

Master Specification

Part RD-ITS-S1

General Requirements for the Supply of ITS Equipment

September 2024



Government of South Australia
Department for Infrastructure
and Transport

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Document Information

Document Information	
K Net Number:	13138248
Document Version:	1
Document Date:	30/09/2024

Document Amendment Record

Version	Change Description	Date
0	Initial issue	31/08/2023
1	Updated cover page	30/09/2024

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RD-ITS-S1 General Requirements for the Supply of ITS Equipment

1 General

- a) This Master Specification Part sets out the requirements for the supply of ITS equipment, including:
 - i) the documentation requirements, as set out in section 2;
 - ii) the ITS equipment requirements, as set out in section 3;
 - iii) the environmental conditions requirements, as set out in section 4;
 - iv) the operational reliability requirements, as set out in section 5;
 - v) the STREAMS interoperability and compatibility requirements, as set out in section 6;
 - vi) the operation and control system requirements, as set out in section 7;
 - vii) the battery powered ITS equipment requirements, as set out in section 8;
 - viii) the mechanical and physical requirements, as set out in section 9;
 - ix) the replacement parts requirements, as set out in section 10;
 - x) the O&M Manuals requirements, as set out in section 11;
 - xi) the warranty and service support requirements, as set out in section 12;
 - xii) the testing requirements, as set out in section 13;
 - xiii) the training requirements, as set out in section 14;
 - xiv) the Hold Point requirements, as set out in section 15; and
 - xv) the verification requirements and records, as set out in section 16.
- b) The supply of ITS equipment must comply with the Reference Documents, including:
 - i) AS/NZS 1664 Aluminium structures;
 - ii) AS/NZS 61000.6.1 Electromagnetic compatibility (EMC), Part 6.1: Generic standards - Immunity for residential, commercial and light-industrial environments; and
 - iii) AS/NZS ISO 9001 Quality management systems - Requirements.
- c) Without limiting the Contractor's obligation to comply with the Contract Documents, including the Master Specification, the supply of ITS equipment must comply with:
 - i) RD-ITS-D1 "Design of Intelligent Transport Systems (ITS)";
 - ii) RD-ITS-D2 "TrafficNet Infrastructure Buildings";
 - iii) RD-ITS-S2 "Roadside Electrical Switchboards";
 - iv) RD-ITS-S3 "ITS Enclosures";
 - v) RD-ITS-S4 "Supply of Electronic Signs";
 - vi) RD-ITS-S5 "Imaging Equipment";
 - vii) RD-ITS-S6 "Field Processors";
 - viii) RD-ITS-S7 "Supply and Installation of Motorway Vehicle Detection Systems";
 - ix) RD-ITS-C1 "Installation and Integration of ITS Equipment";

- x) RD-ITS-C2 “Mains Power Supplies for Roadside Traffic Management Equipment”; and
- xi) RD-ITS-C3 “Telecommunications Cabling”.

2 Documentation

2.1 Design Documentation

In addition to the requirements of PC-EDM1 “Design Management”, the Design Documentation must include:

- a) details of the mean time between failure (MTBF) and mean time to repair (MTTR) for the supplied ITS equipment as required by section 5b);
- b) evidence of the ITS equipment’s interoperability and compatibility with STREAMS, as required by section 6; and
- c) where relevant, details of the Contractor’s proposal for providing batteries with solar or another form of battery charging for providing power to the supplied ITS equipment, as contemplated by section 8a).

2.2 Training Manual

In addition to the requirements of PC-CN2 “Asset Handover”, the Training Manual must include the operations and maintenance training information required by section 14.

2.3 O&M Manual

In addition to the requirements of PC-CN2 “Asset Handover”, the O&M Manuals (including the Operation Manuals and the Maintenance Manuals) must include the information required by section 11.

2.4 Quality Management Records

In addition to the requirements of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable), the Quality Management Records must include:

- a) design documentation in accordance with RD-ITS-D1 “Design of Intelligent Transport Systems (ITS)”;
- b) an inspection report of supplied ITS equipment, in accordance with section 3.3;
- c) a list of all critical ITS equipment and parts, together with spare and replacement part information, as required by section 10c);
- d) all ITS equipment warranty and service agreement documentation required by section 12;
- e) test records and reports required by section 13;
- f) As-Built Records for the supplied ITS equipment, including asset database data sets as required by PC-EDM5 “Digital Engineering” and PC-CN2 “Asset Handover”; and
- g) technical data including manufacturer, model, hardware, firmware or software version of all supplied ITS equipment.

3 ITS equipment requirements

3.1 General

- a) The Contractor must ensure that:
 - i) all supplied ITS equipment:

- A. is fit for its intended purpose;
 - B. satisfies all requirements of the Contract Documents when installed in compliance with the installation instructions;
 - C. is manufactured under a quality system certified to AS/NZS ISO 9001 Quality management systems - Requirements;
 - D. complies with all applicable standards, codes and guides of Standards Australia and Standards New Zealand (or where no appropriate Australian standard or a New Zealand standard does not exist, the relevant British or international standard); and
 - E. is protected against irreparable damage if any of the terminations are:
 - I. open circuited;
 - II. short circuited; or
 - III. disconnected,
while energised;
- ii) all supplied electronic equipment has conformal coated electronics suitable for that equipment to be located in non-conditioned environments, including field cabinets;
 - iii) where multiple items of specific ITS equipment are to be supplied (e.g., VLSL or LUMS signs), the same make and model of that ITS equipment must be used in each instance;
 - iv) all supplied telecommunications ITS equipment:
 - A. complies with all standards and requirements of ACMA; and
 - B. which requires connection to telephony services, must:
 - I. be approved by ACMA; and
 - II. labelled with the Regulatory Compliance Mark; and
 - v) all supplied ITS equipment incorporating radio communications must comply with the requirements of the Australian Department of Infrastructure, Transport, Regional Development, Communications and the Arts.
- b) Where ITS equipment is commercially available in a format compatible with the mounting arrangements provided within the intended ITS housing enclosure, the Contractor must ensure that the relevant ITS equipment is provided in that format.
 - c) The Contractor must supply all equipment necessary for the operation and maintenance of the ITS equipment in accordance with the Contract Documents.
 - d) The Contractor grants the Principