with T HR TE 41001 - ST Packet Switched Networks Wired – Local. Metropolitan, and Wide Area Networks.	NIF_RSS_319
(b)	Each Train must comply with T HR TE 41002 - ST Wireless Data Communications in LIPD Class Licensed Bands.	NIF_RSS_320
(c)	Each Train must comply with T HR TE 81001 - ST Telecommunications Equipment – Physical Interfaces and Environmental Conditions.	NIF_RSS_321
(d)	Each Train must comply with T HR TE 81002 - ST Telecommunications Equipment Network Management.	NIF_RSS_322

3.14.1. On-train communication system

(a)	Each Train must be equipped with an on-Train communications system that permits the Crew to communicate with each other between Crew workstations.	NIF_RSS_324
(b)	The on-Train communications system must be capable of full-duplex voice communications.	NIF_RSS_325
(c)	The on-Train communications system must incorporate a bell system allowing Crew to communicate with each other using Morse or other types of codes.	NIF_RSS_326
(d)	The bell system must be operated by a momentary action push-button.	NIF_RSS_327
(e)	The bell system must be clearly distinguishable from other sounds in the Crew workstations.	NIF_RSS_328
(f)	The bell system must comply with section 13.3.2.2 of AS 7533.3.	NIF_RSS_329
(g)	The on-Train communications system must incorporate accessible passenger intercoms that permit passengers to communicate with Crew in case of emergency or where assistance is required.	NIF_RSS_330
(h)	A passenger intercom must be provided adjacent to any passenger body-side door with an emergency egress function.	NIF_RSS_331
(i)	Each Train must escalate a passenger intercom call to the Train radio to allow response by an off-board staff member in the event of Crew inactivity or lack of response after 120 seconds.	NIF_RSS_332
(j)	Each Train must provide the capacity to handle multiple passenger and Crew calls.	NIF_RSS_333

(k) The priority order and queue management of passenger and Crew calls must be configurable. NIF_RSS_334

3.14.2. Train radio

(a) Each Crew cab must be fitted with GSM-R Train radio equipment compatible with the NSW Digital Train Radio System (DTRS). NIF_RSS_337

(b) Each Crew cab must be fitted with a GSM-R Train radio handheld portable compatible with the NSW Digital Train Radio System (DTRS). NIF_RSS_657

(c) Train radio equipment must comply with all mandatory requirements within EIRENE Functional Requirement Specification version 7.4 except as tailored otherwise in this Appendix. NIF_RSS_338

(d) Train radio equipment must comply with the following optional requirements within EIRENE Functional Requirement Specification version 7.4: NIF_RSS_339

Document	Clause	Part of clause
FRS	5.2.3.1	All failures of self-tests should be recorded in the train-borne recorder
FRS	5.2.3.8	Whole clause
FRS	5.2.3.10	Whole clause
FRS	5.2.3.25ii	Whole clause
FRS	5.2.3.25vi	Whole clause
FRS	5.2.3.26	Initiate automated request
FRS	5.2.3.42	Forward call to the driver handportable
FRS	5.2.4.8	Whole clause
FRS	5.2.4.10	Whole clause
FRS	5.2.4.12	Whole clause
FRS	5.4.14	Whole clause
FRS	5.7.1	Whole clause
FRS	5.7.3	Location information
FRS	5.7.5	Whole clause
FRS	5.8.1	Radio faults
FRS	5.10.2	Whole clause
FRS	11.4.7	Whole clause
FRS	12.2.1	Whole clause
FRS	12.3.2	Whole clause
FRS	13.2.3.1i	Whole clause
FRS	13.2.3.2	Whole clause

(e) Train radio equipment must comply with all mandatory requirements within EIRENE System Requirement Specification version 15.4 except as tailored otherwise in this Appendix. NIF_RSS_340

(f) Train radio equipment must comply with the following optional requirements within EIRENE System Requirement Specification version 15.4: NIF_RSS_341

Document	Clause	Part of clause
SRS	2.2.1	2-21
SRS	2.2.1	2-22
SRS	2.2.1	2-23
SRS	4.3.2	70-Cab Radio
SRS	4.3.3	CFB Cab Radio
SRS	4.3.3	CFNRy Cab Radio
SRS	4.3.3	CFNRc Cab Radio
SRS	4.3.3	BAOC Cab Radio
SRS	4.3.3	BOIC Cab Radio
SRS	5.4.5	Whole clause
SRS	5.6.3	Whole clause
SRS	5.6.5i	Whole clause
SRS	5.7.7	Whole clause
SRS	5.7.8	Whole clause
SRS	11.3.9ii	Whole clause
SRS	11.7.1	Whole clause

(g) With reference to EIRENE System Requirement Specification version 15.4 Clause 5.8.1, the Train radio equipment must: NIF_RSS_342

(i) interface to the Train borne recorder; NIF_RSS_699

(ii) interface to the on-Train communications system to enable a public address announcement to be made by a staff member not on the Train; NIF_RSS_700

(iii) interface to the on-Train communications system to enable passenger intercoms to be responded to by a staff member not on the Train; and NIF_RSS_701

(iv) interface to the Driver's safety device. NIF_RSS_702

(h) Train radio equipment must be capable of operating on the DCS 1800 frequency band operated on the Network. NIF_RSS_343

(i) Train radio equipment must be compatible with alpha-numeric trip codes used in NSW. NIF_RSS_344

TfNSW

(j)	Train radio equipment must support the use of up to six character alphanumeric trip codes in place of EIRENE functional numbers.	NIF_RSS_345
(k)	Train radio equipment must implement enhanced location dependent addressing to discretely identify Trains on different tracks and with a longitudinal accuracy of 10m to enable calls to be routed to the correct controller.	NIF_RSS_346
(l)	Existing DTRS systems utilise the MetroNet track based transponders to achieve the location accuracy required above, the Supplier may also consider use of the MetroNet transponder system for the Train radio.	NIF_RSS_347
(m)	A Train radio at a Crew workstation occupied by a Crew member other than the Driver must be capable of monitoring any voice calls made or received by the Driver's Train radio and receive any text messages directed to the Driver's Train radio.	NIF_RSS_348
(n)	The Train radio interface must be able to initiate a call to the primary controller using a single yellow button.	NIF_RSS_349
(o)	The Train radio interface must be able to initiate the following functionality with one button press only:	NIF_RSS_350
	(i) manual entry of DTRS area numbers;	NIF_RSS_351
	(ii) entry of trip code; and	NIF_RSS_352
	(iii) entry/management of text messages.	NIF_RSS_353
(p)	With reference to EIRENE Functional Requirement Specification version 7.4 Clause 2.3.5, the Train radio equipment must implement radio frequency field monitoring with automatic reporting to the ground.	NIF_RSS_587

3.14.3. Passenger information system

(a)	Each Train must incorporate a passenger information system.	NIF_RSS_355
(b)	The passenger information system must manage and control the display and annunciation of information on the public address system, as well as the internal and external passenger information displays.	NIF_RSS_356
(c)	The passenger information system must operate automatically without Crew input other than initial route set-up.	NIF_RSS_357
(d)	The passenger information system must convey to passengers the current date and time.	NIF_RSS_358
(e)	The passenger information system must convey to passengers the current route and any connection information.	NIF_RSS_359
(f)	The passenger information system must convey to passengers the current and next station(s).	NIF_RSS_360
(g)	The passenger information system must convey to passengers advice for alighting.	NIF_RSS_361

(h)	The passenger information system must convey to passengers station facilities and layouts and other local information.	NIF_RSS_362
(i)	The passenger information system must allow for configurable selection of information and method(s) used to convey information to passengers.	NIF_RSS_363
(j)	The passenger information system must allow for different information to be provided in each Car of the Train to enable Car specific alighting information (e.g. advising of short platforms, advising of locked out Cars) and for multiple Unit operations (e.g. division of the Train to operate different services).	NIF_RSS_364
(k)	The passenger information system must provide a Crew interface at all Crew workstations to select pre-set or free-form messages for display and/or annunciation.	NIF_RSS_365
(l)	The passenger information system must provide a remote interface to select pre-set or free-form messages for display and/or annunciation.	NIF_RSS_366
(m)	The passenger information system must convey to passengers real-time running information compared to the Timetable.	NIF_RSS_367
(n)	The passenger information system must enable remote update of message and Timetable data.	NIF_RSS_368
(o)	The passenger information system must convey to passengers their location within the Train.	NIF_RSS_658
(p)	The passenger information system must convey to passengers the Train facilities including their location(s).	NIF_RSS_659
(q)	The passenger information system must convey to passengers the passenger loading of the Train per Car.	NIF_RSS_660

3.14.4. Public address system

(a)	Each Train must incorporate a public address system.	NIF_RSS_370
(b)	The public address system must be operable by Crew from the Crew cabs and ~~secure control panels within every Car of the Train~~the portable Crew interface.	NIF_RSS_371
(c)	Each Train must enable remote users to make public address announcements via the Train radio.	NIF_RSS_372
(d)	The public address system must provide pre-recorded information to be triggered automatically by the passenger information system.	NIF_RSS_373
(e)	The public address system must provide pre-recorded information to be triggered manually by the Crew.	NIF_RSS_374
(f)	The public address system must provide high quality audio in all passenger saloon areas with a speech transmission index of not less than 0.6 when measured in accordance with EN 60268-16 FULL STI.	NIF_RSS_375

(g)	The public address system must automatically adjust the volume of both manual and pre-recorded announcements in each Car to compensate for ~~the ambient noise in each Car.~~time of day, passenger load and in Cars designated as "quiet Cars".	NIF_RSS_376
(h)	The public address system must enable the Crew to make external announcements on each side of each Car that are audible by passengers standing or sitting at platforms with doors in both open and closed positions.	NIF_RSS_703

3.14.5. Internal passenger information displays

(a)	The internal passenger information displays must be positioned to allow all seated passengers (including within allocated spaces) to easily view the information under normal payload.	NIF_RSS_378
(b)	Internal passenger information displays must comply with section 17.2 of AS 1428.2 for heights of letters.	NIF_RSS_379

3.14.6. External passenger information displays

(a)	Each end of the Unit must be fitted with an external passenger information display.	NIF_RSS_381
(b)	The Train end external passenger information display must be readable by passengers on a platform from a distance of 50m away as the Train approaches/departs a station.	NIF_RSS_382
(c)	Each Car must incorporate two external passenger information displays on each side that are readable by passengers standing or sitting at platforms with doors in both open and closed positions.	NIF_RSS_661
(d)	Each external bodyside passenger information display must be capable of displaying the following information;	NIF_RSS_662
	(i) passenger loading per Car; and	NIF_RSS_663
	(ii) destination and route.	NIF_RSS_664

3.15. CCTV

(a)	Each Train must be equipped with a CCTV system to enable passenger areas of the Train and the Train-platform interface to be observed by Crew.	NIF_RSS_384
(b)	The CCTV system storage must have capacity to record and maintain a minimum of 31 days of images before being overwritten.	NIF_RSS_385
(c)	The CCTV system must include date, time, unique car identification, camera location, geographical location with all stored image data.	NIF_RSS_386

(d)	The CCTV system must record images from all cameras in all operational modes and environmental conditions.	NIF_RSS_387
(e)	The CCTV system image data must be tamper resistant such that any tampering and any corruption of data can be detected and identified.	NIF_RSS_388
(f)	The CCTV system must comply with "National Code of Practice for CCTV Systems for Mass Passenger Transport for Counter-Terrorism".	NIF_RSS_389
(g)	The CCTV system image data must only be downloadable by authorised personnel.	NIF_RSS_390
(h)	The CCTV system equipment must only be accessible by authorised personnel.	NIF_RSS_391
(i)	The CCTV system viewing utility for post-incident review must include a search facility to enable the image data to be searched by car, camera, date and time, and activation of any horn, passenger intercom, emergency egress seal/cover, emergency egress activation or fire alarm activation.	NIF_RSS_392
(j)	The CCTV system storage must be removable by authorised personnel without affecting the data stored to enable chain of custody/evidence processes to be followed.	NIF_RSS_393
(k)	Each Train must enable authorised personnel to remotely download CCTV system data.	NIF_RSS_394
(l)	Each Train must enable authorised personnel to concurrently view at least two CCTV camera images remotely in near real time.	NIF_RSS_395
(m)	The CCTV system must incorporate a camera in each Crew cab to monitor the Driver's workstation.	NIF_RSS_396
(n)	The time to remotely download 15 minutes of CCTV data for all cameras within one Car of the Unit must be less than 60 minutes.	NIF_RSS_397

3.15.1. Unit end cameras

(a)	The CCTV system must incorporate a forward facing camera on each end of the Unit to record the Driver's view of speed boards, signal aspects, infrastructure, other Trains and objects on the track, at all operating speeds and in all environmental and lighting conditions.	NIF_RSS_399

3.15.2. External bodyside cameras

(a)	Each Train must incorporate external bodyside cameras to enable the Train-platform interface to be monitored by Crew to assist Train dispatch procedures.	NIF_RSS_401

(b)	The external bodyside CCTV must allow for detection of persons (including children of 1.1 m height) by Crew along the full length of each Car at a detection rate of greater than 95%.	NIF_RSS_402

3.15.3. Internal cameras

(a)	The CCTV system must incorporate internal cameras to enable all internal passenger areas to be observed, except inside toilets.	NIF_RSS_404
(b)	The internal cameras must provide clear coverage of all passenger intercoms, doorways and emergency egress devices.	NIF_RSS_405
(c)	The internal CCTV must allow for identification as defined in AS 4806.2 of individuals within the passenger areas of the Train.	NIF_RSS_406
(d)	The CCTV system must record both Crew and passenger audio synchronised to the image data from the initial activation of the passenger intercom until the call has been terminated.	NIF_RSS_407
(e)	On activation of a passenger intercom, the CCTV system must display a camera with the view of the first passenger intercom in the queue to a configurable combination of Crew members.	NIF_RSS_408

3.16. Monitoring systems

(a)	Each Train must be equipped with a Train Management System (TMS) that is capable of generating and receiving information on the Train status and location, providing fault diagnosis information, identifying rectification action required and storage of vehicle data.	NIF_RSS_410
(b)	The TMS must have defined levels of access with appropriate restrictions to each user including Drivers, guards, customer service assistants or maintenance staff.	NIF_RSS_411
(c)	The TMS must provide a Crew interface to display status and fault information in the Crew cab and Crew office.	NIF_RSS_412
(d)	The TMS must interface to and monitor all major sub-systems on the Train.	NIF_RSS_413
(e)	The TMS must ensure time synchronisation on all Train systems that provide time-stamped records and/or display the time.	NIF_RSS_414

3.16.1. Event logging and display

(a)	The TMS must incorporate an event logger to record faults and events from monitored systems.	NIF_RSS_416
(b)	The level (priority), Crew role applicability, audible tone (or otherwise) of all faults and events must be configurable.	NIF_RSS_417

(c)	Where the event is a fault presented to the Crew, the TMS must provide detail of the fault and rectification action where appropriate.	NIF_RSS_418
(d)	It must be possible for the Crew to acknowledge and dismiss presented events to reduce Crew distraction.	NIF_RSS_419
(e)	Critical events must be automatically transmitted remotely to the Asset Information System, the Operator and the Train Controller.	NIF_RSS_420

3.16.2. Driver tests

(a)	The TMS must facilitate Driver tests to determine that the Train satisfies the requirements of the Minimum Operating Standards prior to entering service and after a coupling/uncoupling operation.	NIF_RSS_422
(b)	The automated and semi-automated tests required to determine the Train satisfies the requirements of the Minimum Operating Standards must not exceed 10 minutes.	NIF_RSS_424
(c)	Driver tests must be provided for each sub-system and must be automated so far as is reasonably practicable.	NIF_RSS_425
(d)	Where a test is semi-automated and requires action by the Driver, the TMS must guide the Driver through the proper sequence and finalisation of actions and the resulting state of the system.	NIF_RSS_426
(e)	Each Train must automatically report remotely to the Asset Information System and the Operator the results of the Driver tests.	NIF_RSS_427
(f)	The total time to conduct all Train Preparation activities for Driver only operation must not exceed 30 minutes.	NIF_RSS_665

3.16.3. Remote data communications

(a)	The TMS must support remote communications of data from the passenger information system, CCTV system, TMS, event recorder, passenger counting system, and energy metering system ~~and any infrastructure monitoring systems~~ to the Asset Information System and the Operator whilst the Train is in service.	NIF_RSS_429
(b)	The TMS must support remote condition monitoring of the Train systems.	NIF_RSS_430
(c)	The remote monitoring function must support transmission of real time status data and where available from the available stored event data for all systems monitored.	NIF_RSS_431
(d)	Each Train must automatically report remotely the Timetable performance of the Train on arrival and departure at each stopping station to the Asset Information System and the Operator and, where relevant, any other person responsible for Train Control.	NIF_RSS_432

(e)	The Supplier must obtain TfNSW's approval of all data interchange formats for data to be provided to the Operator, Train Controller or TfNSW.	NIF_RSS_433
(f)	The infrastructure monitoring system must support remote communications of data directly to a NSW Rail Entity whilst the Train is in service.	NIF_RSS_781

3.16.4. Event recorder

(a)	In addition to the minimum requirements AS 7527.3, the event recorders must record the following items:	NIF_RSS_435
	(i) emergency egress - cover/seal, device activation, inhibit status;	NIF_RSS_436
	(ii) passenger intercom - initiation, connection, escalation and termination;	NIF_RSS_437
	(iii) Crew intercom - initiation, connection and termination;	NIF_RSS_438
	(iv) fire detection – detection, location and severity; and	NIF_RSS_439
	(v) door status - isolated, inhibited, released, opened and closed.	NIF_RSS_440
(b)	The sampling rate of the event recorder must not be less than 2 Hz for all signals.	NIF_RSS_441
(c)	The event recorder must have sufficient capacity to record and store a minimum of seven days of operational data.	NIF_RSS_442
(d)	Each Train must allow remote download of event recorder data whilst the Train is in service without any impact to recording functionality.	NIF_RSS_443
(e)	The time to remotely download eight hours of event recorder data must be less than five minutes.	NIF_RSS_444
(f)	The event recorder data must be downloadable by authorised personnel with physical access whilst the Train is in operational service.	NIF_RSS_445
(g)	The event recorders must only be accessible by authorised personnel.	NIF_RSS_446
(h)	The event recorder data must be tamper resistant such that any tampering and corruption of data can be detected and identified.	NIF_RSS_447
(i)	The event recorder or event recorder memory must be removable by authorised personnel without affecting the data stored to enable chain of custody/evidence processes to be followed.	NIF_RSS_448

3.17. Passenger counting system

(a)	Each Train must be equipped with an automatic passenger counting system.	NIF_RSS_450

(b)	The passenger counting system data must be stored in such a manner to enable analysis of passenger patronage on the Train and individual Cars by direction, route, location and date/time.	NIF_RSS_451
(c)	The passenger counting system data must be able to be accessed in real time remotely.	NIF_RSS_452
(d)	Historical passenger counting system data for the previous 31 days must be able to be downloaded remotely.	NIF_RSS_453
(e)	The passenger counting system must have an accuracy of not less than 95%.	NIF_RSS_454

3.18. Energy metering system

(a)	Each Train must be equipped with an energy measurement system compliant with EN 50463, to enable recording and management of energy consumption data to meet electricity supply requirements for billing purposes.	NIF_RSS_456
(b)	The energy measurement system must allow remote access to the energy data logged in accordance with EN 50463-4.	NIF_RSS_457
(c)	Each Train must be equipped with a driver advisory system to enable the Driver to adopt energy efficient driving styles whilst still meeting operational Timetable and safety requirements.	NIF_RSS_458

3.19. Fire and smoke detection system

(a)	Each Train must be fitted with a fire and smoke detection system.	NIF_RSS_460
(b)	Each Train must comply with section 5 of EN 45545-6 for "Design Categories N and D" and "Operational category 4".	NIF_RSS_461
(c)	Each Train must include the recommended fire detection locations in Table 1 of EN 45545-6 for "Design Categories N and D" and "Operational category 4" as mandatory.	NIF_RSS_462
(d)	Each Train must detect external smoke in addition to the locations in Table 1 of EN 45545-6 for "Design Categories N and D" and "Operational category 4".	NIF_RSS_463

3.20. Driver safety systems

(a)	When two Units are coupled, all intermediate trip gears must be raised and isolated.	NIF_RSS_465
(b)	Facilities to manually raise, lower, and isolate the trip gear must be provided at or near the trip gear.	NIF_RSS_466

(c)	Each Train must allow the Driver to reset the trip gear from the Driver's workstation when the Train is stationary.	NIF_RSS_467
(d)	The status of the trip gear (raised/lowered/isolated) must be displayed to the driver in the TMS.	NIF_RSS_468
(e)	Each Train must include an operator enable system that complies with the requirements of T HR RS 00840 ST Driver safety systems.	NIF_RSS_469
(f)	The operator enable system should comply with T HR RS 20003 SP Passenger Rolling Stock Driver Safety Systems.	NIF_RSS_470
(g)	Each Train must include a vigilance system that complies with the requirements of T HR RS 00840 ST Driver safety systems.	NIF_RSS_471
(h)	The vigilance system should comply with T HR RS 20003 SP Passenger Rolling Stock Driver Safety Systems.	NIF_RSS_472

3.21. Automatic Train protection

(a)	Each Train must be fitted with European Train Control System (ETCS) equipment enabling operation of each Train at all ETCS levels up to level 2.	NIF_RSS_474
(b)	Suppliers are advised that whilst ETCS used in New South Wales will be based on European standards, TfNSW will have specific requirements that will require adaptations and deviations from these standards including use of the 1800 MHz band for GSM-R.	NIF_RSS_475
(c)	Each Train ETCS must comply with T HR SC 01650 SP ETCS On-board Equipment.	NIF_RSS_476

3.22. Infrastructure Monitoring Systems

3.22.1. Track Geometry Measurement System

(a)	~~3 Short Trains must be fitted with a track geometry measurement system.~~ Not used.	NIF_RSS_668
(b)	~~4~~7 Long Trains must be fitted with a track geometry measurement system.	NIF_RSS_669
(c)	The track geometry measurement system must comply with EN 13848-1.	NIF_RSS_670
(d)	The track geometry measurement system must comply with EN 13838-2.	NIF_RSS_671
(e)	The track geometry measurement system must be configurable to allow the adjustment of thresholds for the measured parameters as required by track maintenance standards.	NIF_RSS_672

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3.22.2. Overhead Line Measurement System

(a)	~~3 Short Trains must be fitted with an overhead line measurement system.~~Not used.	NIF_RSS_674
(b)	~~4~~7 Long Trains must be fitted with an overhead line measurement system.	NIF_RSS_675
(c)	The overhead line measurement system must measure and record wire position relative to the track.	NIF_RSS_676
(d)	The overhead line measurement system must measure and record the wear of the contact wire.	NIF_RSS_677
(e)	The overhead line measurement system must be configurable to allow the adjustment of thresholds for the measured parameters as required by maintenance standards.	NIF_RSS_678

4. Passenger environment

(a)	Each Train interior fittings, panels, flooring and surfaces must be sufficiently robust to avoid scuffing, impact or abrasion damage from contact with wheelchairs, passenger luggage and other foreseeable items.	NIF_RSS_478
(b)	Each Train interior fittings, panels, flooring and surfaces must be sufficiently robust to avoid damage from spills and leaks from rain, food, drinks, cleaning agents and other foreseeable items.	NIF_RSS_597

4.1. Seating

(a)	Passenger seating must deliver a level of comfort comparable or superior to that offered by the existing TfNSW V-set rolling stock fleet.	NIF_RSS_480
(b)	The seating layout must be a 2 + 2 configuration with armrests at each seat location.	NIF_RSS_481
(c)	The seating layout must maximise alignment with side windows and visibility of platforms.	NIF_RSS_482
(d)	The following factors must be considered for the seat arrangements:	NIF_RSS_483
	(i) seat spacing - the distance between the front of the seat back and the rear of the seat in front at the base of the seat. The seat spacing must be at least 750 mm;	NIF_RSS_484
	(ii) seat pitch - the distance between the same points on successive seats. The seat pitch must be at least 820 mm;	NIF_RSS_485
	(iii) seat width (not including arm rests) must be at least 480 mm;	NIF_RSS_486
	(iv) aisle width must be at least 550 mm; and	NIF_RSS_487
	(v) seat access/egress.	NIF_RSS_488
(e)	Each Train must include power sockets, comprising one general purpose outlet and one USB socket, for charging portable computing devices such as phones, tablets and laptops, accessible from each seat location or allocated space.	NIF_RSS_489
(f)	A minimum ratio of one power socket to two seats must be provided for all seating types.	NIF_RSS_679
(g)	Hooks must be provided adjacent to seating and allocated spaces.	NIF_RSS_490
	(i) Each hook must be sufficient in size and strength to hold coats and bags up to a mass of 10kg.	NIF_RSS_680
(h)	Each Train must allow adjustment of interior seating spacing and/or layout throughout the whole Train within 12 hours by no more than four maintenance staff per Car without replacing floor and/or wall finish materials.	NIF_RSS_491

(i)	Each Train must allow replacement of interior seating in the designated locations throughout the Train with alternative use of space such as luggage or bicycle storage, water drinking fountains and/or wheelchair spaces within 12 hours by no more than four maintenance staff per Car without replacing floor and/or wall finish materials.	NIF_RSS_492
(j)	Priority seating must be located in close proximity to allocated wheelchair spaces and doorways.	NIF_RSS_493
(k)	Priority seating must be identifiable through differentiated colour and information decals.	NIF_RSS_681
(l)	A drop down table with dimensions no less than 402 mm x 209 mm must be provided for each seat where a seated position exists behind.	NIF_RSS_682
(m)	Each drop down table must;	NIF_RSS_683
	(i) include a form of latching to maintain a stowed upright position;	NIF_RSS_684
	(ii) include a recessed circular region for locating cups or drinks; and	NIF_RSS_685
	(iii) be suitable for placement of portable computing devices such as phones, tablets and laptops.	NIF_RSS_686

4.2. Flooring

(a)	The floors and steps, including gangway areas, must be supplied with slip resistant surfaces having a coefficient of friction equal to or greater than 0.42 for wet conditions and 0.7 for dry conditions when tested to AS/NZS 4586.	NIF_RSS_498
(b)	Flooring, including gangway areas must meet the requirements of AS1428.1 Section 7.	NIF_RSS_687

4.3. Handrails and grabrails

(a)	Handrails and/or grabrails must be installed along access paths wherever passengers are likely to require additional support or passive guidance.	NIF_RSS_500

4.4. Draught screens

(a)	Draught screens must be provided at each passenger door portal to protect seated passengers and allocated spaces from adverse weather conditions when the doors are opened.	NIF_RSS_502
(b)	Draught screens must, at a minimum, be partially glazed such that they do not create blind spots and provide an open plan feel.	NIF_RSS_504

4.5. Luggage storage

(a)	Each Train must provide storage within the interior for luggage.	NIF_RSS_506
(b)	The volume of luggage storage in a Short Unit must be at least 2 m³.	NIF_RSS_688
(c)	The volume of luggage storage in a Long Unit must be at least 7.5 m³.	NIF_RSS_690
(d)	Luggage storage solutions must be provided in well-lit locations that are readily visible to passengers whilst seated, and to Crew when walking through the Train, as well as being in view of CCTV cameras.	NIF_RSS_507

4.6. Bicycle storage

(a)	Each Train must provide storage within the interior for bicycles.	NIF_RSS_509
(b)	Restraints must be provided in bicycle storage locations.	NIF_RSS_691

4.7. Toilets

(a)	Each Unit must provide a minimum of one toilet that is compliant with the DSAPT.	NIF_RSS_511
(b)	The DSAPT-compliant toilet must provide baby changing facilities.	NIF_RSS_512
(c)	Each Long Unit must include one standard toilet.	NIF_RSS_692
	(i) Each standard toilet must meet AS1428.1 Part 16: Sanitary compartment for people with ambulant disabilities.	NIF_RSS_693
(d)	Toilet locations must be clearly marked on the exterior of the vehicle and the direction in which the nearest toilet is located must be clearly indicated throughout the interior of the Train.	NIF_RSS_513
(e)	The toilets must operate without planned intervention for 24 hours.	NIF_RSS_514
(f)	Each Train must be compatible with all effluent and waste removal facilities on the Network.	NIF_RSS_598
(g)	Each Train must provide effluent and waste removal interfaces accessible from either side of the Train.	NIF_RSS_609
(h)	Each Train must be capable of having all effluent and waste removed and made Serviceable in less than five minutes.	NIF_RSS_611
(i)	Each Train must be compatible with all water provisioning facilities on the Network.	NIF_RSS_599
(j)	Each Train must provide water provisioning interfaces accessible from either side of the Train.	NIF_RSS_610
(k)	Each Train must be capable of being fully provisioned with water and made Serviceable in less than five minutes.	NIF_RSS_612

(l)	In the case of an emergency, the toilet's access door must be able to be overridden and opened by Crew when in its 'locked' state. This must be possible with an incapacitated passenger behind the door.	NIF_RSS_515
(m)	The emergency toilet door access device must be tamper proof and/or be hidden from passenger sight.	NIF_RSS_516
(n)	The toilets must limit the presence of odours within the toilet cubicle and prevent their escape into surrounding passenger areas including vestibules.	NIF_RSS_517
(o)	The toilets must be capable of being removed and replaced by seating, or other interior features, without the need for major structural changes.	NIF_RSS_518
(p)	Each toilet must include at least two coat hooks.	NIF_RSS_695
(i)	Each hook must be sufficient in size and strength to hold hand bags, baby change bags, coats and backpacks up to a mass of 10kg.	NIF_RSS_696

4.8. Water drinking fountain

(a)	Each Train must have the capability to be modified to provide a water drinking fountain.	NIF_RSS_600
(b)	The water drinking fountain must operate without planned intervention for 24 hours.	NIF_RSS_633

4.9. Wi-Fi & mobile connectivity

(a)	Each Train must be fitted with equipment to provide Wi-Fi service coverage in all Cars to provide public internet access for passengers.	NIF_RSS_523
(b)	Any network required to support the Wi-Fi equipment must be separate from any Train control equipment.	NIF_RSS_524
(c)	The public internet access service will be provided by TfNSW.	NIF_RSS_601
(d)	In all areas of the Train there must be no reduction in the quality of any public mobile telecommunication service connectivity.	NIF_RSS_525

5. Crew environment

5.1. Crew roles

(a)	Each Train must support Driver and guard mode of operation; the guard's duties will include monitoring the Train-platform interface using the CCTV system, control of the doors, observation of internal CCTV, management of emergency egress, responding to passenger intercoms, passenger information and passenger assistance.	NIF_RSS_531
(b)	Each Train must support Driver only operation; the Driver will be responsible for monitoring the Train-platform interface using the CCTV system, control of the doors and initial set-up of the passenger information.	NIF_RSS_532
(c)	Each Train must support Driver and customer service assistant operation; the Driver responsibilities are the same as Driver only operation and the customer service assistant duties will include observation of internal CCTV, responding to passenger intercoms, passenger information and passenger assistance.	NIF_RSS_533
(d)	Each Train must enable the Crew role mode of operation to be configurable by maintenance personnel.	NIF_RSS_534
(e)	Each Train must enable the customer service assistant to perform all duties including monitoring of internal CCTV, responding to passenger intercoms, and control of passenger information whilst mobile within the interior of the Train using the portable Crew interface.	NIF_RSS_711

5.2. Crew office

(a)	Each Unit must allow the optional fitment of one Crew office for use by Crew for carrying out customer liaison tasks.	NIF_RSS_536
(b)	The Crew office must enable the Customer Service Assistant to be visible to passengers.	NIF_RSS_537
(c)	The Crew office must be sized to allow a minimum of one seated Crew member to be accommodated.	NIF_RSS_538
(d)	The Crew office must be capable of being secured to prevent unauthorized access.	NIF_RSS_539
(e)	The Crew office must provide access to all systems required for the Customer Service Assistant including; passenger information system, passenger intercom, Crew intercom, public address, CCTV, TMS.	NIF_RSS_540

5.3. Crew cab

(a)	Each Crew cab must be provided with all controls and indicators required to perform the Crew roles.	NIF_RSS_543
(b)	Each Crew cab must provide seating for use by inspectors and trainers positioned appropriately to facilitate their role of observing Crew activities.	NIF_RSS_544
(c)	Each Crew cab must be fitted with a power socket for Crew to charge portable computing devices such as phones and tablets.	NIF_RSS_545
(d)	Each Crew cab must be fitted with an audio entertainment device for Crew use.	NIF_RSS_546
(e)	Each Train must ensure that all auditory warnings/alarms and train radio calls can be heard over the audio entertainment device.	NIF_RSS_547
(f)	Each Crew cab must comply with AS 7533.3.	NIF_RSS_548
(g)	Each Crew cab must provide storage for emergency equipment as specified in AS7523.3.	NIF_RSS_549
(h)	Each Crew cab must be fitted with facilities for storage and charging of the portable DTRS handset.	NIF_RSS_697
(i)	Each Crew cab must provide secure storage for portable Crew interface device of dimensions no less than 300 mm × 250 mm x 100 mm.	NIF_RSS_712
(j)	Each Crew cab must provide charging facilities for the portable Crew interface within secure storage.	NIF_RSS_713

5.4. Portable Crew interface

(a)	Each Train must support the concurrent operation of at least two portable Crew interface devices.	NIF_RSS_745
(b)	Each portable Crew interface must enable the Crew to associate a portable Crew interface device with a Train.	NIF_RSS_746
(c)	The portable Crew interface device software must integrate with Apple® iPad® devices.	NIF_RSS_747
(d)	The portable Crew interface device software should integrate with other device platforms such as Android™ devices.	NIF_RSS_748
(e)	The portable Crew interface software must not interfere with operation of other software operating on the portable Crew interface device.	NIF_RSS_749
(f)	Each portable Crew interface device and device software must automatically enable operation within all Units that form a Train.	NIF_RSS_750
(g)	Each Train must enable the Crew to prevent the operation of any portable Crew interface device from the Crew Cab.	NIF_RSS_751

(h)	Each Train must enable the operation of each portable Crew interface from any location within the Train.	NIF_RSS_752
(i)	Each Train must enable the operation of each portable Crew interface within three (3) metres of the Train from platform or track level.	NIF_RSS_753
(j)	Each Train must prevent the operation of a portable Crew interface from any non-coupled adjacent trains.	NIF_RSS_754
(k)	Each portable Crew interface must provide equivalent functionality as the Crew cab for the following:	NIF_RSS_755
(i)	each portable Crew interface must enable the Crew to make Crew intercom calls;	NIF_RSS_756
(ii)	each portable Crew interface must enable the Crew to receive Crew intercom calls; and	NIF_RSS_757
(iii)	each portable Crew interface must enable the Crew to receive passenger intercom calls.	NIF_RSS_758
(l)	Each portable Crew interface must ensure incoming audio is only heard by Crew.	NIF_RSS_759
(m)	Each portable Crew interface must enable the Crew to make public address announcements.	NIF_RSS_760
(n)	Each portable Crew interface must enable the Crew to control the passenger information system.	NIF_RSS_761
(o)	Each portable Crew interface must enable the Crew to view near real-time on-board CCTV images.	NIF_RSS_762
(p)	Each portable Crew interface must enable the Crew to view near real-time Train status and faults.	NIF_RSS_763
(q)	Each portable Crew interface must incorporate automatic reminder functionality.	NIF_RSS_764
(r)	Each portable Crew interface must enable the Crew to request a reminder for an event.	NIF_RSS_765
(i)	Each portable Crew interface must enable the Crew to enter free-text as the description for a reminder and/or select a pre-determined description.	NIF_RSS_766
(ii)	Each portable Crew interface must enable the Crew to select date, time, location within the associated Train, and/or geographic location as the trigger conditions for a reminder.	NIF_RSS_767
(iii)	Each portable Crew interface must enable the Crew to select visual alert and/or audible alert as the alert method for a reminder.	NIF_RSS_768
(iv)	Each portable Crew interface must provide the Crew with the description of a reminder using the alert method when the trigger conditions are satisfied.	NIF_RSS_769

(s)	Each portable Crew interface device software application must optimise battery life to enable use by Crew for at least eight (8) consecutive hours without recharging and when starting from a fully energised power source.	NIF_RSS_770
(t)	Each portable Crew interface must provide security to prevent unauthorised usage.	NIF_RSS_771
(u)	Each Train must enable each function of the portable Crew interface to be enabled and/or disabled by maintenance personnel.	NIF_RSS_772
(v)	Each portable Crew interface device software application must be suitable for use by Crew for up to five (5) consecutive hours in operational service.	NIF_RSS_773

6. Mock-Ups and prototypes

(a)	The Supplier must develop full-scale high fidelity Mock-Ups of sufficient quality to be used for User Group review and public relations purposes.	NIF_RSS_551
(b)	The Supplier must develop Mock-Ups and prototypes to enable consultation with relevant stake holders and User Groups in accordance with section 6.6 of T HR HF 00001 ST during the Preliminary Design Review.	NIF_RSS_552
(c)	The Supplier must develop Mock-Ups and prototypes based on the risk to the project with consideration of the following as a minimum:	NIF_RSS_553
	(i) design changes that impact the human machine interface and/or Crew workstations;	NIF_RSS_554
	(ii) novel features of the design;	NIF_RSS_555
	(iii) new features and/or systems to TfNSW;	NIF_RSS_556
	(iv) significant human computer interactions including; TMS, ETCS, DTRS; and	NIF_RSS_557
	(v) provisions for Driver monitoring and control of the platform train interface including; CCTV, SDO.	NIF_RSS_558
(d)	The Mock-Ups and prototypes must be available early enough to enable feedback from stakeholder consultation to be incorporated into the Detailed Design Review Technical Package.	NIF_RSS_559
(e)	The Supplier must develop full-scale high fidelity mock-ups of the Crew cab and all Crew workstations including but not limited to:	NIF_RSS_560
	(i) all Crew controls and indicators;	NIF_RSS_561
	(ii) Crew seating; and	NIF_RSS_562
	(iii) Crew access and egress.	NIF_RSS_563
(f)	The Supplier must develop full-scale high fidelity mock-ups of the passenger areas including features such as:	NIF_RSS_564
	(i) seating, including each type of seat and alternate materials;	NIF_RSS_565
	(ii) doorways, including any associated door controls;	NIF_RSS_566
	(iii) emergency access and egress;	NIF_RSS_567
	(iv) passenger help points;	NIF_RSS_568
	(v) allocated wheelchair spaces;	NIF_RSS_569
	(vi) toilets;	NIF_RSS_570
	(vii) storage spaces for bikes and luggage;	NIF_RSS_571
	(viii) stairways;	NIF_RSS_572
	(ix) any gradients of flooring;	NIF_RSS_573

	(x)	hand and grab rails;	NIF_RSS_574
	(xi)	representative lighting;	NIF_RSS_575
	(xii)	floor coverings;	NIF_RSS_602
	(xiii)	power sockets;	NIF_RSS_603
	(xiv)	gangways;	NIF_RSS_698
	(xv)	decals; and	NIF_RSS_704
	(xvi)	passenger information displays.	NIF_RSS_705
(g)	The Supplier must develop full-scale functional prototype of the end detrainment system that will be used to demonstrate ease of operation, operating time, and detrainment times.		NIF_RSS_576
(h)	The Mock-Ups and prototypes must be stored at a location within New South Wales to be agreed with TfNSW.		NIF_RSS_577
(i)	The Mock-Ups and prototypes must be stored and made available for a duration to be agreed with TfNSW.		NIF_RSS_578
(j)	The Mock-Ups and prototypes must be finished in a way that is visually representative of the schedule of finishes and schedule of decals.		NIF_RSS_579
(k)	The Mock-Ups must be fully accessible to mobility impaired persons to provide accessibility for stakeholder engagement purposes.		NIF_RSS_580
(l)	The Mock-Ups must be sufficiently ventilated and robust to accommodate a representative sample of the User population, including a minimum of two persons for Crew areas and minimum of 20 persons for passenger areas.		NIF_RSS_581
(m)	The Supplier must submit a sample of each passenger seat type to TfNSW within 20 Business Days of the Commencement Date.		NIF_RSS_706
(n)	The Supplier must submit a sample of all passenger seat covering materials to TfNSW within 20 Business Days of the Commencement Date.		NIF_RSS_707

Attachment A – Washplant facilities

1.0 Washplant Facility Details

TfNSW operates a washplant facility at each of its three existing maintenance centres (Hornsby, Flemington and Mortdale) to clean the car exterior sides and part of the roof area. Details of the washplant facilities are as follows:

1.1	**General Parameters:**	
1.1.1	Propulsion Method	Train towed or driven
1.1.2	Maximum Track Grade	1.961%
1.2	**Wash Parameters**	
1.2.1	Train Wash Speed	3.5 km/h
1.2.2	Detergent application arch	
1.2.3	Spray Nozzle Brand	Spraying Systems Company
1.2.4	Nozzle Type/Size	H 1/4 U.SS.4008 (Note 1)
1.2.5	Nozzle angle	40 degree V-Jet
1.2.6	Nozzle flow	4 to 5 litres per minute
1.2.7	Nozzle quantity	9 per side (Total 18)
1.2.8	Spray Pressure	7 bar (100 psi)
1.2.9	Brush Diameter	833 mm (3 off each side)
1.2.10	Brush Material	Polypropylene
1.2.11	Detergent Active Ingredient	Oxalic Acid
1.2.12	Detergent Supplier	Applied Chemicals No. 2-544
1.2.13	Concentration Target	(Note 2)
1.3	**Rinse Parameters**	
1.3.1	Train Rinsing Speed	3.5 km/h
1.3.2	Spray Nozzle Brand	Spraying Systems Company
1.3.3	Nozzle Type/Size	H 1/4 U.SS.5030 to H 1/4 U.SS.5050 (Note 3)
1.3.4	Nozzle angle	40 degrees
1.3.5	Nozzle flow	1250 to 1600 litres per minute
1.3.6	Nozzle quantity	26 per side (Total 52)
1.3.7	Spray Pressure	7 bar (100 psi)
1.3.8	Rinse Agent	Fresh tap water (Note 4)
1.4	**Foam Acid application**	

1.1	**General Parameters:**	
1.4.1	Nozzle angle	80 degree V-Jet
1.4.2	Operating pressure	25 to 30 psi
1.4.3	Flow to foam arch	30 to 40 litres/min

2.0 Additional Notes

Note 1: The detergent arches are no longer in use. The application of detergent is via the foam arch where:

- Nozzle Quantity is 9 per side,

- Nozzle type Bex K Ball F80.10.

Note 2: The active ingredient, Oxalic Acid is supplied as 20% of total Train wash solution in its raw form. The active ingredient Oxalic Acid is further reduced by dilution when it enters the Acid blend tank prior to delivery to the train. The active ingredient Oxalic Acid is controlled at 1% (+or- 0.5%) on application to the train.

Note 3: The nozzles used in the washplant provide a uniform coverage of detergent and rinse water over the exterior sides and roof of a double deck railcar.

Note 4: Recycled water is also returned from the rinse cycle tank and sprayed onto the 6 scrub brushes when in use. Rinse water is maintained at 7pH.

NSW GOVERNMENT | Transport for NSW

New Intercity Fleet Project

Schedule G – Scope and Performance Requirements

Appendix 03 – Simulators

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TfNSW

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1. Introduction

(a)	This Appendix describes the Scope and Performance requirements for the Simulators.		NIF_SIM_3
(b)	The purpose of the Simulators will be:		NIF_SIM_4
	(i)	to provide general training for all persons working with the Trains including Train Crew, presentation staff and technicians.	NIF_SIM_5
	(ii)	to provide specific training to Train Crew on specific fault finding and rectification scenarios such that disruptions to Train services can be minimised.	NIF_SIM_6

2. General

(a)	The Simulators must comprise: (i) two Crew cab Simulators with Simulator control station; and (ii) computer based simulators.	NIF_SIM_8
(b)	Each Crew cab Simulator will be used for training and assessments of Train Crew.	NIF_SIM_9
(c)	The computer based simulators will be used primarily for self-learning.	NIF_SIM_10
(d)	Each Crew cab Simulator must be fitted with a HVAC system so as to maintain a comfortable environment for trainees and instructors at all times.	NIF_SIM_11
(e)	Each Crew cab Simulator must be fitted with a self-contained power supply.	NIF_SIM_12
(f)	Each Crew cab Simulator must be capable of being powered by an external electrical power supply.	NIF_SIM_13
(g)	The Simulators must satisfy all requirements of this Appendix throughout the full range of climate and environmental operating conditions reasonably expected in New South Wales, without degrading its life expectancy or suffering any permanent damage.	NIF_SIM_14
(h)	The Supplier must assume that the Simulators will be utilised for 16 hours per day, seven days per week.	NIF_SIM_15
(i)	The Supplier must assume that the Crew cab Simulator will be moved 10,000 km per year.	NIF_SIM_16
(j)	The Simulators must have a Design Life of 35 years when maintained in accordance with the requirements of the Asset Management Plan and utilised in accordance with this Appendix.	NIF_SIM_17
(k)	The Simulators must comply with T MU HF 00001 ST Human Factors Integration.	NIF_SIM_18

3. Crew cab Simulators

3.1. General

(a)	Each Crew cab Simulator must emulate the performance and functionality of the Trains.	NIF_SIM_21
(b)	Each Crew cab Simulator must be identical in appearance and dimensions to the Train Crew cab interior.	NIF_SIM_22
(c)	Each Crew cab Simulator must be provided in a road registrable trailer which is transportable without requiring either a specific permit (provided in accordance with the Road Transport (Mass, Loading and Access) Regulation 2005) or a pilot vehicle to any TfNSW maintenance site or facility, TfNSW will source a prime mover as required.	NIF_SIM_23
(d)	The road registrable trailer must be compatible with readily available prime movers.	NIF_SIM_24
(e)	The Supplier must obtain TfNSW's approval for the type of road registrable trailer.	NIF_SIM_25
(f)	Each Crew cab Simulator must be capable of training Crew in all modes of Crew role operation.	NIF_SIM_26
(g)	Each Crew cab Simulator must provide 40 pre-programmed training sessions.	NIF_SIM_27
(h)	The Supplier must obtain TfNSW's approval for all training sessions.	NIF_SIM_28
(i)	Each Crew ~~cab~~Cab Simulator must provide simulation of at least ~~60 km~~480km of relevant actual Network track ~~to be agreed with TfNSW~~, covering the intercity and suburban Network, including stabling yards and other facilities, utilised by the New Intercity Fleet.	NIF_SIM_29
	(i) Network track simulated must accurately represent the gradient profile, track heights and any track features including signals in accordance with actual track.	NIF_SIM_117
	(ii) Network track simulated must accurately depict visual features adjacent to the track visible to Train Crew including:	NIF_SIM_122
	A. buildings;	NIF_SIM_123
	B. all viaducts, tunnels and bridges;	NIF_SIM_126
	C. all stations and platforms including station structures;	NIF_SIM_127
	D. rail, road and pedestrian crossings; and	NIF_SIM_128
	E. landscaping, vegetation or any other feature near the rail corridor that may be reasonably used by Drivers as location cues.	NIF_SIM_129
	(iii) Network track simulated must provide vision of objects and features in the distance including:	NIF_SIM_121
	A. landmark buildings;	NIF_SIM_130
	B. major city centre skylines;	NIF_SIM_131

		C. mountains and hills; and	NIF_SIM_132
		D. rivers and bodies of water.	NIF_SIM_133
	(iv)	The Supplier must define the scope for the "entire intercity and suburban network including stabling yards and other facilities" during the Detailed Design phase.	NIF_SIM_152
	(v)	All available GIS data may be used by the Supplier and their Significant Contractor for the Simulator to facilitate the design.	NIF_SIM_153
	(vi)	TfNSW will provide information required to represent Kangy Angy at a high level of definition, upon request from the Supplier.	NIF_SIM_154
(j)	Each Crew cab Simulator must provide an accurate impression of travelling along a railway route by including simulation of dynamic features including:		NIF_SIM_30
	(i)	moving/passing trains;	NIF_SIM_134
	(ii)	persons working on or near the track;	NIF_SIM_135
	(iii)	persons moving on platforms;	NIF_SIM_136
	(iv)	persons falling on or jumping onto track; and	NIF_SIM_137
	(v)	road vehicles on roads or level crossings.	NIF_SIM_138
(k)	Each Crew cab Simulator must provide simulation of all operating conditions, events and faults that may be investigated or actioned by Train Crew when operating an actual Train.		NIF_SIM_31
(l)	Each Crew cab Simulator must provide simulation of typical platform train interface scenarios including but not limited to passengers boarding and alighting, door obstructions, persons falling into platform gap, and various scenarios of selective door operation.		NIF_SIM_32
(m)	Each Crew cab Simulator must provide the trainee with the same lines of sight and field of view as that of the actual Train Crew cab.		NIF_SIM_33
(n)	Each Crew cab Simulator must be capable of representing realistic composite sounds consisting of all relevant individual sound sources played simultaneously.		NIF_SIM_34
(o)	Each Crew cab Simulator must simulate three-dimensional spatial effects to indicate the direction and apparent distance of a sound source as perceived from the trainee's position.		NIF_SIM_35
(p)	Each Crew cab Simulator must simulate the Doppler effects on sound sources.		NIF_SIM_36
(q)	Each Crew cab Simulator must not exhibit any discernible delay between corresponding audible and visual components.		NIF_SIM_37
(r)	Each Crew cab Simulator must simulate audio consistent with sounds heard on the Train including:		NIF_SIM_139
	(i)	wheel-rail noise;	NIF_SIM_140
	(ii)	traction system noise;	NIF_SIM_141
	(iii)	braking noise;	NIF_SIM_142

	(iv)	compressor noise;	NIF_SIM_143
	(v)	horns;	NIF_SIM_144
	(vi)	cab alerts and alarms;	NIF_SIM_145
	(vii)	audio entertainment device;	NIF_SIM_146
	(viii)	passenger noise behind the cab; and	NIF_SIM_147
	(ix)	other noises behind the cab including door close warnings and passenger information announcements.	NIF_SIM_148
(s)	Each Crew cab Simulator must emulate all communications to and from the Crew cab through the instructor in the Simulator control station including:		NIF_SIM_38
	(i)	crew intercom;	NIF_SIM_149
	(ii)	passenger intercom; and	NIF_SIM_150
	(iii)	Train radio.	NIF_SIM_151

3.1.1. Interface for non-Crew cab systems

(a)	Each Crew cab Simulator must provide an interface to the trainee for interaction with areas of the simulated Train which exist outside of the Crew cab.	NIF_SIM_40
(b)	The interface for non-Crew cab systems must allow the trainee to navigate to any area of the simulated Train at which a simulated fault or event may occur at.	NIF_SIM_41
(c)	The interface for non-Crew cab systems must allow interaction with other areas of the simulated Train for actioning any tasks required for the training session.	NIF_SIM_42
(d)	The interface for non-Crew cab systems must provide audible cues indicating direction and locations of sound sources.	NIF_SIM_43

3.2. Simulator control station

(a)	The Simulator control station must provide a seat for the instructor.	NIF_SIM_45

3.2.1. Functionality

(a)	The Simulator control station must allow the instructor to monitor all trainee actions and use of equipment.	NIF_SIM_47
(b)	The Simulator control station must allow the instructor to observe the visual and audible information provided to the trainee.	NIF_SIM_48
(c)	The Simulator control station must allow hands-free bi-directional communication between the instructor and the trainee without using any simulated Train systems.	NIF_SIM_49

(d)	The Simulator control station must provide a graphical representation of the Train's simulated position and track profile (change in curvature, elevation of track, track features, speed board) to the instructor.	NIF_SIM_50
(e)	The Simulator control station must allow the instructor to control the introduction or removal of faults and events during training sessions.	NIF_SIM_51
(f)	The Simulator control station must allow the instructor to change the state of fixed and in-cab signals.	NIF_SIM_52
(g)	The Simulator control station must allow the instructor to select from the full range of climate and environmental operating conditions expected on the Network to be simulated.	NIF_SIM_53
(h)	The Simulator control station must provide the instructor with the current status of the simulation.	NIF_SIM_54
(i)	The Simulator control station must allow the instructor to select the scenario for a training session.	NIF_SIM_55
(j)	The Simulator control station must allow the instructor to control the state of the scenario including progressing the scenario (e.g. advance/drive to next station for non-Driver Crew scenarios).	NIF_SIM_56
(k)	The Simulator control station must allow the instructor to initiate, hold and/or terminate a training session at any time.	NIF_SIM_57
(l)	The Simulator control station must provide an online help facility.	NIF_SIM_58

3.2.2. Training management

(a)	The Simulator control station must allow the instructor to input and store training session details including trainee and instructor details (names and identification).	NIF_SIM_60
(b)	The Simulator control station must allow the instructor to assess the trainee.	NIF_SIM_61
(c)	The Simulator control station must allow the instructor to input additional information in free text to the training session result.	NIF_SIM_62
(d)	The Simulator control station must allow the instructor to generate an assessment report for the training session.	NIF_SIM_63
(e)	The Simulator control station must allow the instructor to print a copy of the assessment report or transfer the assessment report to removable media.	NIF_SIM_64
(f)	The Simulator control station must allow the instructor to generate a feedback report for the training session indicating the trainee's performance against target criteria such as timetable performance, passenger comfort (acceleration/jerk rate) and energy consumption.	NIF_SIM_65

3.2.3. Recording and replay

(a)	The Simulator control station must allow the instructor to record all trainee and instructor control actions (including trainee video, audio and data) for any training session in order to replay the training session.	NIF_SIM_67
(b)	The recorded training session must include trainee and instructor details (names and identification, time and date recorded).	NIF_SIM_68
(c)	Each Crew cab Simulator must be able to store 100 hours of training sessions.	NIF_SIM_69
(d)	Each Crew cab Simulator must be able to export saved training sessions to external media.	NIF_SIM_70
(e)	Each Crew cab Simulator must be able to import saved training sessions from external media.	NIF_SIM_71
(f)	The Simulator control station must allow the instructor to play, pause and/or stop a replay of the recorded training session to the Crew cab Simulator.	NIF_SIM_72
(g)	The Simulator control station must allow the instructor to fast forward and rewind a recorded training session during replay.	NIF_SIM_73
(h)	The Simulator control station must allow the instructor to select the time to start a replay of a recorded training session.	NIF_SIM_74
(i)	The Simulator control station must allow the replay of a recorded training session at an accelerated rate.	NIF_SIM_75

TfNSW

4. Computer based simulators

4.1. General

(a)	The computer based simulators must allow training of all tasks defined in the Supplier's training packages.	NIF_SIM_78
(b)	The Supplier must obtain TfNSW's approval for all computer based simulator training scenarios.	NIF_SIM_79
(c)	The computer based simulators must allow simultaneous training of 500 staff.	NIF_SIM_80

4.2. Functionality

(a)	The computer based simulators must allow the trainee to log on with their name and/or unique identifier.	NIF_SIM_82
(b)	The computer based simulators must allow the trainee to select the Crew role or task for training.	NIF_SIM_83
(c)	The computer based simulators must allow the trainee to select the training scenario and training mode.	NIF_SIM_84
(d)	The computer based simulators must allow the trainee to save partially completed training scenarios and resume the scenario at a later time.	NIF_SIM_85
(e)	The computer based simulators must allow the trainee to review the progress of training scenarios.	NIF_SIM_86
(f)	The computer based simulators must provide audible cues indicating direction and locations of sound sources.	NIF_SIM_87
(g)	The computer based simulators must simulate consequences of incorrect actions by the trainee.	NIF_SIM_88
(h)	The computer based simulators must not allow a training scenario to be completed until all consequences of incorrect actions have been addressed.	NIF_SIM_89

4.3. Modes

(a)	The computer based simulators must have a demonstration mode, tutorial mode, practice mode and assessment mode.	NIF_SIM_91

4.3.1. Demonstration mode

(a)	The computer based simulators' demonstration mode must provide an overview to the trainee on how to operate the computer based simulator.	NIF_SIM_93

(b)	The computer based simulators' demonstration mode must present animations which automatically execute a number of typical training scenarios with visual and aural commentary to explain the operation of the computer based simulator and actions being demonstrated.	NIF_SIM_94

4.3.2. Tutorial mode

(a)	The computer based simulators' tutorial mode must provide training for the required actions for each training session.	NIF_SIM_96
(b)	The computer based simulators' tutorial mode must provide help screens to the trainee for each task.	NIF_SIM_97
(c)	The computer based simulators' tutorial mode must provide additional labels to areas of the Train simulated to assist the trainee in identifying the correct components for attention.	NIF_SIM_98
(d)	The computer based simulators must allow authorised TfNSW instructors to update and modify help screens and labels for the tutorial mode.	NIF_SIM_99
(e)	The computer based simulators tutorial mode must have a walk-through function to indicate the correct procedure to the trainee.	NIF_SIM_100

4.3.3. Practice mode

(a)	The computer based simulators' practice mode must not provide any assistance to the trainee for training scenarios.	NIF_SIM_102
(b)	The computer based simulators' practice mode must allow the trainee to make an incorrect choice and return to the previous step.	NIF_SIM_103
(c)	The computer based simulators' practice mode must provide feedback to the trainee if an incorrect choice is made.	NIF_SIM_104
(d)	The computer based simulators' practice mode must provide the trainee with the time taken to complete the training scenario and scoring for self-assessment.	NIF_SIM_105

4.3.4. Assessment mode

(a)	The computer based simulators' assessment mode must not provide any assistance to the trainee for training scenarios.	NIF_SIM_107
(b)	The computer based simulators' assessment mode must monitor the execution of steps by the trainee and confirm that the steps were executed in the correct order.	NIF_SIM_108
(c)	The computer based simulators' assessment mode must identify any deviation from the recommended steps or order of steps.	NIF_SIM_109
(d)	The computer based simulators' assessment mode must provide an assessment report for the trainee and instructor indicating a pass or fail score based on the time taken and correct execution of steps.	NIF_SIM_110

(e)	The computer based simulators must allow authorised TfNSW instructors to update and modify the assessment criteria and scoring for assessment mode.	NIF_SIM_111
(f)	The computer based simulators must allow the trainee and/or instructor to print a copy of the assessment report or transfer the assessment report to removable media.	NIF_SIM_112

4.4. Training management

(a)	The computer based simulators must allow the instructor to allocate training sessions to selected trainees.	NIF_SIM_114
(b)	The computer based simulators must allow the instructor to monitor the progress of trainee training sessions.	NIF_SIM_115
(c)	The computer based simulators must allow the instructor to retrieve all completed assessment reports for review and printing or transfer the assessment reports to removable media.	NIF_SIM_116

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Schedule G – Scope and Performance Requirements

Appendix 04 – Provided Facilities

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TfNSW

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1. Introduction

(a)	The strategy for the delivery of the Maintenance Facility is that the facility will be provided by TfNSW. TfNSW will engage the MFC Contractor to build the Maintenance Facility on the Maintenance Facility Site and connect it to the Network.	NIF_MFI_2
(b)	The design of the Maintenance Facility will be developed in parallel with the procurement of the other Assets to incorporate feedback received from potential rolling stock suppliers. The concept Maintenance Facility design is expected to be agreed prior to award of the contract.	NIF_MFI_3
(c)	A Commissioning Facility will be provided by TfNSW for use by the Supplier until the Maintenance Facility is complete.	NIF_MFI_4
(d)	The Supplier must design and complete all MFI Works, including the provision, installation, testing and commissioning of all plant, equipment and materials stated in this document.	NIF_MFI_5
(e)	Initial general arrangement layout drawings for the Maintenance Facility are provided in section 4 of this Appendix.	NIF_MFI_6
(f)	The use of the Maintenance Facility and the Commissioning Facility is described in the concept of operations.	NIF_MFI_7

2. Maintenance Facility

2.1. General

(a)	The Maintenance Facility Site is located in the Wyong area on the Central Coast.	NIF_MFI_10
(b)	The Maintenance Facility Site is adjacent to the Main Northern Line.	NIF_MFI_11
(c)	TfNSW will provide all utility services and connections for the utility services for the Maintenance Facility.	NIF_MFI_12
(d)	The Supplier must supply and install all specialist Tools and equipment (including ICT equipment and test equipment) required to test and maintain the Assets.	NIF_MFI_13
(e)	TfNSW will provide amenities at the Maintenance Facility Site for use by TfNSW Personnel and Supplier's Personnel.	NIF_MFI_14
(f)	TfNSW will provide all fixed lighting for the Maintenance Facility, excluding portable task-specific lighting.	NIF_MFI_15
(g)	TfNSW will provide fire systems for the Maintenance Facility.	NIF_MFI_16
(h)	TfNSW will provide all structural and civil works (including landscaping) for the Maintenance Facility.	NIF_MFI_17
(i)	The Maintenance Facility will comply with the TfNSW "Design Guidelines for the Upgrade and Construction of New and Existing Train Stabling Yards and Turnback Sidings" and the TfNSW Security Standard – Stabling Locations and Maintenance Centres – RSS-002.	NIF_MFI_18
(j)	The Maintenance Facility will comply with AS 1428 (Part 2 Enhanced and Additional Requirements – Buildings and Facilities) and be DDA compliant.	NIF_MFI_19

2.2. Internal access roads

(a)	The Maintenance Facility will have internal vehicular access roads and pedestrian walkways in accordance with section 2.2(e) of this Appendix 04.	NIF_MFI_21
(b)	TfNSW will provide connecting roads from the Maintenance Facility Site to the local road network.	NIF_MFI_22
(c)	The internal vehicular access roads will include level crossings across track(s) with manual boom gates.	NIF_MFI_23
(d)	TfNSW will provide a parking area with suitable power connection for the Simulator road trailer vehicle.	NIF_MFI_24
(e)	The pavement types of the access roads will be in accordance with T HR CI 12200 ST Access Roads.	NIF_MFI_25

2.3. Fencing and security

(a)	TfNSW will provide high security fencing for the perimeter of the	NIF_MFI_27

Maintenance Facility Site, including intruder detection systems.

(b) TfNSW will provide a security building at the Maintenance Facility Site pedestrian and vehicle entrance suitable for 24 hour per day, 7 days per week security personnel presence. NIF_MFI_28

(c) TfNSW will provide security access systems to the Maintenance Facility Site including access gates for pedestrians and vehicles. Road access gates will be mechanised with traffic barriers for use at busier times under supervision of security personnel. turnstile gates will be installed for pedestrians with access cards. NIF_MFI_29

(d) TfNSW will provide a CCTV security installation for the Maintenance Facility Site covering external areas of buildings, access pathways, car parking etc. The system will be self-contained and monitored from the security building within the site but capable of connection to TfNSW control centres as may be agreed. The system will be compliant with TfNSW Security Standards. NIF_MFI_30

2.4. Power Supply

(a) TfNSW will provide all necessary power supply including uninterruptible power supply to the Maintenance Facility for systems such as signalling, security, emergency lighting and communications systems. NIF_MFI_32

(b) TfNSW will provide all traction overhead structures and overhead wiring, including isolation capability for overhead wiring. NIF_MFI_33

(c) TfNSW will provide all general power electrical supply to the Maintenance Facility, including power outlets in offices, amenities and working areas (including workshops). NIF_MFI_34

(d) TfNSW will provide a traction substation. NIF_MFI_35

(e) TfNSW will provide an 11 kV / 415 V substation for the purpose of general power for the Maintenance Facility. NIF_MFI_36

(f) TfNSW will provide pad-mounted sub-stations on a ring-main arrangement to distribute the general power (for buildings, Train wash, wheel lathe, cranes, external lighting, control and communications systems, and other specialist equipment) around the site from the substation. NIF_MFI_37

(g) TfNSW will provide signalling power from the existing Sydney Trains 11 kV signalling power system. NIF_MFI_38

2.5. Maintenance Facility building

(a) TfNSW will provide a Maintenance Facility building of sufficient length for Trains up to 205 m in length. NIF_MFI_40

(b) The Maintenance Facility building will contain four maintenance roads, with provision for a fifth maintenance road. NIF_MFI_41

(c) The Maintenance Facility building will be constructed with 10 m distance between track centres. NIF_MFI_42

(d) The Maintenance Facility building will have a short concrete apron at both ends of the building to allow for safe access to inside the building for deliveries, forklifts or emergency service vehicles. NIF_MFI_43

(e)	The floor of the Maintenance Facility building around maintenance roads will be recessed with the floor notionally 800 mm below rail level; pits within the floor area will be recessed up to 1300 mm below rail level with ramps or steps into and out of each pit.	NIF_MFI_44
(f)	TfNSW will provide overhead traction supply through the shed on the four maintenance roads in the form of a swing away arm overhead wiring system, with provision for future wiring on the fifth maintenance road. The overhead traction supply on each road can be individually isolated and the swing away conductor rail can be retracted to enable Train roof maintenance.	NIF_MFI_45
(g)	TfNSW will provide a depot personnel protection system to prevent unauthorised movement of Trains or the unauthorised energising of the overhead wire within the Maintenance Facility building.	NIF_MFI_46
(h)	TfNSW will provide a workshop area at the floor level of the Maintenance Facility building.	NIF_MFI_47
(i)	TfNSW will provide a supervisor's office located centrally within the building, with easy access to the workshop area, maintenance roads, main office and amenities.	NIF_MFI_48
(j)	TfNSW will provide an electronic clean room as a separate internal building for stripping, cleaning, repair and testing of electronic controls modules and components in a low dust environment.	NIF_MFI_49
(k)	TfNSW will provide a compressed air supply for the Maintenance Facility building and four maintenance roads, with provision for compressed air supply on the fifth maintenance road.	NIF_MFI_50

2.6. Maintenance roads

(a)	The Maintenance Facility design will include provision for Train access to the maintenance roads from the Network at the southern end of the Maintenance Facility Site.	NIF_MFI_52
(b)	The maintenance roads will be suitable for routine and out-of-course repair and fault rectification work.	NIF_MFI_53
(c)	The four (4) maintenance roads will consist of one (1) heavy lifting road, and three (3) standard maintenance roads.	NIF_MFI_136
(d)	TfNSW will provide track on all maintenance roads supported on pedestals, with the exception of the heavy lifting road which will incorporate a raised floor with cast in rail. Future maintenance road 5 will not be fitted out with any rail on pedestals or cast into the slab.	NIF_MFI_54
(e)	TfNSW will provide a maintenance pit on each maintenance road recessed up to 1300mm below rail level for the full length of each road.	NIF_MFI_55
(f)	TfNSW will provide level track on all maintenance roads.	NIF_MFI_56
(g)	TfNSW will provide elevated platforms on both sides of three (3) maintenance roads at roof and Train door level. These platforms will be in a configuration to be agreed with the Supplier to maximise accessibility without constraining the ability of the maintainer to install and remove equipment from the Trains.	NIF_MFI_57
(h)	TfNSW will provide three phase 415 V power supply, single phase 240 V power outlets (for the use of Tools and equipment) along the length of each maintenance road within and outside pits, and installed on access	NIF_MFI_58

platform structures.

(i)	The Supplier must supply and install equipment for the removal and fitment of bogies on any Unit.	NIF_MFI_59
(j)	The Supplier must supply and install any specialist equipment required to drop, lift, rotate, or transport the bogies to/from the maintenance road.	NIF_MFI_60

2.7. Cranes

(a)	TfNSW will provide a crane with safe working load of 12.5 tonne in the loading dock of the stores building.	NIF_MFI_62
(b)	TfNSW will provide a travelling gantry crane on each maintenance road in the Maintenance Facility building, with a provision for installation of a crane on the fifth maintenance road. A total of four cranes will be provided, each with a safe working load of 3.2 tonne. Each crane will be able to traverse the full length of the maintenance road.	NIF_MFI_63
(c)	The Supplier must provide lifting beams and slings required for lifting operations.	NIF_MFI_64

2.8. Office space and car parking

(a)	TfNSW will provide administration office space of approximately 1,500 m^2.	NIF_MFI_66
(b)	The Supplier must fit-out the office space, including but not limited to furniture, ICT equipment and connections.	NIF_MFI_67
(c)	The administration office space will be provided with carpet, lighting, heating, ventilation and air conditioning.	NIF_MFI_68
(d)	The administration office space will also be used by up to 20 TfNSW Personnel including operations support personnel and Train Crew. TfNSW will provide the furniture, fixtures and equipment items for its Personnel including operations support personnel and Train Crew.	NIF_MFI_69
(e)	TfNSW will provide amenities such as kitchens, locker rooms etc. for use by TfNSW Personnel and Supplier's Personnel.	NIF_MFI_70
(f)	TfNSW will provide car park spaces for nominally 100 cars.	NIF_MFI_71

2.9. Stores building

(a)	TfNSW will provide a stores building of approximately 1,500 m^2 for the storage of tools and materials.	NIF_MFI_73
(b)	The stores building will be adjacent to the Maintenance Facility building.	NIF_MFI_74
(c)	The stores building will allow for both light and heavy storage areas.	NIF_MFI_75
(d)	The stores building heavy storage area will allow for the use of forklifts.	NIF_MFI_76
(e)	The stores building heavy storage area will allow for shelving up to 6 m in height.	NIF_MFI_77
(f)	The stores building light storage area will allow for shelving up to 2 m in	NIF_MFI_78

height.

(g) The Supplier must supply and install storage racking and shelving. NIF_MFI_79

2.10. Wheel lathe

(a) TfNSW will provide a wheel lathe building of approximately 40 m by 10 m. The floor will be recessed below rail level to accommodate the lathe and associated equipment. NIF_MFI_81

(b) The wheel lathe building will have no overhead wire, with twin isolators provided on one side of the building. NIF_MFI_82

(c) The Supplier must supply and install a tandem underfloor wheel lathe capable of profiling two axles simultaneously. NIF_MFI_83

(d) The Supplier must ensure that the wheel lathe is integrated with the other associated systems described below along with the necessary visual and audible alarms to ensure safe operation of the wheel lathe. NIF_MFI_84

(e) The Supplier must supply any additional plant and equipment (including a system to progress a train through the wheel lathe) required for safe and efficient Train wheel profiling operations. NIF_MFI_85

(f) The Supplier must supply and install a dust and fume extraction system comprising the necessary ducts and extraction unit to exhaust fumes from the tool tips. NIF_MFI_86

(g) The Supplier must supply and install a swarf management system to convey and deposit swarf external to the building. NIF_MFI_87

2.11. Wash plant

(a) TfNSW will provide a train wash plant and building within the Maintenance Facility Site. NIF_MFI_89

(b) The train wash plant will enable the exterior surfaces (including sides, roof eaves, skirts and ends) of a Long Train to be washed. The wash plant may be designed to also accommodate washing of other existing electric train fleets. NIF_MFI_90

(c) The required travel speed of a Train will be 3.5 km/hr through the wash plant for optimum wash performance and the wash plant will achieve a peak wash throughput of three (3) Trains per hour. Detergent and acid wash cycle options will be available. NIF_MFI_91

(d) Recycled and fresh water will be used in the wash process. NIF_MFI_92

2.12. Graffiti cleaning and decanting facilities

(a) TfNSW will provide a bunded area of nominally 125 m in length on Standing Road 6 for graffiti removal maintenance activities. This area will also be fitted with high pressure hoses for the cleaning of animal strikes and other biohazards from the underframe of a Train. NIF_MFI_94

(b) TfNSW will provide infrastructure for Train toilet decanting and water tank filling to be undertaken on each of the maintenance roads within the NIF_MFI_95

Maintenance Facility building, with the exception of the heavy lifting road.

(c) TfNSW will provide emergency shower and eye wash points adjacent to each decanting facility. NIF_MFI_96

(d) The Supplier must supply the connection hoses and fittings to the Train for the decanting and tanking activities. NIF_MFI_97

2.13. Automatic detection equipment

(a) The Supplier must supply, install, test and commission automatic wheel condition monitoring equipment on a road that the majority of Trains will traverse over as they enter the Maintenance Facility, the location of which is to be agreed between TfNSW and the Supplier. NIF_MFI_99

(b) TfNSW will provide power and data cabling to the location of the wheel condition monitoring equipment. NIF_MFI_100

(c) The automatic wheel condition monitoring equipment must monitor and report: NIF_MFI_101

(i) wheel profile; NIF_MFI_102

(ii) wheel diameter; NIF_MFI_103

(iii) wheel out-of-round; and NIF_MFI_104

(iv) wheel tread surface defects (including flats, spalling and cracks). NIF_MFI_105

2.14. Carriage weighing equipment

(a) TfNSW will provide a weighbridge on one of the maintenance roads inside the Maintenance Facility building to measure mass and mass distribution of a whole car after maintenance, either statically or in motion at low speed. NIF_MFI_107

(b) The Supplier must provide TfNSW with a Unit for calibration and commissioning of the carriage weighing equipment. NIF_MFI_108

3. Commissioning Facility

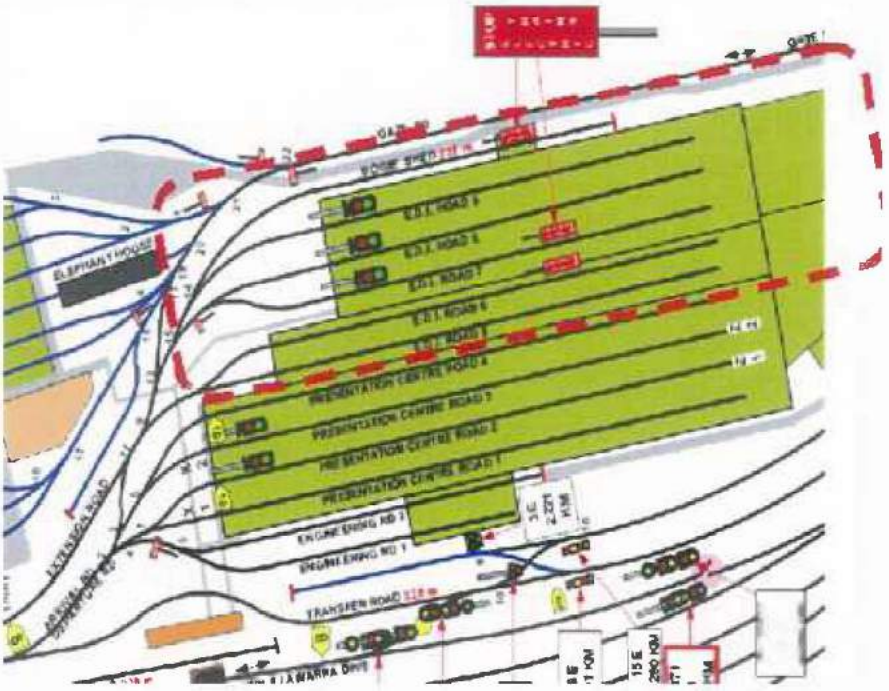
3.1. General

(a) The Commissioning Facility will be at an existing operating train maintenance facility with rail access to the Network. NIF_MFI_111

(b) The general layout of the Commissioning Facility is defined in Figure 1. NIF_MFI_112

Figure 1: Commissioning Facility general layout

NIF_MFI_113



(c) The Commissioning Facility consists of 5 internal maintenance roads and 1 external road as follows: NIF_MFI_114

(i) 5 Road – 320 m length road with fixed full-length platforms on both sides at passenger door height; NIF_MFI_115

(ii) 6 Road – 290 m length road with fixed full-length platforms on both sides at passenger door height; NIF_MFI_116

(iii) 7 Road – 220 m length road with fixed partial length platforms on both sides; NIF_MFI_117

(iv) 8 Road – 240 m length road with fixed 80 m length platforms on both sides; NIF_MFI_118

(v) 9 Road – 160 m length road with fixed 80 m length platforms on both sides; and NIF_MFI_119

(vi) 10 Road – 80 m length external storage road (with provision for external storage of wheel sets and bogies) and loading dock. NIF_MFI_120

(d) Roof level access is provided on the following roads within the Commissioning Facility: NIF_MFI_121

(i) 7 Road – 80 m length, wired (retractable); NIF_MFI_122

	(ii) 8 Road – 80 m length, wired (non-retractable);	NIF_MFI_123
	(iii) 9 Road – 80 m length, wired (non-retractable).	NIF_MFI_124
(e)	Overhead cranes are provided on 7 Road (safe working load 3.2 tonne) and 10 Road (safe working load 10 tonne).	NIF_MFI_125
(f)	A single bogie drop system is provided on Road 9 / 10.	NIF_MFI_126
(g)	A static single car weighbridge is provided on Road 9.	NIF_MFI_127
(h)	Pneumatic shore supply (650 kPa maximum supply air pressure) is available on Roads 5 through 9.	NIF_MFI_128
(i)	Electrical shore supply (415 VAC) is available on Roads 7 through 9.	NIF_MFI_129
(j)	A store is located on the western end of the Maintenance Facility building.	NIF_MFI_130
(k)	An office (facilities for up to 20 persons) is located on the western end of the Maintenance Facility building.	NIF_MFI_131

3.2. Supplier's responsibilities

(a)	The Supplier must supply and install any equipment required to perform the Supplier's Activities at the Commissioning Facility.	NIF_MFI_133
(b)	The Supplier must obtain TfNSW's written approval prior to installation of any equipment at the Commissioning Facility.	NIF_MFI_134

4. Maintenance Facility General Arrangement Drawings

See Attachment A (drawing NIF-MF-WORKSITE-1).

MAINTENANCE FACILITY AREA

TfNSW

KANGY ANGY

NEW INTERCITY FLEET MAINTENANCE FACILITY

WORKSITE DIAGRAMS

SHEET 1 OF 4

Document No: NIF-MF-WORKSITE-1

REV: *A1

A3 Original | This sheet may be projected using plotters and may be rectangular if cropped | NOTE: Do not scale from this drawing

NSW GOVERNMENT | Transport for NSW

New Intercity Fleet Project

Schedule G – Scope and Performance Requirements

Appendix 05 – Maintenance Services Specification

Date of Issue	10 AUGUST 2016
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TfNSW

Table of Contents

1. Introduction

(a)	This Appendix describes the Scope and Performance requirements for the Maintenance Services.	NIF_MSS_3
(b)	The Supplier must provide the Maintenance Services for the Assets, throughout the Maintenance Phase in accordance with the requirements of this Appendix.	NIF_MSS_4

2. Maintenance services

2.1. General

(a)	The Maintenance Services provided by the Supplier must operate and maintain the Assets in a safe, planned and systematic manner and ensure that the Supplier meets the requirements of this deed.		NIF_MSS_7
(b)	The Supplier must ensure that the Supplier's Personnel working on the Network or within Other Sites comply with all applicable requirements of NSW Rail Entities' policies and procedures relating to those sites.		NIF_MSS_8
(c)	The Supplier must maintain Assets in accordance with:		NIF_MSS_9
	(i)	this Appendix;	NIF_MSS_10
	(ii)	the Minimum Operating Standards;	NIF_MSS_11
	(iii)	the Asset Management System; and	NIF_MSS_12
	(iv)	all other relevant Project Plans.	NIF_MSS_13
(d)	The Supplier must provide all Tools, equipment and plant required to maintain the Assets.		NIF_MSS_14
(e)	The Supplier must implement all controls and limits defined in the Planning Approvals.		NIF_MSS_16

2.2. Reporting and communications

(a)	The Supplier must coordinate all Maintenance Services with TfNSW in accordance with the Interface Protocols.		NIF_MSS_18
(b)	The Supplier must notify TfNSW when Units will be Available and provide notice to TfNSW if the Required Availability will not be achieved.		NIF_MSS_19
(c)	The Supplier must notify TfNSW when Units are required for Maintenance Services at the Maintenance Facility.		NIF_MSS_20
(d)	The Supplier must conduct Asset Condition Assessments, identifying:		NIF_MSS_87
	(i)	whether or not the Asset is at the Target Condition;	NIF_MSS_88
	(ii)	any major or latent Defects in the Assets;	NIF_MSS_89
	(iii)	the residual life for each Asset against the Design Life;	NIF_MSS_90
	(iv)	any backlog of Maintenance Services to be performed on the Asset; and	NIF_MSS_91
	(v)	any need for upgrade or replacement of life expired or obsolete Assets.	NIF_MSS_92

TfNSW

2.3. Track possession planning

(a)	TfNSW will provide to the Supplier an indicative 12-month schedule of planned track possessions.	NIF_MSS_22
(b)	Track possessions on the adjacent suburban, main or relief lines may inhibit access to and/or require the isolation of overhead wire supply within the Maintenance Facility.	NIF_MSS_23
(c)	Regardless of inclusion in the indicative schedule, TfNSW may give notice to the Supplier at least 30 days prior to the commencement of a track possession and provide an associated amended Train Plan.	NIF_MSS_24
(d)	The Supplier must update the Maintenance Works Program and the call-in schedule for Units required to be delivered to the Maintenance Facility, consistent with the requirements of the amended Train Plan.	NIF_MSS_25
(e)	The Supplier must have contingency plans to cater for track possessions which may occur due to scheduled or unplanned events within the Maintenance Facility or on the neighbouring running lines.	NIF_MSS_26

2.4. Services

(a)	The Supplier must operate Trains within the Maintenance Facility.	NIF_MSS_28
(b)	The Supplier must deliver Serviceable Trains to the Handback Point for collection in accordance with the Train Plan.	NIF_MSS_29
(c)	The Supplier must collect Trains from the Handover Point in accordance with the Train Plan.	NIF_MSS_30
(d)	TfNSW will endeavour to deliver Trains that require scheduled maintenance or unscheduled maintenance to the Handover Point.	NIF_MSS_31

2.4.1. Certificate of Serviceability

(a)	The Supplier must issue a Certificate of Serviceability for each Unit delivered to the Handback Point following maintenance.	NIF_MSS_33
(b)	The Supplier must issue a new Certificate of Serviceability if any unscheduled maintenance is carried out on a Unit within the Maintenance Facility.	NIF_MSS_34
(c)	The Supplier must assure the Operator that any unscheduled maintenance performed on any Unit has been completed without rendering the Unit non-compliant with the Minimum Operating Standards.	NIF_MSS_98
(d)	The Certificate of Serviceability for each Unit must:	NIF_MSS_35
(i)	include acknowledgement that the relevant Unit has been maintained in accordance with the Asset Management Plan and meets the Minimum Operating Standards at the time of certification;	NIF_MSS_36

	(ii)	identify the Unit and Car numbers;	NIF_MSS_37
	(iii)	include the date and time of issue, as well as the date for re-certification (expiry); and	NIF_MSS_38
	(iv)	advise the relevant Driver of the condition of the Unit at the time of certification including all Performance Operating Standard Defects.	NIF_MSS_39
(e)		Each Certificate of Serviceability must be provided electronically to TfNSW prior to the Presentation Time.	NIF_MSS_40

2.4.2. Provisioning/Decanting

(a)	The Supplier must provision the Trains at the Maintenance Facility i.e. supply all necessary water and other Consumables.	NIF_MSS_93
(b)	The Supplier must decant the Trains at the Maintenance Facility i.e. remove all effluent and waste.	NIF_MSS_42
(c)	TfNSW will provision and decant the Trains that are stored outside the Maintenance Facility.	NIF_MSS_43

2.4.3. Cleaning

(a)	The Supplier must ensure the cleanliness of the Assets.	NIF_MSS_45
(b)	The Supplier must clean the interior of the Trains that are stored at the Maintenance Facility in accordance with the requirements of the Train Presentation Manual.	NIF_MSS_46
(c)	TfNSW will clean Trains that are stored outside the Maintenance Facility in accordance with the requirements of the Train Presentation Manual.	NIF_MSS_47
(d)	The Supplier must clean the exterior of the Trains at the Maintenance Facility in accordance with the requirements of the Train Presentation Manual.	NIF_MSS_48
(e)	The Supplier must clean externally any Train at the Maintenance Facility.	NIF_MSS_50

2.4.4. Additional Maintenance

(a)	The Supplier must provide AM Services including repair services for damages to the Trains arising from vandalism, collisions, accidents or other causes in accordance with Schedules E4 and E5 of this deed and the Interface Protocols.	NIF_MSS_52

2.4.5. Incident response

(a)	Where an Incident occurs in respect of a Train, the Supplier must:		NIF_MSS_54
	(i)	provide help desk and other support to TfNSW including the Train Controller and Train Crew to expedite the Train's repairs and minimise disruptions to services;	NIF_MSS_55
	(ii)	attend to Incidents that require intervention by the Supplier's Personnel;	NIF_MSS_56
	(iii)	assist TfNSW with Recovery of the Train; and.	NIF_MSS_57
	(iv)	perform any other actions required by the Incident and Security Management Plan.	NIF_MSS_58
(b)	Where an Fault or Failure occurs in respect of a Simulator, the Supplier must:		NIF_MSS_59
	(i)	provide help desk and other support to TfNSW to rectify the issue; and	NIF_MSS_60
	(ii)	if requested by TfNSW, attend the Simulator within three hours to resolve the Fault or Failure.	NIF_MSS_61

3. Operations support services

3.1. Help desk

(a)	The Supplier must provide technical and operational support for 24 hours per day, seven days per week to TfNSW, the Train Controller and the Operator to expedite resolution of Incidents in service and minimise in service delays.	NIF_MSS_64
(b)	The Supplier must provide the technical and operational support at a location to be nominated by TfNSW.	NIF_MSS_65

3.2. Updates

(a)	The Supplier must provide operational update services in accordance with the Interface Protocols and Schedule E4 of this deed for operational data on the Trains.	NIF_MSS_67
(b)	The Supplier must provide operational update services in accordance with the Interface Protocols and Schedule E4 of this deed for livery and decals on the Trains.	NIF_MSS_68

3.3. Downloads

(a)	The Supplier must provide operational download services from the Trains to support investigation of incidents, performance monitoring or other matters required by TfNSW or an Investigative Authority.	NIF_MSS_70
(b)	The Supplier must provide operational download services in accordance with the Interface Protocols and Schedule E4 of this deed for data from the Trains.	NIF_MSS_71

3.3.1. Physical retrievals

(a)	The Supplier must provide physical retrieval services for Train data to support investigation of incidents or other matters required by TfNSW or an Investigative Authority.	NIF_MSS_73
(b)	The Supplier must provide physical retrieval services in accordance with the Interface Protocols and Schedule E4 of this deed for data from the Trains.	NIF_MSS_74

3.3.2. Retention of data

(a)	The Supplier must retain data for any equipment replaced on the Trains for a period not less than the recording duration of the equipment as if it had continued operating on the Train in service.	NIF_MSS_76
(b)	The Supplier must provide any data retained in accordance with section 3.3.2(a) if requested by TfNSW within the above period.	NIF_MSS_77

3.3.3. Operator User Access and System Transactions

(a)	The Supplier must provide an interface for the Operator's systems supporting the following system to system transactions:		NIF_MSS_100
	(i)	receiving Driver's test results for each Train;	NIF_MSS_101
	(ii)	receiving a Certificate of Serviceability for each Train;	NIF_MSS_102
	(iii)	receiving status information (including location, Train configuration, etc.) from Train(s);	NIF_MSS_103
	(iv)	receiving performance records including the Supplier Daily Performance Record and Supplier Service Payment Period Performance Record;	NIF_MSS_104
	(v)	receiving Fleet Availability reports;	NIF_MSS_105
	(vi)	receiving daily call-in schedules and alterations;	NIF_MSS_106
	(vii)	receiving Supplier requests for movement of Trains between locations;	NIF_MSS_107
	(viii)	receiving real-time passenger counting data from Train(s);	NIF_MSS_108
	(ix)	receiving historical passenger counting data from Train(s);	NIF_MSS_109
	(x)	receiving energy metering data from Train(s);	NIF_MSS_110
	(xi)	retrieving Asset information from the AIS;	NIF_MSS_111
	(xii)	receiving status and changes in status of faults in the AIS;	NIF_MSS_112
	(xiii)	receiving on-time running information from Train(s);	NIF_MSS_113
	(xiv)	receiving infrastructure monitoring information from Train(s);	NIF_MSS_114
	(xv)	uploading timetables to Train(s);	NIF_MSS_115
	(xvi)	uploading timetable amendments (e.g. STN, transpositions) to Train(s);	NIF_MSS_116
	(xvii)	raising faults with the Supplier's AIS; and	NIF_MSS_117
	(xviii)	receiving faults and critical events from Train(s).	NIF_MSS_118
(b)	The Supplier must provide user access to its systems for the Operator's staff to remotely perform the following activities:		NIF_MSS_119
	(i)	receiving Driver's test results for each Train;	NIF_MSS_120

(ii)	receiving a Certificate of Serviceability for each Train;	NIF_MSS_121
(iii)	receiving status information (including location, train configuration, etc.) from Train(s);	NIF_MSS_122
(iv)	receiving real-time passenger counting data from Train(s);	NIF_MSS_123
(v)	receiving historical passenger counting data from Train(s);	NIF_MSS_124
(vi)	receiving energy metering data from Train(s);	NIF_MSS_125
(vii)	retrieving stored CCTV from Train(s);	NIF_MSS_126
(viii)	uploading message library data to Train(s);	NIF_MSS_127
(ix)	sending/selecting message for display and annunciation to Train(s);	NIF_MSS_128
(x)	transmitting information on allocated runs;	NIF_MSS_129
(xi)	accessing Asset Information System information;	NIF_MSS_130
(xii)	receiving on-time running information from Train(s);	NIF_MSS_131
(xiii)	downloading event recorder from Train(s);	NIF_MSS_132
(xiv)	viewing real-time CCTV from Train(s);	NIF_MSS_133
(xv)	uploading timetables to Train(s);	NIF_MSS_134
(xvi)	uploading timetable amendments (e.g. STN, transpositions) to Train(s);	NIF_MSS_135
(xvii)	raising faults with the Supplier's AIS; and	NIF_MSS_136
(xviii)	receiving faults and critical events from Train(s).	NIF_MSS_137

4. Engineering support services

4.1. General

(a)	The Supplier must provide and maintain all Technical Documents for the Assets.	NIF_MSS_80
(b)	The Supplier must maintain the Simulators' appearance and functionality to match the configuration status of the Trains at all times.	NIF_MSS_81
(c)	The Supplier must provide design configuration updates in accordance with the Interface Protocols and Schedule E4 of this deed for the Trains.	NIF_MSS_82
(d)	The Supplier must provide additional engineering support services in accordance with Schedule E3 and Schedule E4 for purposes including:	NIF_MSS_83
	(i) Variations requested by TfNSW;	NIF_MSS_84
	(ii) support of safety investigations or audits by TfNSW or other Investigative Authorities; and	NIF_MSS_85
	(iii) the addition/updating of track and/or training scenarios for the Simulators.	NIF_MSS_86

Transport for NSW

New Intercity Fleet Project

Schedule G – Scope and Performance Requirements

Appendix 06 – Running Time and Energy Performance

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TfNSW

Table of Contents

1. Overview and scope

1.1. General

(a)	This Appendix describes the running time and energy performance requirements with respect to the provision of the Fleet.	NIF_App06_3

2. Running time and energy performance requirements

2.1. Running time performance

(a)	The Fleet must be delivered and maintained to be able to meet the running times as specified:		NIF_App06_6
	(i)	section running times for the routes stopping at each station, as listed below in Tables 1-4;	NIF_App06_7
	(ii)	for each overhead wire current limitation in Tables 1-4;	NIF_App06_8
	(iii)	curve and gradient data as per TS 0002 TI Curve and Gradient Diagrams;	NIF_App06_9
	(iv)	speed signs as per TS TOC.2;	NIF_App06_10
	(v)	in "exceptional payload" in accordance with EN15663 as tailored in Appendix 02; and	NIF_App06_11
	(vi)	in any combination of Units forming up to and including a Long Train.	NIF_App06_12
(b)	A station dwell time of 30 seconds must be assumed for duty cycle and equipment rating purposes.		NIF_App06_13

2.2. Energy performance

(a)	The Reference Energy Consumption in Table 5 for the Fleet is defined by the net traction energy consumed by ~~each~~the Long Train ~~Configuration type~~ operating to:		NIF_App06_15
	(i)	section running times for the routes, as listed below in Tables 1-4;	NIF_App06_16
	(ii)	for the 3,200 A overhead wire current limitation in Tables 1-4; and	NIF_App06_17
	(iii)	in "exceptional payload" in accordance with EN15663 as tailored in Appendix 02.	NIF_App06_18
(b)	The Supplier must verify the Actual Energy Consumption of the New Intercity Fleet against the Reference Energy Consumption.		NIF_App06_19
(c)	The auxiliary energy consumption for the Fleet must be calculated assuming:		NIF_App06_20
	(i)	section running times for the routes, as listed below in Tables 1-4;	NIF_App06_21
	(ii)	for the 3,200 A overhead wire current limitation in Tables 1-4;	NIF_App06_22
	(iii)	in "exceptional payload" in accordance with EN15663 as tailored in Appendix 02;	NIF_App06_23
	(iv)	external ambient temperature of 30 °C;	NIF_App06_24
	(v)	solar radiation of 1070 W/m^2; and	NIF_App06_25

(vi) dwell times at each station of 30 seconds. NIF_App06_26

Table 1 Sectional running times – route 1A Main North Express (Down)

Route 1A: Main North Express (Down)					
Departure Station	**Arrival Station**	**Section Running Time (hh:mm:ss)**			**Net traction energy - Long Train (kWh)**
		OHW Limit 3,200 A	**OHW Limit 3,600 A**	**OHW Limit 4,400 A**	**OHW Limit 3,200 A**
Sydney Terminal	Redfern	[redacted]			
Redfern	Strathfield				
Strathfield	Epping				
Epping	Hornsby				
Hornsby	Woy Woy				
Woy Woy	Gosford				
Gosford	Tuggerah				
Tuggerah	Wyong				
Wyong	Morisset				
Morisset	Fassifern				
Fassifern	Broadmeadow				
Broadmeadow	Hamilton				
Total					
Notes on Train path: Down Main to Strathfield, Down North Main to West Ryde, Down Suburban to Epping, Down Main North to Hornsby Platform 5, Platform 2 through Berowra and Down Main all the way to Hamilton.					

Table 2 Sectional running times – route 1B Main North Express (Up)

Route 1B: Main North Express (Up)					
Departure Station	**Arrival Station**	**Section Running Time (hh:mm:ss)**			**Net traction energy - Long Train (kWh)**
		OHW Limit 3,200 A	**OHW Limit 3,600 A**	**OHW Limit 4,400 A**	**OHW Limit 3,200 A**
Hamilton	Broadmeadow	[redacted]			
Broadmeadow	Fassifern				
Fassifern	Morisset				
Morisset	Wyong				
Wyong	Tuggerah				
Tuggerah	Gosford				
Gosford	Woy Woy				
Woy Woy	Hornsby				
Hornsby	Epping				
Epping	Strathfield				
Strathfield	Redfern				
Redfern	Sydney Terminal				
Total					
Notes on Train path: Up Main Hamilton to Epping, Up North Suburban to West Ryde, Up North Main to platform 1 Strathfield, Up Main to Redfern and then through to Sydney Terminal.					

Table 3 Sectional running times – route 2A Main North (Down)

Route 2A: Main North (Down)					
Departure Station	**Arrival Station**	**Section Running Time (hh:mm:ss)**			**Net traction energy - Long Train (kWh)**
		OHW Limit 3,200 A	**OHW Limit 3,600 A**	**OHW Limit 4,400 A**	**OHW Limit 3,200 A**
Sydney Terminal	Redfern	[redacted]			
Redfern	Strathfield				
Strathfield	Epping				
Epping	Hornsby				
Hornsby	Berowra				
Berowra	Cowan				
Cowan	Hawkesbury River				
Hawkesbury River	Wondabyne				
Wondabyne	Woy Woy				
Woy Woy	Koolewong				
Koolewong	Tascott				
Tascott	Point Clare				
Point Clare	Gosford				
Gosford	Narara				
Narara	Niagara Park				
Niagara Park	Lisarow				
Lisarow	Ourimbah				
Ourimbah	Tuggerah				
Tuggerah	Wyong				
Wyong	Warnervale				
Warnervale	Wyee				
Wyee	Morisset				
Morisset	Dora Creek				
Dora Creek	Awaba				
Awaba	Fassifern				
Fassifern	Booragul				
Booragul	Teralba				
Teralba	Cockle Creek				
Cockle Creek	Cardiff				
Cardiff	Kotara				
Kotara	Adamstown				
Adamstown	Broadmeadow				
Broadmeadow	Hamilton				
Total					
Notes on Train path: Down Main to Strathfield, Down North Main to West Ryde, Down Suburban to Epping, Down Main North to Hornsby Platform 5, Platform 2 through Berowra and Down Main all the way to Hamilton.					

Table 4 Sectional running times – route 2B Main North (Up)

Route 2B: Main North (Up)					
Departure Station	**Arrival Station**	**Section Running Time (hh:mm:ss)**			**Net traction energy - Long Train (kWh)**
		OHW Limit 3,200 A	**OHW Limit 3,600 A**	**OHW Limit 4,400 A**	**OHW Limit 3,200 A**
Hamilton	Broadmeadow	[redacted]			
Broadmeadow	Adamstown				
Adamstown	Kotara				
Kotara	Cardiff				
Cardiff	Cockle Creek				
Cockle Creek	Teralba				
Teralba	Booragul				
Booragul	Fassifern				
Fassifern	Awaba				
Awaba	Dora Creek				
Dora Creek	Morisset				
Morisset	Wyee				
Wyee	Warnervale				
Warnervale	Wyong				
Wyong	Tuggerah				
Tuggerah	Ourimbah				
Ourimbah	Lisarow				
Lisarow	Niagara Park				
Niagara Park	Narara				
Narara	Gosford				
Gosford	Point Clare				
Point Clare	Tascott				
Tascott	Koolewong				
Koolewong	Woy Woy				
Woy Woy	Wondabyne				
Wondabyne	Hawkesbury River				
Hawkesbury River	Cowan				
Cowan	Berowra				
Berowra	Hornsby				
Hornsby	Epping				
Epping	Strathfield				
Strathfield	Redfern				
Redfern	Sydney Terminal				
Total					
Notes on Train path: Up Main Hamilton to Epping, Up North Suburban to West Ryde, Up North Main to platform 1 Strathfield, Up Main to Redfern and then through to Sydney Terminal.					

Table 5 Energy Performance

Energy Performance						
Route	Configuration	Reference Energy Consumption (kWh)			Auxiliary Energy Consumption (kWh)	
		Traction Energy Consumed	Traction Energy Regenerated	Net Traction Energy	HVAC	Other
Route 1A	Long Train	[redacted]				
~~Route 1A~~	~~Short Train~~					
Route 1B	Long Train					
~~Route 1B~~	~~Short Train~~					
Route 2A	Long Train					
~~Route 2A~~	~~Short Train~~					
Route 2B	Long Train					
~~Route 2B~~	~~Short Train~~					

NSW GOVERNMENT | Transport for NSW

New Intercity Fleet Project

Schedule G – Scope and Performance Requirements

Appendix 07 – Schedule of Deliverables

Date of Issue	~~03 AUGUST 2016~~08 FEBRUARY 2019
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Table of Contents

1. Overview

(a) This Appendix specifies the Schedule of Deliverables for the Project. NIF_App07_2

(b) The Schedule of Deliverables defines the minimum list of Deliverables (excluding Assets) resulting from the Supplier's Activities to be delivered to TfNSW. NIF_App07_3

(c) For each item listed, the Schedule of Deliverables provides the: NIF_App07_4

(i) the milestone(s) for delivery (within the RFT phase, Delivery Phase, and Maintenance Phase) and; NIF_App07_5

(ii) the status of each of the relevant Deliverables at each milestone, using the following terminology: NIF_App07_6

- I – to be delivered within Initial Plan submissions (at RFT phase);
- S – to be delivered as a Submitted Document; and
- C – to be Submitted for Review under the Review Procedures and achieve Confirmed Document status.

2. Schedule of Deliverables

	TENDER	DELIVERY								MAINTENANCE	
DELIVERABLE	RFT	Contract Award	DPPR	SDR	PDR	DDR	TRR	SVR	Acceptance	MPPR	Handover
Project Management											
Project Management Plan	I			C							
Organisation chart	I		S							S	
Delivery Program	I		S								
Register of Submitted Documents			S							S	
Authorisation and Accreditation											
Authorisation and Accreditation Plan	I			C							
Accreditation for construction, maintenance, and testing of rolling stock						S					
Accreditation Variation support documents						S					
AEO Authorisation		S									
Quality Management											
Quality Plan				C							
Internal audit schedule			S							S	
Supplier hold points and witness points				S							

	TENDER	DELIVERY								MAINTENANCE	
DELIVERABLE	RFT	Contract Award	DPPR	SDR	PDR	DDR	TRR	SVR	Acceptance	MPPR	Handover
Workmanship quality standards						S					
Risk Management											
Risk Management Plan				C							
Project risk register	I		S							S	
Configuration Management											
Configuration Management Plan	I			C							
Configuration items					C						
Product configuration information						C					
Configuration audit reports									S		S
Work Health and Safety Management											
Safety Management Plan				C							
Safety Management System				S							
Safety performance reporting			S							S	
Incident and Security Management											
Incident and Security Management Plan				C							
Systems Engineering Management											

	TENDER	DELIVERY								MAINTENANCE	
DELIVERABLE	RFT	Contract Award	DPPR	SDR	PDR	DDR	TRR	SVR	Acceptance	MPPR	Handover
System Engineering Management Plan	I			C							
System requirement specifications				C							
Concept Design	S										
Operational concepts				C							
Architectural design description					C						
Human factors integration plan (HFIP)					C						
Human factors integration report						C					
Requirements management											
DOORS database			S	S	S	S	S	S		S	
Requirements Traceability Matrix (RTM)				C	S	C					
Reliability, Availability, Maintainability											
RAM Management Plan				C							
Preliminary RAM ~~analysis~~Analysis (Units)				C							
Preliminary RAM Analysis (MFI)					C						
Preliminary RAM Analysis (Simulator)					C						
RAM target apportionment					C						

	TENDER	DELIVERY								MAINTENANCE	
DELIVERABLE	RFT	Contract Award	DPPR	SDR	PDR	DDR	TR R	SVR	Acceptance	MPPR	Handover
System RAM requirements					C						
Reliability analysis and prediction						C					
System Safety Assurance											
System Safety Plan	I			C							
Preliminary hazard analysis				C							
Project hazard log	I		S	S	S	S	S		S	S	
System hazard & safety risk analysis				C	S	C					
Safety target apportionment					C						
System safety requirements					C						
Schedule of safety assurance deliverables						C					
Interface agreements						C					
Safety assurance reports					C	C	C		C		C
Electromagnetic Compatibility											
EMC Management Plan				C							
Electromagnetic compatibility analysis report					CS	C					
Power supply system compatibility analysis report					CS	C					

	TENDER	DELIVERY								MAINTENANCE	
DELIVERABLE	**RFT**	**Contract Award**	**DPPR**	**SDR**	**PDR**	**DDR**	**TRR**	**SVR**	**Acceptance**	**MPPR**	**Handover**
Track detection systems compatibility analysis report					C S	C					
Electromagnetic compatibility case								C			
Power supply system compatibility case								C			
Track detection systems compatibility case								C			
Manufacturing and Procurement											
Manufacturing and Procurement Plan	I			C							
Verification Management											
Verification Plan	I			C							
Verification Program	I		C								
Verification Procedures						C	C				
Verification Reports								C			
Verification matrix	I			C		C		C			
Vehicle Information Pack (T HR RS 00814 ST)							C				
Test notification							S				
Operational Readiness											
Operational Readiness Plan						C					

	TENDER	DELIVERY								MAINTENANCE	
DELIVERABLE	RFT	Contract Award	DPPR	SDR	PDR	DDR	TR R	SVR	Acceptance	MPPR	Handover
Training needs analysis						C					
Training packages								C			C
Operations and Maintenance Manual for each key Asset (except Units)								C			C
Train Maintenance Manual for the Rolling Stock								C			C
Train Operating Manual for the Rolling Stock								C			C
Train Presentation Manual for the Rolling Stock								C			C
Asset Management											
Asset Management Plan	I					C					C
Technical ~~maintenance plans~~Maintenance Plans – Units						C					
Technical Maintenance Plans – Simulator						C					
Technical Maintenance Plans – MFI						C					
Technical Maintenance Plans – Commissioning Facility						C					
Technical Maintenance Plans – Maintenance Facility						S		C			
Maintenance Works Program (see Note 1)									C	S	
Environment and Sustainability Management											

	TENDER	DELIVERY								MAINTENANCE	
DELIVERABLE	RFT	Contract Award	DPPR	SDR	PDR	DDR	TR R	SVR	Acceptance	MPPR	Handover
Environment and Sustainability Management Plan				C							
Technical Submissions											
Technical Packages (including Technical Reports and Technical Documents)				C	C	C		C			
Mock Ups and prototypes						C					
Stakeholder engagement report				C	C	C					
Escrow deposits									S		
Schedule of finishes						C					
Schedule of decals						C					
Data interchange formats					CS	C					
Simulator											
Type of road registerable trailer					C						
Training scenarios						C					
Simulated network route					C						
Computer based Simulator training scenarios						C					
Reporting											

	TENDER	DELIVERY							MAINTENANCE	
DELIVERABLE	RFT	Contract Award	DPPR	SDR	PDR	DDR	TRR	SVR	Acceptance	MPPR	Handover
Delivery Phase Performance Report			S								
Maintenance Phase Performance Report										S	

Note 1:

As described in section 2.15.2 of the SPR, not less than 40 Business Days prior to the commencement of each Maintenance Year, the Supplier must prepare, submit for Review and implement a Maintenance Works Program which describes the Maintenance Services looking forward over a two year period from the commencement of each Maintenance Year.

The requirement described in the Table above to submit a Maintenance Works Program with the MPPR refers to the obligation set out in section 4.3(o) of the SPR to submit an update to the current Maintenance Works Program, identifying changes at the time of the MPPR.

Transport for NSW

New Intercity Fleet Project
Volume 4 – Scope and Performance Requirements
Appendix 08 – Authorised Engineering Organisation Services

Date of Issue	03 AUGUST 2016
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Transport
Asset Standards
Authority

Instructions

Who fills it in?
The AEO representative of the applicant organisation in conjunction with an ASA Facilitator
The AEO representative may call on SME support from within the applicant organisation in completing the engineering services scoping matrix
When is it used?
It is completed during the initial scoping meeting with the ASA facilitator and developed during preparation for assessment and is to be submitted as part of the application to begin the formal AEO assessment
It is to be used by the applicant to gauge their organisation's scope of services for the full formal assessment as an AEO
It defines the profile of engineering services and assurance requirements for a particular project
It is the scope of the AEO authorisation used to support any procurement response against the project profile
What documents are used in conjunction with it?
TMU MD 00009 ST *AEO Authorisation Requirements* (which includes guidance on applicant interpretation against mandatory requirements)
Applicant organisations management process documentation that is expected to meet AEO authorisation requirements
Applicant organisations evidence records of actual deployment against management process documentations, while carrying out defined services
AEO letter of authorisation
Explanation on completing key fields
For prospective AEO:
Review the engineering disciplines within your organisation (listed on the vertical axis)
Review the asset life cycle stages your organisation operates within (listed on the horizontal axis)
Insert an 'A' or 'P/A' (see 'Definitions' work sheet for details) in the square(s) corresponding to the engineering disciplines and asset life cycle stages applicable to your organisation. NOTE that it is sufficient that an organisation provides a process and the competence to provide a service (they need to have justified confidence that the service is capable of being delivered competently). The ASA recognises that organisations will have different approaches to sourcing resources to support their services.
Work with your facilitator to incorporate any notes regarding the context within which you are seeking authorisation

TfNSW

Transport for NSW
Transport Asset Standards Authority

<Insert AEO or contract name/title >
Engineering Services Matrix

Correct as at:

Specialist Engineering Service/ Discipline	Asset Life Cycle Activities	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Detailed Design to IFC	[illegible]	[illegible]	[illegible]	[illegible]	Testing and Commissioning	[illegible]	[illegible]	[illegible]	Conduct Asset Condition Surveys	Manage Asset Configuration	Plan Decommissioning / Disposal	Conduct Decommissioning/Disposal	Update Asset Configuration Data
	Asset Life Cycle Phases	Plan											Acquire						Operate/Maintain				Dispose		
	Detailed Life Cycle	Feasibility					Concept				Design		Manufacture		Install	Integrate, Test and Commission			Maintenance				Disposal		
Rolling Stock	Locomotives																								
Rolling Stock	Freight																								
Rolling Stock	Heavy Commuter EMU / DMU						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A		P/A
Rolling Stock	Track Machine																								
Rolling Stock	Rail Road Vehicle																								
Rolling Stock	Trolley / Trailer																								
Rolling Stock	Other Rail Vehicles																								
Rolling Stock	Rolling Stock Subsystems						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Signalling and Control Systems	Supervisory and Control Systems										P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Signalling and Control Systems	Interlocking Systems																		P/A	P/A	P/A	P/A			
Signalling and Control Systems	Trackside Systems (including Cabling)																		P/A	P/A	P/A	P/A			
Communications	Cables and Routes: Optical fibre and other						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Applications and Systems – Telephony (VOIP and Analogue)						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Applications and Systems – Passenger Information Systems						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Applications and Systems – Alarm and CCTV Surveillance						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Applications and Systems–Condition Monitoring and Wayside Telemetry						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Networks Wired - Packet switched (IP MPLS etc)						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Networks Wired - Circuit switched (SDH, DWDM, etc)						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Networks Wireless - Packet switched (WiFi, WiMax, LTE etc)						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Networks Wireless - Circuit switched (Radio systems, PMR, Tetra etc)						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Telecommunications Power Systems and Facilities						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Communications	Network and Information Management Systems and Security						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A
Track Engineering	Wheel/Rail Interface																		P/A	P/A	P/A	P/A			
Track Engineering	Geometry/Alignment																		P/A	P/A	P/A	P/A			
Track Engineering	Components/Structure																		P/A	P/A	P/A	P/A			
Track Engineering	Rail-Specific Survey																								
Civil and related Engineering	Civil - Survey																								
Civil and related Engineering	Civil - Geotechnical																								
Civil and related Engineering	Civil - CSR																		P/A	P/A	P/A	P/A			
Civil and related Engineering	Civil - Tunnelling																								
Civil and related Engineering	Civil - Bridges and Structures																		P/A	P/A	P/A	P/A			
Civil and related Engineering	Civil - Earthworks																		P/A	P/A	P/A	P/A			
Civil and related Engineering	Civil - Roads and pavements																		P/A	P/A	P/A	P/A			
Civil and related Engineering	Civil - Drainage and Hydrology																		P/A	P/A	P/A	P/A			
Buildings and Stations	Manage Buildings Work																		P/A	P/A	P/A	P/A			
Buildings and Stations	Architectural Design																								
Buildings and Stations	Specialist Buildings Expertise (must specify in the Notes)						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A		P/A
Buildings and Stations	Building Structures (must specify in the Notes)																		P/A	P/A	P/A	P/A			
Buildings and Stations	Building Services (must specify in the Notes)																		P/A	P/A	P/A	P/A			
Buildings and Stations	Specialist Rail Systems Buildings Expertise (must specify in the Notes)						P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A	P/A		P/A
Electrical Engineering	High Voltage Aerial Feeders																								
Electrical Engineering	High Voltage Cables																								
Electrical Engineering	Traction Substation and Sectioning Hut																								
Electrical Engineering	Distribution Substations																								
Electrical Engineering	High Voltage Protection Systems																								
Electrical Engineering	LV Power Systems and LV Protection																		P/A	P/A	P/A	P/A			
Electrical Engineering	Earthing, Bonding, Electrolysis and Lightning Protection																		P/A	P/A	P/A	P/A			
Electrical Engineering	Electrical Control Systems (SCADA) (must specify in the Notes)																								
Electrical Engineering	Overhead Wiring																		P/A	P/A	P/A	P/A			
Electrical Engineering	Electrical Network Planning and Modelling																								
Note: ONLY use the below sections if you provide the service as a standalone service																									
Systems Engineering and Assurance (all services)	Systems Engineering (all SE services)																								
Systems Engineering and Assurance (all services)	Systems Assurance																								
Systems Engineering and Assurance (all services)	RAM Management																								
Systems Engineering and Assurance (all services)	Safety Engineering / Assurance																								
Systems Engineering and Assurance (all services)	Independent Safety Assessment (ISA)																								
Systems Engineering and Assurance (all services)	Human Factors Integration																								
Systems Engineering and Assurance (all services)	Electromagnetic Compatibility																								
Systems Engineering and Assurance (all services)	System Modelling and Analysis																								
Systems Engineering and Assurance (all services)	Requirements Management Engineering																								
Systems Engineering and Assurance (all services)	Interface Management																								
Systems Engineering and Assurance (all services)	Systems Integration Services (use Notes to elaborate)																								
Systems Engineering and Assurance (all services)	Verification and Validation																								
Non-Asset Specific Engineering Services	Acoustic / Noise Engineering																								
Non-Asset Specific Engineering Services	Fire and Life Safety (Infrastructure or Vehicles)																								
Non-Asset Specific Engineering Services	DDA Compliance Services (Infrastructure or Vehicles)																								
Non-Asset Specific Engineering Services	Sustainability and Environmental Services (Engineering-related)																								
Non-Asset Specific Engineering Services	Engineering Competence Management																								
Non-Asset Specific Engineering Services	Multi-Discipline Engineering Management (Use notes to elaborate)																								
Non-Asset Specific Engineering Services	Other Specialist Engineering Services (unspecified)																								
Asset Management	Configuration Management																								
Asset Management	Integrated Logistics																								
Asset Management	Asset Management																								

Action per discipline

A	"Assure only" means that the AEO does not produce the actual deliverable/service, but has competence, processes and systems in place to assure it (i.e. providing confidence that the requirements are fulfilled) For example, a company may specialise in providing independent inspections, verification, certification, assessments, testing, design reviews, installation QA inspections, fabrication QA inspections etc. Such an "assurance" AEO may be engaged directly or indirectly with TfNSW (or by an AEO) to assure some work or service produced by another AEO, or will team-up with the other AEO producing the service
P/A	"Produce/Assure" means the organisation produces / delivers and assures engineering service/product within the scope of a selected life cycle process / activity for a particular engineering discipline/service

Notes: specify details of the selected discipline or activity if required

1	Rolling Stock sub-systems P/A is required only for where design and integration responsibility is at sub-system level
2	
3	
4	
5	
5	

Signed ______________________

Name: Jim Modrouvanos

Position: Director Asset Standards Authority

Dated:

TfNSW

Transport Asset Standards Authority

Asset Life Cycle Activities:

Feasibility	Transport Needs Analysis / Model / Plan	Engineering support to transport modelling and analysis performed to identify existing transport network constraints, future transport growth needs
	Operations Concept Development	Engineering support to translate transport demand and business needs into a concept of operations that will support these needs. This will examine options and perform engineering and other trade-off analysis
	Maintenance Concept Development	Engineering support to determine how transport demand needs and operational concept will influence how the network assets can be maintained most effectively
	[illegible]	Engineering support in performing optioneering and trade-off studies for various infrastructure options to support the business case
	BRS / URD Development	Engineering support in developing the business requirements
Concept	Single Option Development	Engineering development of the preferred option
	Safety Change Planning	Engineering input into identifying the key safety risks, how they will be controlled and the plan that describes how this will be done
	SRS Development	Engineering development of the system requirements, including tracing to business requirements
	Concept / Reference Design	Engineering development of the reference design (P90 risk level) to sufficient detail to go out to tender for detailed design and construction
Design	Preliminary Design	Engineering design to 70% completion
	Detailed Design to AFC	Engineering design to 100%, including production of material procurement specifications and final acceptance of design prior to construction
Manufacture	Material Procurement	Following approval for construction, materials and equipment are procured (either COTS products, or bespoke)
	Manufacturing / Fabrication	Manufacturing of equipment, or fabrication of structural elements in the factory prior to shipping to site
[illegible]	Construction / Installation	Construction/installation of assets on site, once they have been shipped from the supplier/factory
Integrate, Test and Commission	Subsystem Integration	Once individual systems/subsystems have been constructed or installed on site, commence connection/integration of these systems for testing
	Testing and Commissioning	Testing includes FAT, SAT, SIT and finally commissioning into operation
	Acceptance Services	Engineering inputs into systems acceptance (involving the asset maintenance organisation and asset owner, and the service operator)
Asset Maintenance	Plan Asset Maintenance	Engineering inputs into planning maintenance of assets
	Maintain / Upgrade Assets	Engineering inputs in carrying out asset maintenance or upgrades throughout the operational lifetime
	Conduct Asset Condition Surveys	Engineering inputs into conducting asset condition surveys
	Manage Asset Configuration	Engineering management of asset configuration information
Disposal	[illegible]	Engineering inputs into planning the decommissioning and disposal of life-expired assets
	[illegible] Decommissioning/Disposal	Engineering inputs into decommissioning and disposal
	Update Asset Configuration Data	Engineering inputs into updating asset configuration data

Specialist Engineering Services / Disciplines:

Rolling Stock	Locomotives	Provision of services related to locomotives
	Freight	Provision of services related to freight rolling stock
	Heavy Commuter EMU / DMU	Provision of services related to heavy rail passenger rolling stock
	Track Machine	Provision of services related to track machines
	Road Rail Vehicle	Provision of services related to road rail vehicles
	Trolley / Trailer	Provision of services related to trolleys/trailers
	Other Rail Vehicles	Provision of services related to other rolling stock (light rail etc)
	Rolling Stock Subsystems	Provision of products and services relating to group of interconnected and interactive parts that performs a task as a component of a larger rolling stock system
Signalling and Control Systems	Supervisory and Control Systems	Provision of services related to railway signalling [illegible] management systems
	Interlocking Systems	Provision of services related to railway sig [illegible] relay or [illegible] based)
	Trackside Systems (including Cabling)	Provision of services related to railway trackside signalling equipment (signals, point machines, train detection, ATP, ATO etc)
[illegible]	Cables and Routes, Optical fibre and other)	Provision of services related to route construction (CSR, ULX, Pits etc), optical fibre and other cabling placement and termination, balanced cabling, copper , building wiring etc)
	Applications and Systems – Telephony (VOIP and Analogue)	Provision of services relating to telecommunications telephony services, analogue, VOIP, emergency telephones
	Applications and Systems – Passenger Information Systems	Provision of station, rolling stock and other services relating to passenger information systems, help points, on station and rolling stock public address systems
	Applications and Systems – Alarm and CCTV Surveillance	Provision of services relating to CCTV surveillance systems, station installations, alarm and security systems
	Applications and Systems – Condition Monitoring and Wayside Telemetry	Provision of services relating to wayside and condition monitoring systems, telemetry and other
	Networks Wired - Packet switched (IP MPLS etc)	Provision of services relating to network based packet switched systems IP, MPLS etc
	Networks Wired - Circuit switched (SDH, DWDM, etc)	Provision of services relating to circuit switched network systems, SDH, DWDM, ATM, ISDN and other
	Networks Wireless - Packet switched (WiFi, WiMax , LTE etc)	Provision of services relating to packet switched wireless systems, WiFi, Wimax, 3G (excl voice), 4G, LTE
	Networks Wireless - Circuit switched (Radio systems, PMR, Tetra etc)	Provision of services relating to circuit switched wireless systems, GSM GSM-R, 2G, 3G (voice), mobile radio systems, PMR, Tetra, APCO25 etc
	Telecommunications Power Systems and Facilities	Provision of services relating to telecommunications power systems, Battery, ac, UPS, fuel cells, earthing and bonding, telecommunications equipment housing, fit-out, racks, equipment rooms, environmental systems
	Network and Information Management Systems and Security	Provision of services relating to communications network management systems, security of communications network and information
Track engineering	Wheel / Rail Interface	Comprehensive understanding of the dynamic interaction between rails and wheels considering defects, metallurgical behaviour, wheel steerage, lubrication and rail grinding
	Geometry / Alignment	Design, construct or maintain track infrastructure geometry or position that will impact upon compliance to standard or specification requirements
	Components / Structure	Knowledge and comprehension of design selection, materials behaviour and performance capability of track componentry
	Rail - Specific Survey	Provision of survey services (DBYD, set-out, cadastral, geodetic, topographic, remote sensing/LiDAR, geospatial, etc) as inputs to design, pre/post construction, during maintenance, and during decommissioning of assets including detailed site survey and services search
Civil and related Engineering	Civil - Survey	Provision of survey services (DBYD, set-out, cadastral, geodetic, topographic, remote sensing/LiDAR, geospatial, etc) as inputs to design, pre/post construction, during maintenance, and during decommissioning of civil assets
	Civil - Geotechnical	Provision of geotechnical investigations, surveys and assessments as inputs to design, as well as support pre/post construction, during maintenance, and during decommissioning of civil assets
	Civil - CSR	Provision of services related to civil aspects of all combined services routes to accommodate signalling, telecommunications or HV/LV power cables and other services such as water mains
	Civil - Tunnelling	Provision of services related to road, rail and pedestrian tunnels and associated civil works
	Civil - Bridges and Structures	Provision of services related to road, rail and pedestrian bridges and railway structures (OHWS, Masts, Gantries, Viaducts, retaining walls etc)
	Civil - Earthworks	Provision of services related to earthworks (railway embankments, railway related formation, railway cuttings)
	Civil - Roads and pavements	Provision of services related to service access roads and car parks (staff and commuters)
	Civil - Drainage and Hydrology	Provision of services related to track drainage systems, including flood assessment and control
Buildings and Stations	Manage Building Works	Manage all scale and complexity buildings work
	Architectural Design	Architect, initiate, develop, integrate and co-ordinate functional, spatial, formal, building envelope/openings/detail/finishes etc for buildings work
	Specialist Building Expertise - (must specify in the Notes)	Specialist buildings expertise (e.g. Urban Planning, Environmental, Heritage, Landscape, Fire strategy, Façade engineering). Note that these activities apply to buildings and rail corridor generally
	Building Structures - (must specify in the Notes)	Building structure/building related civil works
	Building Services -(must specify in the Notes)	Building services (for example; plumbing and drainage, electrical, lighting, HVAC, BMS, Fire services)
	Specialist Rail Systems Buildings Expertise -(must specify in the Notes)	Specialist Rail Systems Buildings Expertise (for example; PIDS, PA, Security/CCTV, Ticketing)
Electrical Engineering	High Voltage Aerial Feeders	Provision of services related to HV aerial feeders (including poles, feeder cable tensioning and loading, and UGOHs). Note RailCorp is an Electricity Distributor in NSW
	High Voltage Cables	Provision of services related to HV cables and joints. Note RailCorp is an Electricity Distributor in NSW
	Traction Substations Sectioning Hut	Provision of services related to traction substations (indoor and outdoor HV yards), HV switching station and sectioning huts
	Distribution Substations	Provision of services related to distribution substations (11kV locations such as pad mounts, depots, stations)
	High Voltage Protection Systems	Provision of services related to HV electrical protection systems (CTs, VTs, protection schemes, protection grading)
	LV Power Systems and LV Protection	Provision of services related to LV power distribution systems (station supplies, tunnel light and power supply, depots, car parks, signalling locations etc) Includes LV protection design, grading and coordination
	Earthing, Bonding, Electrolysis and Lightning Protection	Provision of services related to earthing, bonding and electrolysis mitigation associated with electrified railways system
	Electrical Control Systems (SCADA) (must specify in the Notes)	Provision of services related to electrical SCADA system (separate authorisation given for Master Station equipment and field equipment (for example; RTUs))
	Overhead Wiring	Provision of services related to 1500 V dc (and possible 25 kV ac) overhead wiring systems (OHW sub-disciplins: Auto-tensioned OHW, fixed Anchored OHW, Overhead Conductor Rail - fixed and Retractable, OHW Heavy Rail ac, OHW Heavy Rail dc, OHW Light Rail)
	Electrical Network Planning and Modelling	Provision of network planning and modelling functions (system capacity, load flow studies and system interconnectivity)

Standalone Services:

Systems Engineering and Assurance (all services)	Systems Engineering Management (all SE services)	Management and coordination of all systems engineering sub-disciplines on large multi-discipline projects or asset management contracts (specific to a systems engineering manager role)
	Systems Assurance	Provision of specific services in systems assurance, which may include safety assurance, RAM assurance, quality assurance and audit services
	RAM Management	Provision of specific services in RAM management, which may include RAM engineering (as part of the design) or RAM assurance (checking designs produced by others for RAM)
	Safety Engineering/Assurance	Provision of specific services in system safety assurance and management in line with the ASA 'System Safety Standard for New or Altered Assets TS 20001:2013
	Independent Safety Assessment (ISA)	Provision of specific services in independent safety assessment, where required for projects assessed as having a significant safety change (high risk, high novelty, high complexity)
	Human Factors Integration	Provision of services in human factors integration, in line with ASA human factors standards, initiated at the Feasibility stage and focussed at the Concept and Design stages, but that could also be required at later stages if changes are made to the design that impact the user
	Electromagnetic Compatibility	Provision of specific services in EMC, usually during Concept and Design stages, but could provide EMC support throughout the asset/system life cycle, including testing and maintenance (including, earth, bonding and electrolysis, as well as RF interference)
	System Modelling and Analysis	Provision of specific services in modelling, simulation and associated analysis of the results, generally to support development of novel and complex designs with high risk factors (e.g. transport models, signal headways, FEM, structural models, fire, etc.)
	Requirements Management Engineering	Provision of specific services in requirements management, including requirements engineering, and ongoing capture of V and V evidence into a requirements management tool to demonstrate progressive compliance
	Interface Management	Provision of specific services in interface management, including specifying interface requirements, identifying and managing interface owners, developing interface test specifications and designs
	Systems Integration Services (use Notes to elaborate)	Provision of specific services in systems integration, whose activities generally start at factory integration and continue through to integration of the tested system into the transport network
	Verification and Validation	Provision of specific services in verification and validation, including management of evidence gathered from various V and V techniques (design reviews, modelling, prototyping, simulation, survey, audit, inspection and testing)
Non-Asset Specific Engineering Services	Acoustic/Noise and Vibration Engineering	Provision of specific services in noise and vibration engineering and control/abatement, generally to support design development, but also to conduct measurements during construction, operation and ongoing maintenance phases of the assets (see table below for more details)
	Fire and Life Safety (Infrastructure or Vehicles)	Provision of specific services related to fire and life safety (infrastructure or vehicles)
	DDA Compliance Services (Infrastructure or Vehicles)	Provision of specific services related to Disability Discrimination Act compliance
	Sustainability and Environmental Services (Engineering-based)	Provision of specific services in sustainability, environmental investigations and/or mitigation, for input usually to the concept and design stages but could also have input during construction, maintenance or decommissioning
	Engineering Competence Management	Provision of specific services in establishing, developing, implementing, maintaining, improving or delivering of the competence management
	Multi-Discipline Engineering Management (Use Notes to elaborate)	Provision of engineering management services for single or multi-disciplinary railway engineering projects across the full project life cycle or some parts of it
	Other Specialist Engineering Services	Provision of other specific engineering services not explicitly identified and categorised at this stage in the scoping matrix
Asset Management	Configuration Management	Provision of configuration management as a service
	Integrated Logistics	Provision of engineering services related to integrated logistic of assets and systems delivered to TfNSW (this is often an additional service offered by the asset supplier - e.g. rolling stock suppliers)
	Asset Management	Provision of services of establishing, developing, implementing, maintaining or improving specialist asset management activities related to TfNSW or other external parties in line with ISO55001

Acoustic/Noise and Vibration Engineering Detail Guide (the appropriate sub-discipline can be listed in the Notes section using sub discipline code provided)	
Sub-discipline	Description
Wheel-Rail Noise and Vibration (N and V) (NV01)	Noise and vibration arising from the interaction between the rail and the wheels of any class of Rolling stock
Rolling stock Design Noise and Vibration (NV02)	Noise and vibration issues associated with rolling stock, including wheel and bogie design, body panel vibration, traction supply, and air-conditioning units
Track Design Noise and Vibration (NV03)	Vibration issues related to track design characteristics, including N and V mitigation products, and bridge airborne and structure-radiated noise, and tunnel ground-borne noise and vibration
Specialist Vibration / Structural Engineering Issues (NV04)	Structural vibration effects including vibration-induced damage to buildings, tunnels and other structures
Construction Noise (NV05)	Measurement, assessment, management and mitigation of noise generated by construction and maintenance activities, especially rail
Environmental Impact Assessment and Statements – N and V (NV06)	Measurement, assessment and mitigation of environmental noise and vibration effects due to new or modified infrastructure, operational practices, or rolling stock
Environmental Monitoring Programs (NV07)	Measurement and data management programs for noise and vibration associated with rail operations, including noise mapping, noise management strategies and prioritisation, and audits of plant and equipment
Other Transportation Noise (NV07)	Measurement, assessment, management and mitigation of noise generated by other transportation sources. This may include aircraft, road vehicles and trams
Industrial Noise (NV08)	Measurement, assessment, management and mitigation of noise generated by industrial sources. This may include industrial noise associated with stabling yards, substations, railway stations, and production plants
Building Acoustics (NV10)	Building acoustic design issues, including sound insulation properties of the building envelope, and reverberation characteristics of rooms
Electro-Acoustics (NV11)	Acoustic design for electro-mechanical systems such as public address systems
Occupational Health and Safety (NV12)	Measurement and assessment of occupational noise exposure for employees
Psycho-Acoustics (NV13)	Assessment of human response to noise and vibration, including human factors relating to safety, comfort, annoyance, sleep disturbance, and health effects
Other Related Disciplines (NV14)	Only to be used if unable to locate a suitable choice from the listing above

Transport for NSW

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Schedule G – Scope and Performance Requirements

Appendix 09 – Environment and Sustainability

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TfNSW

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1. Overview and scope

1.1. General

(a)	The Supplier must comply with the requirements and guidelines of the "NSW Government Environmental Management Systems Guidelines" for all Supplier's Activities.	NIF_App09_5
(b)	The Supplier must produce an ISO 14025 "Environmental Product Declaration" for the Rolling Stock.	NIF_App09_4

1.2. Systems and processes

(a)	The Supplier's environmental management system must integrate with the "Transport Environment and Sustainability Policy Framework".	NIF_App09_6
(b)	The Supplier must identify and implement the systems that will be used to support environmental and sustainability management including:	NIF_App09_13
	(i) management strategies for ongoing compliance;	NIF_App09_14
	(ii) management strategies for the review of environmental control performance;	NIF_App09_15
	(iii) processes and methodologies for surveillance monitoring and corrective action;	NIF_App09_16
	(iv) processes for complaint handling, incident and emergency response; and	NIF_App09_17
	(v) the interface with other operational procedures and processes.	NIF_App09_18
(c)	The Supplier must assist TfNSW and NSW Rail Entities with the creation of the Rail Operator Environmental Management Plan prior to the Maintenance Phase commencing.	NIF_App09_19

1.3. Climate change

(a)	The Supplier must develop and implement climate change initiatives that ensure all Supplier's Activities are resilient to the effects of climate change known at the Commencement Date.	NIF_App09_21
(b)	The Supplier must undertake climate change risk assessments in respect to all Supplier's Activities in accordance with the guidance and requirements included in the Department of the Environment and Heritage (Australian Greenhouse Office) "Climate Change Impacts and Risk Management - A Guide for Business and Government".	NIF_App09_22

1.4. Carbon management and energy efficiency

(a)	The Supplier must minimise carbon emissions associated with the	NIF_App09_25

Supplier's Activities, including through the use of:

(i) energy avoidance and reduction strategies; NIF_App09_26

(ii) low carbon and energy efficiency practices and initiatives; NIF_App09_27

(iii) low carbon transportation options; and NIF_App09_28

(iv) alternative sustainable fuels. NIF_App09_29

(b) The Supplier must undertake carbon footprint assessments in accordance with the requirements of ISO 14064-1, ISO 14064-2 and ISO 14064-3 for direct and indirect emissions associated with the Supplier's Activities, including, but not limited to: NIF_App09_30

(i) electricity and fuel consumption; NIF_App09_115

(ii) on-site process emissions; and NIF_App09_116

(iii) embodied emissions for materials used. NIF_App09_117

(c) The Supplier must develop, implement and maintain a methodology for the identification of opportunities to reduce overall carbon emissions and energy use during construction and transport of the Rolling Stock. NIF_App09_31

(d) The Supplier must develop, implement and maintain a methodology for the identification of opportunities to reduce overall carbon emissions and energy use of the Maintenance Facility. NIF_App09_32

(e) The Supplier must develop, implement and maintain low carbon strategies and initiatives to minimise the carbon emissions associated with the Delivery Phase and Maintenance Phase. NIF_App09_33

(f) The Supplier must undertake energy modelling for the Maintenance Services that: NIF_App09_34

(i) incorporates electrical energy consumption and fuel consumption; NIF_App09_118

(ii) incorporates on-site renewable energy generation and renewable energy sourced from the main electricity grid; and NIF_App09_119

(iii) is used to establish a reliable estimate against which the benefits of efficiency initiatives can be measured. NIF_App09_120

(g) The Supplier must ensure that life cycle assessments are used to assist selection of the most appropriate low-impact materials. NIF_App09_36

(h) The Supplier must encourage mass transit, shared and active transport, and develop and implement green travel plans for the Supplier's Personnel. NIF_App09_37

(i) The Supplier must ensure that all vehicles, plant and equipment, are: NIF_App09_38

(i) selected and operated for optimum energy efficiency; NIF_App09_39

(ii) not left idling when not in use; NIF_App09_40

(iii) fitted with catalytic converters, diesel particulate filters or equivalent devices where reasonable and feasible; and NIF_App09_41

(iv) well maintained and serviced in accordance with relevant equipment maintenance documentation to reduce emissions. NIF_App09_42

(j)	The Supplier must ensure that the energy efficiency of all plug-in electrical equipment used at the Maintenance Facility or Commissioning Facility complies with the requirements of the NSW Government Resources Efficiency Policy, "E3 standards for new electrical appliances and equipment".	NIF_App09_43

1.4.1. Operational energy

(a)	The Supplier must minimise energy demand for the Maintenance Services.	NIF_App09_45
(b)	The Supplier must identify and implement opportunities for using onsite sources of renewable or low carbon energy for the Maintenance Services, where reasonable.	NIF_App09_46
(c)	The Supplier must maximise the energy efficiency of lighting.	NIF_App09_48
(d)	The Supplier must use a minimum 5% bio diesel mix for all diesel powered plant and equipment and a minimum 10% blended ethanol mix for all petrol powered plant and equipment where practicable.	NIF_App09_49
(e)	The Supplier must implement energy monitoring for the Maintenance Facility, including electrical energy consumption (grid and onsite renewables) and fuel energy consumption.	NIF_App09_50

1.5. Water resources

(a)	The Supplier must minimise water use and demand, including total water consumption and potable water consumption by:	NIF_App09_52
	(i) monitoring and tracking of potable and non-potable water consumed;	NIF_App09_53
	(ii) using water efficient controls, fixtures and fittings;	NIF_App09_54
	(iii) harvesting rainwater;	NIF_App09_55
	(iv) using water from recycled water networks; and	NIF_App09_56
	(v) collecting, treating and reusing stormwater and wastewater.	NIF_App09_57
(b)	The Supplier must undertake a water balance study that describes the sources, uses and estimated quantities of potable and non-potable water which will be created and used in the performance of the Maintenance Services.	NIF_App09_59
(c)	The Supplier must ensure that an average of 90 per cent of annual non-potable water demand is sourced from non-potable sources at the Maintenance Facility.	NIF_App09_61
(d)	The Supplier must ensure that a minimum of 80 per cent of the water used in the train wash is collected, treated and reused.	NIF_App09_62

1.6. Waste and materials

(a)	The Supplier must identify and implement waste minimisation initiatives	NIF_App09_64

and material selection strategies to minimise the embodied carbon and lifecycle impacts of waste and materials associated with the Supplier's Activities.

(b) The Supplier must comply with the requirements and guidance of the UNIFE "Manual Railway Industry Substance List" for all Supplier's Activities and all Assets. NIF_App09_65

1.6.1. Waste

(a) The Supplier must: NIF_App09_67

(i) minimise waste generation; and NIF_App09_68

(ii) demonstrate waste minimisation, recycling and resource recovery through design refinement, construction planning and construction methods. NIF_App09_69

(b) The Supplier must implement the following waste management measures: NIF_App09_70

(i) provide commingled recycling bins adjacent to all general waste bins; NIF_App09_71

(ii) provide separate bins for storage of specialist waste streams, including oil, electrical and electronic waste, and equipment waste; NIF_App09_72

(iii) recycle specialist wastes, where reasonably practicable; and NIF_App09_73

(iv) provide sufficient on-site storage space for the safe storage of recyclable waste and general waste prior to collection for treatment and disposal. NIF_App09_74

(c) The Supplier must ensure that 80% of office waste is recycled or alternatively beneficially reused during the Maintenance Phase. NIF_App09_75

1.6.2. Materials

(a) The Supplier must comply with T MU RS 17002 ST. NIF_App09_78

(b) Not used. NIF_App09_121

(c) The Supplier must use recycled and recyclable materials if available, without compromising the structural integrity, longevity and visual quality of materials and structures. NIF_App09_79

(d) The Supplier must apply the Australian Government Department of Health guidance on materials prohibited or restricted by legislation in Australia in the chemicals banned or severely restricted in Australia fact sheet at the website – http://www.nicnas.gov.au NIF_App09_82

1.6.3. Volatile organic compounds

(a) All surface coatings must comply with the Australian Paint Approval Scheme (APAS). NIF_App09_84

(b)	The Supplier must use low volatile organic compound finishes, sealants and adhesives.	NIF_App09_122

1.7. Pollution control

(a)	The Supplier must target zero pollution incidents, reportable under the Environmental Law, during the Maintenance Phase	NIF_App09_86
(b)	The Supplier must comply with the requirements of the Sydney Trains Environmental Protection Licence 12208, which will be supplied to the Supplier by TfNSW; and	NIF_App09_87
(c)	The Supplier must comply with the requirements of the NSW Government Resource Efficiency Policy.	NIF_App09_88

1.8. Supply chain

1.8.1. Workforce during Maintenance Phase

(a)	The Supplier must develop and implement a methodology for workforce skills acquisition, development and training, including:	NIF_App09_94
	(i) approaches to the provision of relevant nationally recognised accredited training;	NIF_App09_95
	(ii) analysis of possible industry and skills partnerships; and	NIF_App09_96
	(iii) use of existing government training, development and employment programs.	NIF_App09_97
(b)	The Supplier must ensure, where practicable, that during the Maintenance Phase:	NIF_App09_98
	(i) the Supplier's Personnel employed in Australia in respect of the Supplier's Activities include at least 1 apprentice for every 9 tradespersons; and	NIF_App09_99
	(ii) at least 30% of the Supplier's Personnel, excluding apprentices, are from the Greater Hunter region or Sydney Metropolitan region.	NIF_App09_100
(c)	The Supplier must ensure that work experience placements, internships and graduate placements are offered across the Supplier's Activities.	NIF_App09_103
(d)	The Supplier must develop and implement programs (including internships, work experience placements and graduate placements) for engagement with local universities, TAFEs and other colleges.	NIF_App09_104
(e)	The Supplier must develop and implement strategies to support local small to medium enterprises and social not-for-profit enterprises.	NIF_App09_105
(f)	The Supplier must assess the capacity of local small to medium enterprises and social enterprises to deliver works, services or supplies that are required for the Supplier's Activities where practicable.	NIF_App09_106

1.8.2. Sustainable procurement

(a)	The Supplier must ensure that all materials, products and services are sourced and produced in accordance with the requirements of BS 8903.	NIF_App09_108
(b)	The Supplier must include environmental and social criteria in the selection process for Subcontractors.	NIF_App09_109

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Schedule G – Scope and Performance Requirements

Appendix 10 – Initial Interface Protocols

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TfNSW

Table of Contents

1. Overview and scope

1.1. Scope

(a)	This Appendix describes the Scope and Performance requirements for the Interface Protocols.	NIF_App10_3
(b)	The Supplier must enter into, develop, agree, implement, maintain and comply with Interface Protocols with NSW Trains, Sydney Trains and TfNSW in accordance with the deed and must ensure that the safety, technical and operational interfaces between all undertakings are maintained.	NIF_App10_4

2. Interface protocols

2.1. General

(a) The Supplier and TfNSW may, by giving written notice, propose changes to the Interface Protocols from time to time to improve the way the interfaces are managed, or to take account of changed circumstances. NIF_App10_7

(b) Changes to Interface Protocols may include changes to the management and co-ordination of: NIF_App10_64

- the Performance Review Meetings;
- the Contract Review Meetings;
- arrangement of Network Access Rights;
- Failure attribution process;
- TfNSW Defect Notice; and
- request and provision of AM Services.

2.2. Notice of Availability

(a) The Supplier must provide an Availability report to TfNSW containing information on Availability of the Units 2 hours prior to each Availability Period, including: NIF_App10_9

(i) Required Availability;

(ii) Units Available;

(iii) Units Deemed Available;

(iv) Units Unavailable; and

(v) Units spare.

(b) Units stabled outside the Maintenance Facility or at NIF Stabling Yards will be assumed to be Available, unless the Supplier advises otherwise in the Availability report. NIF_App10_10

2.3. Movement of Trains

2.3.1. Daily call-in schedule

(a) The Supplier must provide a daily call-in schedule to the Train Controller by 1600 hours each day or more frequently as agreed between both parties. NIF_App10_13

(b)	The call-in schedule must list the Units that the Supplier proposes to be delivered to the Maintenance Facility for the following seven days on a rolling basis.	NIF_App10_14
(c)	The call-in schedule must be in ascending date order.	NIF_App10_15
(d)	For each day within the call-in schedule, the Units must be listed in order of preference.	NIF_App10_16
(e)	TfNSW will use reasonable endeavours to arrange Units to be delivered in order of preference to the Maintenance Facility but may be unable to achieve the preference order of the call-in schedule.	NIF_App10_17

2.3.2. Alterations to the call-in schedule (scheduled maintenance)

(a)	The Supplier may alter the call-in schedule by advising the Train Controller of any alterations no later than two days prior to the date on which the Supplier proposes that the relevant Unit(s) be presented.	NIF_App10_19
(b)	TfNSW will use reasonable endeavours to deliver the requested Unit(s) on the proposed date.	NIF_App10_20

2.3.3. Special call-ins (unscheduled maintenance)

(a)	The Supplier may request a 'special call-in' of a Unit to the Maintenance Facility on a particular day. For special call-ins, the Supplier must advise the Train Controller no later than 1200 hours on the day before the proposed special call-in.	NIF_App10_22
(b)	TfNSW will use reasonable endeavours to deliver the requested Unit(s).	NIF_App10_23

2.3.4. Receipt of Units to the Maintenance Facility

(a)	The Supplier must develop, implement and maintain a set of protocols and procedures for receipt of Units at the Maintenance Facility.	NIF_App10_25
(b)	The Supplier must accept Units delivered to the Handover Point by TfNSW.	NIF_App10_26
(c)	The Supplier must facilitate movement of Units from the Handover Point to the required location (i.e. the Maintenance Facility building or the stabling within the Maintenance Facility Site).	NIF_App10_27

2.3.5. Dispatch of Units from Maintenance Facility

(a)	The Supplier must develop, implement and maintain a set of protocols and procedures for dispatch of Units at the Maintenance Facility.	NIF_App10_29

(b) The Supplier must deliver units to the Handback Point at the Presentation Time, as required by the Train Plan. NIF_App10_30

(c) The Supplier must ensure that Units delivered to the Handback Point satisfy the Minimum Operating Standards for Available Units. NIF_App10_31

(d) TfNSW will be responsible for collecting the Unit from the Handback Point. NIF_App10_32

2.3.6. Unplanned Arrivals

(a) The Supplier must ensure that at least one arrival road at the Maintenance Facility is kept free to accept any train from the network. NIF_App10_34

(b) TfNSW will endeavour to provide at least one hour notice of unplanned arrivals prior to arrival of a train to enable contingency planning by the Supplier. NIF_App10_35

2.3.7. Movement of Units between locations

(a) The Supplier may request the movement of Units between locations. NIF_App10_37

(b) The Supplier must advise the Train Controller of the request no later than 1200 hours on the preceding day. NIF_App10_38

(c) TfNSW will use reasonable endeavours to arrange the movement. NIF_App10_39

2.4. Crew duties at Maintenance Facilities

(a) Rail vehicle movements within the Maintenance Facility will be conducted by the Crew or Supplier's Personnel. NIF_App10_41

(b) Crew may enter the Maintenance Facility when required for train crewing duties including: NIF_App10_42

(i) delivering a Train to the Handover Point;

(ii) duties while at the Maintenance Facility; and

(iii) collecting a Train from the Handback Point, preparing the Train and departing the Maintenance Facility.

(c) Crew will not be moving Units other than to/from the Handover/Handback Points. NIF_App10_43

(d) The Supplier must ensure adequate competent and authorised Supplier's Personnel are available to operate the Units within the Maintenance Facility. NIF_App10_44

2.5. Access to Provided Facilities and Trains

(a)	The Supplier must produce and manage an induction process for all the Supplier's Personnel, TfNSW Personnel and visitors to the Provided Facilities.	NIF_App10_46
(b)	The Supplier must provide Crew with sufficient access to perform Crew duties at the Provided Facilities.	NIF_App10_47
(c)	The Supplier must provide local direct access to the Asset Information System at each Provided Facility to be used by two TfNSW Personnel at any time.	NIF_App10_48

2.6. Supplier access to Other Sites

(a)	Work that cannot be safely performed during NSW Trains or Sydney Trains operations or which affect train operations must be performed during a LPA.	NIF_App10_50
(b)	Outside of LPA times, the Supplier's Activities that may be safely performed which do not impact on train operations, may be performed in Other Sites outside the hours of 0600 to 0930 and 1430 to 1830 Monday to Friday.	NIF_App10_51
(c)	The Supplier must only perform work at Other Sites when the following conditions are met for each individual site: (i) authorisation from TfNSW or the appropriate NSW Rail Entity to perform work; (ii) usage of Supplier's Personnel that have been appropriately authorised and inducted by TfNSW or the appropriate NSW Rail Entity.	NIF_App10_52
(d)	The Supplier must provide all tools and amenities for the Supplier's Personnel at their own cost.	NIF_App10_53
(e)	The Supplier must ensure that any waste or rubbish created by its activities within Other Sites is disposed of correctly.	NIF_App10_54
(f)	The Supplier must minimise disturbance to TfNSW Personnel and customers when undertaking works within Other Sites.	NIF_App10_55
(g)	The Supplier must obtain prior approval from TfNSW or the appropriate NSW Rail Entity to store or utilise plant, equipment and/or materials on premises controlled by a NSW Rail Entity.	NIF_App10_56

2.7. Maintenance of Simulators

(a)	Scheduled maintenance of the Simulator must occur outside the hours of 0600 and 2200 unless otherwise agreed by TfNSW.	NIF_App10_58

2.8. AM Services for other train fleets

(a)	The Supplier must conduct wheel profiling of other trains at the Maintenance Facility in accordance with Schedule E4 of this deed.	NIF_App10_60
(b)	TfNSW will provide at least seven days' notice of wheel profiling requests.	NIF_App10_61
(c)	The Supplier must conduct external washes of other trains at the Maintenance Facility in accordance with Schedule E4 of this deed.	NIF_App10_62
(d)	TfNSW will provide at least seven days' notice of external wash requests.	NIF_App10_63

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New Intercity Fleet Project

Schedule G – Scope and Performance Requirements

Appendix 11 – Initial Project Plans

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TfNSW

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1. Overview and scope

1.1. Scope

(a) The Initial Project Plans comprise the following Supplier documents:

- B3.3.1 Project Management Plan
- B3.3.2 Authorisation and Accreditation Plan
- B3.3.3 Configuration Management Plan
- B3.3.4 Systems Engineering Management Plan
- B3.3.5 System Safety Plan
- B3.3.6 Manufacturing and Procurement Plan
- B3.3.7 Verification Plan
- B3.3.8 Asset Management Plan
- B3.3.8-1 Technical Maintenance Plan (Trains)
- B3.3.8-2 Technical Maintenance Plan (Simulators)
- B3.3.8-3 Technical Maintenance Plan (Maintenance Facility)

The balance of Appendix 11 has been redacted -
section 32(1)(a) of the GIPA Act - commercial-in-confidence
provisions of a government contract.

NSW GOVERNMENT | Transport for NSW

New Intercity Fleet Project
Schedule G – Scope and Performance Requirements
Appendix 12 – Concept Design

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TfNSW

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1. Overview and scope

1.1. Scope

The Concept Design comprises the following Supplier documents:

- Attachment A – Train General Description and Technical Solution (B4, C3)
- Attachment B – Drawings (B4.2)
- Attachment C – Simulator Drawings (C3.14)
- Attachment D – Train Operational Modelling (B4.5)
- Attachment E – Supplier FABEL Data (C3.4)

Attachment A – Train General Description and Technical Solution (B4, C3)

- B4.1 Train Visualisations
- B4.2 General Description and arrangement drawings - Trains
- B4.3 Passenger Seating and Capacity
- B4.4 Train Mass and Energy Features
- B4.5 Train Operational Modelling
- B4.6 Whole of life Considerations
- C3.1 Network Interface Requirements
- C3.2 Crew Cab
- C3.3 Train Management System (TMS)
- C3.4 Traction and Braking
- C3.5 Body Shell and Structure
- C3.6 Bogies
- C3.7 CCTV
- C3.8 Doors
- C3.9 Main Power and Auxiliary Electrical Supply
- C3.10 Heating, Ventilation and Air Conditioning
- C3.11 Safety Features and Emergency Evacuation
- C3.12 Technical Provisions
- C3.13 Data Interfaces
- C3.14 Simulator
- C3.15 Passenger Information System
- C3.16 Condition Monitoring

Attachment B – Drawings (B4.2)

DRAWING NUMBER	TITLE	FORMAT
A277-TDB42-001	GENERAL ARRANGEMENT OF SHORT UNIT	PDF
A277-TDB42-002	GENERAL ARRANGEMENT OF LONG UNIT	PDF
A277-TDB42-003	GENERAL ARRANGEMENT OF 8-CAR UNIT	PDF
A277-TDB42-004	GENERAL ARRANGEMENT OF SHORT TRAIN	PDF
A277-TDB42-005	GENERAL ARRANGEMENT OF LONG TRAIN	PDF
A277-TDB42-006	GENERAL ARRANGEMENT OF A CAR	PDF
A277-TDB42-007	GENERAL ARRANGEMENT OF B CAR	PDF
A277-TDB42-008	GENERAL ARRANGEMENT OF B1 CAR	PDF
A277-TDB42-009	GENERAL ARRANGEMENT OF C CAR	PDF
A277-TDB42-010	GENERAL ARRANGEMENT OF D CAR	PDF
A277-TDB42-011	GENERAL ARRANGEMENT OF E CAR	PDF
A277-TDB42-012	INTERIOR EQUIPMENT LAYOUT OF A/A1 CAR	PDF
A277-TDB42-013	INTERIOR EQUIPMENT LAYOUT OF B CAR	PDF
A277-TDB42-014	INTERIOR EQUIPMENT LAYOUT OF B1 CAR	PDF
A277-TDB42-015	INTERIOR EQUIPMENT LAYOUT OF C CAR	PDF
A277-TDB42-016	INTERIOR EQUIPMENT LAYOUT OF D CAR	PDF
A277-TDB42-017	INTERIOR EQUIPMENT LAYOUT OF E CAR	PDF
A277-TDB42-018	UNDERFRAME EQUIPMENT LAYOUT OF A/A1 CAR	PDF
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A277-TDB42-022	UNDERFRAME EQUIPMENT LAYOUT OF D CAR	PDF
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A277-TDB42-034	END DETRAINMENT SYSTEM – STOWED	PDF
A277-TDB42-035	END DETRAINMENT SYSTEM – DEPLOYED	PDF
A277-TDB42-036	LAYOUT OF ISOLATION COCKS A/A1 CAR	PDF
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A277-TDB42-039	LAYOUT OF ISOLATION COCK LABELS OF A CAR	PDF
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A277-TDB42-043	LAYOUT OF ISOLATION COCK LABELS OF D CAR	PDF
A277-TDB42-045	DECANTING & FILL POINTS FOR B CAR (2 END)	PDF
A277-TDB42-048 S1	TYPICAL SEATING ARRANGEMENT	PDF

A277-TDB42-048 S2	TYPICAL SEATING ARRANGEMENT	PDF
A277-TDB42-048 S3	TYPICAL SEATING ARRANGEMENT	PDF
A277-TDB42-049	TYPICAL CEILING HEIGHT	PDF
A277-TDB42-050 S1	TYPICAL GANGWAY ARRGT (1/2)	PDF
A277-TDB42-050 S2	TYPICAL GANGWAY ARRGT (2/2)	PDF
A277-TDB42-051	EQUIPMENT LOCKER LOCATIONS OF A CAR	PDF
A277-TDB42-052	EQUIPMENT LOCKER LOCATIONS OF B CAR	PDF
A277-TDB42-053	EQUIPMENT LOCKER LOCATIONS OF B1 CAR	PDF
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A277-TDB42-055	EQUIPMENT LOCKER LOCATIONS OF D CAR	PDF
A277-TDB42-057	LOCATION OF INTERNAL PASSENGER INFORMATION DISPLAYS FOR A/A1 CAR	PDF
A277-TDB42-058	LOCATION OF INTERNAL PASSENGER INFORMATION DISPLAYS FOR B1/C/D CAR	PDF
A277-TDB42-059	LOCATION OF EMERGENCY EGRESS DEVICES & PASSENGER INTERCOM	PDF
A277-TDB42-060	LAYOUT OF ACCESSIBLE TOILET CUBICLE AND BABY CHANGE TABLE	PDF
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A277-TDB42-066	CLEAR IDENTIFICATION OF STANDING AREA FOR B CAR	PDF
A277-TDB42-070	CLEAR IDENTIFICATION OF STANDING AREA FOR E CAR	PDF
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A277-TDB42-097	DEFINITION OF VEHICLE DESIGN OUTLINE	PDF
A277-TDB42-098	LAYOUT OF ISOLATION COCKS - B1 CAR	PDF
A277-TDB42-099	LAYOUT OF ISOLATION COCKS - C / D CAR	PDF
A277-TDB42-101	GENERAL ARRANGEMENT OF A1 CAR	PDF
A277-TDB42-102	EQUIPMENT LOCKER LOCATIONS OF A1 CAR	PDF
A277-TDB42-103	PNEUMATIC SCHEME FOR A CAR	PDF

A277-TDB42-104	PNEUMATIC SCHEME FOR B CAR	PDF
A277-TDB42-105	PNEUMATIC SCHEME FOR B1,C CAR	PDF
A277-TDB42-106	PNEUMATIC SCHEME FOR D CAR	PDF
A277-TDB42-107	PNEUMATIC SCHEME FOR E CAR	PDF
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A277-TDC32-003 S1	DRIVER'S SIGHTLINES FROM BOTH THE SEATED AND STANDING POSITIONS	PDF
A277-TDC32-003 S2	DRIVER'S SIGHTLINES FROM BOTH THE SEATED AND STANDING POSITIONS	PDF
A277-TDC32-003 S3	DRIVER'S SIGHTLINES FROM BOTH THE SEATED AND STANDING POSITIONS	PDF
A277-TDC32-003 S4	DRIVER'S SIGHTLINES FROM BOTH THE SEATED AND STANDING POSITIONS	PDF
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A277-TDC35-005	STRUCTURAL ARRGT OF D CAR	PDF
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A277-TDB42-111	1P FIXED + 3P FLIP-UP SEAT	PDF
A277-TDB42-112	1P FLIP-UP + 3P FLIP-UP SEAT	PDF
A277-TDB42-113	2-PLACE SEAT WITH ONE ARMREST	PDF
A277-TDB42-114	2P FLIP-UP SEAT	PDF

Attachment C – Simulator Drawings (C3.14)

FILE NAME	TITLE	FORMAT
1.1. Simulator Trailer Layout for NIF	1.1 Simulator Trailer Layout for NIF	JPEG
1.2 Simulator External Container	1.2. Simulator External Container	JPEG
1.3. Simulator_Crew Cab	1.3. Simulator Crew Cab	JPEG
1.4. Simulator_Instructor & Observer Stations	1.4. Simulator Instructor and Observer Stations	JPEG
1.5. Simulator_Instructor Station	1.5. Simulator Instructor Station	JPEG
1.6. Simulator_Layout	1.6. Simulator Layout	JPEG
1.7. Simulator_Observer Station	1.7. Simulator Observer Station	JPEG
1.8 Swept Path - Prime Mover_Semi-Trailer	1.8. Prime Mover Swept Path	JPEG

Attachment D – Train Operational Modelling (B4.5)

FILE NAME	TITLE	FORMAT
B4.5 (was C6.7)_Long_ 160kmh3200A1300VMainNth	Route 2A and Route 2B Main North - Long Train: OHW limit 3200A, 1300V	XLSX
B4.5 (was C6.7)_Long_ 160kmh3200A1300VMainNthExp	Route 1A and Route 1B Main North Express - Long Train: OHW limit 3200A, 1300V	XLSX
B4.5 (was C6.7)_Long_ 160kmh3200A1450VMainNth	Route 2A and Route 2B Main North - Long Train: OHW limit 3200A, 1450V	XLSX
B4.5 (was C6.7)_Long_ 160kmh3200A1450VMainNthExp	Route 1A and Route 1B Main North Express - Long Train: OHW limit 3200A, 1450V	XLSX
B4.5 (was C6.7)_Long_ 160kmh3600A1300VMainNth	Route 2A and Route 2B Main North - Long Train: OHW limit 3600A, 1300V	XLSX
B4.5 (was C6.7)_Long_ 160kmh3600A1300VMainNthExp	Route 1A and Route 1B Main North Express - Long Train: OHW limit 3600A, 1300V	XLSX
B4.5 (was C6.7)_Long_ 160kmh3600A1450VMainNth	Route 2A and Route 2B Main North - Long Train: OHW limit 3600A, 1450V	XLSX
B4.5 (was C6.7)_Long_ 160kmh3600A1450VMainNthExp	Route 1A and Route 1B Main North Express - Long Train: OHW limit 3600A, 1450V	XLSX
B4.5 (was C6.7)_Long_ 160kmh4400A1300VMainNth	Route 2A and Route 2B Main North - Long Train: OHW limit 4400A, 1300V	XLSX
B4.5 (was C6.7)_Long_ 160kmh4400A1300VMainNthExp	Route 1A and Route 1B Main North Express - Long Train: OHW limit 4400A, 1300V	XLSX
B4.5 (was C6.7)_Long_ 160kmh4400A1450VMainNth	Route 2A and Route 2B Main North - Long Train: OHW limit 4400A, 1450V	XLSX
B4.5 (was C6.7)_Long_ 160kmh4400A1450VMainNthExp	Route 1A and Route 1B Main North Express - Long Train: OHW limit 4400A, 1450V	XLSX
B4.5 (was C6.7)_Short_ 160kmh3200A1300VMainNth	Route 2A and Route 2B Main North - Short Train: OHW limit 3200A, 1300V	XLSX
B4.5 (was C6.7)_Short_ 160kmh3200A1300VMainNthExp	Route 1A and Route 1B Main North Express - Short Train: OHW limit 3200A, 1300V	XLSX
B4.5 (was C6.7)_Short_ 160kmh3200A1450VMainNth	Route 2A and Route 2B Main North - Short Train: OHW limit 3200A, 1450V	XLSX
B4.5 (was C6.7)_Short_ 160kmh3200A1450VMainNthExp	Route 1A and Route 1B Main North Express - Short Train: OHW limit 3200A, 1450V	XLSX
B4.5 (was C6.7)_Short_ 160kmh3600A1300VMainNth	Route 2A and Route 2B Main North - Short Train: OHW limit 3600A, 1300V	XLSX
B4.5 (was C6.7)_Short_ 160kmh3600A1300VMainNthExp	Route 1A and Route 1B Main North Express - Short Train: OHW limit 3600A, 1300V	XLSX
B4.5 (was C6.7)_Short_ 160kmh3600A1450VMainNth	Route 2A and Route 2B Main North - Short Train: OHW limit 3600A, 1450V	XLSX
B4.5 (was C6.7)_Short_ 160kmh3600A1450VMainNthExp	Route 1A and Route 1B Main North Express Short Train: OHW limit 3600A, 1450V	XLSX

Attachment E – Supplier FABEL Data (C3.4)

FILE NAME	TITLE	FORMAT
Perf@1300V, 160kmh FABEL Data_20160614	NIF Supplier FABEL Data - 1300 V, 160 km/h	XLSX
Perf@1450V,160kmh FABEL Data_20151210	NIF Supplier FABEL Data - 1450 V, 160 km/h	XLSX
Perf@1300V,130kmh FABEL Data_160129	NIF Supplier FABEL Data - 1300 V, 130 km/h	XLSX
Perf@1450V,130kmh FABEL Data_151210	NIF Supplier FABEL Data - 1450 V, 130 km/h	XLSX

The balance of Appendix 12 has been redacted -
section 32(1)(a) of the GIPA Act - commercial-in-confidence
provisions of a government contract.

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New Intercity Fleet Project

Schedule G – Scope and Performance Requirements

Appendix 13 – Pre-Agreed Variations

Date of Issue	10 AUGUST 2016
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Status	FINAL

TfNSW

Table of Contents

1 Overview and scope

1.1 Scope

(a) This Appendix describes the applicable amendments to the Scope and Performance requirements for the Project for each Pre-Agreed Variation.

(b) TfNSW may direct the Supplier to implement a Pre-Agreed Variation in accordance with clause 27 of this deed.

1.2 Meanings and Interpretations

(a) Dollar values shown in parentheses, i.e. (), denote negative values.

2 Pre-Agreed Variations

2.1 Pre-Agreed Variation – Portable Crew Interface

(a) This Pre-Agreed Variation is for the provision of a portable Crew interface to perform duties whilst mobile and moving within the interior of the Train.

(b) In the event that TfNSW directs the Supplier to implement this Pre-Agreed Variation, the SPR must be amended as follows:

(i) SPR Appendix 02 – Rolling Stock Specification clauses in sections 5.1, 5.3, 5.4, 3.14:

A. Additional clauses 5.1(e)

(e)	Each Train must enable the customer service assistant to perform all duties including monitoring of internal CCTV, responding to passenger intercoms, and control of passenger information whilst mobile within the interior of the Train using the portable Crew interface.	NIF_RSS_NEW

B. Additional clauses 5.3(i) and 5.3(j)

(i)	Each Crew cab must provide secure storage for portable Crew interface device of dimensions no less than 300 mm × 250 mm x 100 mm.	NIF_RSS_NEW
(j)	Each Crew cab must provide charging facilities for the portable Crew interface within secure storage.	NIF_RSS_NEW

C. Additional section 5.4 titled 'Portable Crew interface' and clauses as follows

(a)	Each Train must support the concurrent operation of at least two portable Crew interface devices.	NIF_RSS_NEW
(b)	Each portable Crew interface must enable the Crew to associate a portable Crew interface device with a Train.	NIF_RSS_NEW
(c)	The portable Crew interface device software must integrate with Apple® iPad® devices.	NIF_RSS_NEW
(d)	The portable Crew interface device software should integrate with other device platforms such as Android™ devices.	NIF_RSS_NEW
(e)	The portable Crew interface software must not interfere with operation of other software operating on the portable Crew interface device.	NIF_RSS_NEW
(f)	Each portable Crew interface device and device software must automatically enable operation within all Units that form a Train.	NIF_RSS_NEW

(g)	Each Train must enable the Crew to prevent the operation of any portable Crew interface device from the Crew Cab.	NIF_RSS_NEW
(h)	Each Train must enable the operation of each portable Crew interface from any location within the Train.	NIF_RSS_NEW
(i)	Each Train must enable the operation of each portable Crew interface within three (3) metres of the Train from platform or track level.	NIF_RSS_NEW
(j)	Each Train must prevent the operation of a portable Crew interface from any non-coupled adjacent trains.	NIF_RSS_NEW
(k)	Each portable Crew interface must provide equivalent functionality as the Crew cab for the following:	NIF_RSS_NEW
	(i) each portable Crew interface must enable the Crew to make Crew intercom calls;	NIF_RSS_NEW
	(ii) each portable Crew interface must enable the Crew to receive Crew intercom calls; and	NIF_RSS_NEW
	(iii) each portable Crew interface must enable the Crew to receive passenger intercom calls.	NIF_RSS_NEW
(l)	Each portable Crew interface must ensure incoming audio is only heard by Crew.	NIF_RSS_NEW
(m)	Each portable Crew interface must enable the Crew to make public address announcements.	NIF_RSS_NEW
(n)	Each portable Crew interface must enable the Crew to control the passenger information system.	NIF_RSS_NEW
(o)	Each portable Crew interface must enable the Crew to view near real-time on-board CCTV images.	NIF_RSS_NEW
(p)	Each portable Crew interface must enable the Crew to view near real-time Train status and faults.	NIF_RSS_NEW
(q)	Each portable Crew interface must incorporate automatic reminder functionality.	NIF_RSS_NEW
(r)	Each portable Crew interface must enable the Crew to request a reminder for an event.	NIF_RSS_NEW
	(i) Each portable Crew interface must enable the Crew to enter free-text as the description for a reminder and/or select a pre-determined description.	NIF_RSS_NEW
	(ii) Each portable Crew interface must enable the Crew to select date, time, location within the associated Train, and/or geographic location as the trigger conditions for a reminder.	NIF_RSS_NEW
	(iii) Each portable Crew interface must enable the	NIF_RSS_NEW

		Crew to select visual alert and/or audible alert as the alert method for a reminder.	
	(iv)	Each portable Crew interface must provide the Crew with the description of a reminder using the alert method when the trigger conditions are satisfied.	NIF_RSS_NEW
(s)		Each portable Crew interface device software application must optimise battery life to enable use by Crew for at least eight (8) consecutive hours without recharging and when starting from a fully energised power source.	NIF_RSS_NEW
(t)		Each portable Crew interface must provide security to prevent unauthorised usage.	NIF_RSS_NEW
(u)		Each Train must enable each function of the portable Crew interface to be enabled and/or disabled by maintenance personnel.	NIF_RSS_NEW
(v)		Each portable Crew interface device software application must be suitable for use by Crew for up to five (5) consecutive hours in operational service.	NIF_RSS_NEW

(ii) SPR Appendix 02 – Rolling Stock Specification clauses in section 3.14.4(b):

A. Original Text

(b)	The public address system must be operable by Crew from the Crew cabs and secure control panels within every Car of the Train.	NIF_RSS_371

B. Amended Text

(b)	The public address system must be operable by Crew from the Crew cabs and the portable Crew interface.	NIF_RSS_371

(iii) SPR Appendix 12 – Concept Design

A. Additional section per corresponding section of Attachment A.

(c) Commercial Terms

Description	
Impact on Initial Fleet Contract Value	[redacted]
Impact on FUP	
Impact on Option Units Contract Value	
Impact on VUP_{OU}	

Description	
Validity Period	Within 3 months of Commencement Date
Impact on Schedule	Nil

2.2 Pre-Agreed Variation – Maximum Operating Speed

(a) This Pre-Agreed Variation is for the adjustment of the Train maximum operating service speed from 160 km/h to 130km/h.

(b) In the event that TfNSW directs the Supplier to implement this Pre-Agreed Variation, the SPR must be amended as follows:

(i) SPR Appendix 02 – Rolling Stock Specification clause 2.8(b):

A. Original Text

(b)	Each Train must have a maximum operating service speed of 160 km/h.	NIF_RSS_51

B. Amended Text

(b)	Each Train must have a maximum operating service speed of at least 130 km/h.	NIF_RSS_51

(ii) SPR Appendix 02 – Rolling Stock Specification clause 2.21(c):

A. Original Text

(c)	Each Train must be capable of modification to a maximum operating service speed of 130 km/h.	NIF_RSS_133

B. Amended Text

(c)	Each Train must be capable of upgrade to a maximum operating service speed of at least 160 km/h.	NIF_RSS_133

(iii) SPR Appendix 06 – Replace Table 1 through Table 5 with corresponding Tables from Attachment A.

(c) Commercial Terms

Description	
Impact on Initial Fleet Contract Value	[redacted]
Impact on FUP	
Impact on Option Units Contract Value	
Impact on VUP_{OU}	

Description	
Validity Period	Within 3 months of Commencement Date
Impact on Schedule	Nil

2.3 Pre-Agreed Variation – Boarding Ramp

(a) This Pre-Agreed Variation Concept Design is for the implementation of portable boarding ramps.

(b) In the event that TfNSW directs the Supplier to implement this Pre-Agreed Variation, the SPR must be amended as follows:

(i) SPR Appendix 02 – Rolling Stock Specification clauses in section 2.15:

A. Additional clauses 2.15(e)

(a)	Each Train must be equipped with a boarding ramp near each Crew cab.	NIF_RSS_NEW

B. Additional clauses 2.15(e)(i)

(i)	Each boarding ramp must be able to be operated ergonomically and safely by a single person.	NIF_RSS_NEW

C. Additional clauses 2.15(e)(ii)

(ii)	Each boarding ramp must not exceed 7.5 kg.	NIF_RSS_NEW

D. Additional clauses 2.15(e)(iii)

(iii)	Each Train must secure access to the boarding ramps.	NIF_RSS_NEW

(ii) SPR Appendix 12 – Concept Design:

A. Additional section per corresponding section of Attachment A.

(c) Commercial Terms

Description	
Impact on Initial Fleet Contract Value	[redacted]
Impact on FUP	
Impact on Option Units Contract Value	
Impact on VUP_{OU}	

TfNSW

Description	
Validity Period	Within 3 months of Commencement Date
Impact on Schedule	Nil

2.4 Pre-Agreed Variation – [redacted]

(a) This Pre-Agreed Variation is for the implementation of [redacted]

(b) In the event that TfNSW directs the Supplier to implement this Pre-Agreed Variation, the SPR must be amended as follows:

(i) [redacted]

(ii) SPR Appendix 12 – Concept Design:

A. Additional section per corresponding section of Attachment A.

(c) Commercial Terms

Description	
Impact on Initial Fleet Contract Value	[redacted]
Impact on FUP	
Impact on Option Units Contract Value	
Impact on VUP_{OU}	
Validity Period	Within 3 months of Commencement Date
Impact on Schedule	Nil

2.5 Pre-Agreed Variation – Seat Covering

(a) This Pre-Agreed Variation is for the implementation of composite leather as the outer seat covering material.

(b) In the event that TfNSW directs the Supplier to implement this Pre-Agreed Variation, the SPR must be amended as follows:

(i) SPR Appendix 02 – Rolling Stock Specification clauses in Section 4.1:

A. Additional clause 4.1n

(n)	Seating covering material must be composite leather.	NIF_RSS_NEW

(ii) SPR Appendix 12 – Concept Design:

A. Additional section per corresponding section of Attachment A.

(c) Commercial Terms

Description	
Impact on Initial Fleet Contract Value	[redacted]
Impact on FUP	
Impact on Option Units Contract Value	
Impact on VUP_{OU}	
Validity Period	Within 3 months of Commencement Date
Impact on Schedule	Nil

3 Attachment A – Concept Design for Pre-Agreed Variations

- C6.4.1 Seat Covering
- C6.4.2 Boarding Ramp
- C6.6 Portable Crew Interface
- C6.7 Maximum Operating Speed
- C6.8 [redacted]

The balance of Appendix 13 has been redacted -
section 32(1)(a) of the GIPA Act - commercial-in-confidence
provisions of a government contract.

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New Intercity Fleet Project

Schedule G – Scope and Performance Requirements

Appendix 14 – Initial Project Deliverables

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TfNSW

1. Overview and scope

1.1. Scope

The Initial Project Deliverables comprise the following Supplier documents:

- Attachment A - Delivery Program (B3.4.1)
- Attachment B - Project Hazard Log Overview (B3.4.2)
- Attachment C - Project Hazard Log (B3.4.2)
- Attachment D - Project Risk Register (B3.4.3)
- Attachment E - Verification Matrix + SPR Markup (B3.4.4 + B3.5)

Attachment A - Delivery Program (B3.4.1)

FILE NAME	TITLE	FORMAT
17.13.04.03 Attachment A - NIF Integrated Delivery Program	RailConnect NSW & TfNSW New Intercity Fleet Integrated Delivery Programme	PDF
17.13.04.04 Attachment A - NIF Integrated Delivery Program	RailConnect NSW & TfNSW New Intercity Fleet Integrated Delivery Programme	XER

Attachment B - Project Hazard Log Overview (B3.4.2)

FILE NAME	TITLE	FORMAT
17.14.01.02 B3.4.2 Project Hazard Log Intro_RailConnect_Rev 2	SCHEDULE B3.4.2 Project Hazard Log Overview	DOC

Attachment C - Project Hazard Log (B3.4.2)

FILE NAME	TITLE	FORMAT
17.14.01.03 B3.4.2 Project Hazard Log_RailConnect - Rev 12	Schedule B3.4.2 Project Hazard Log Rev A	XLSX

Attachment D - Project Risk Register (B3.4.3)

FILE NAME	TITLE	FORMAT
B.3.4.3 Risk Register_RailConnect	Schedule B.3.4.3 - Project Risk Register	XLSX

Attachment E - Verification Matrix + SPR Markup (B3.4.4 + B3.5)

FILE NAME	TITLE	FORMAT
B3.4.4+B3.5 Verification Matrix + SPR Markup_RailConnect	New Intercity Fleet Project, RFT Volume 2: Returnable Schedules RETURNABLE SCHEDULE B3.5 – SPR MARK UP Vol 4 SPR Compliance Proforma	XLSX

The balance of Appendix 14 has been redacted -
section 32(1)(a) of the GIPA Act - commercial-in-confidence
provisions of a government contract.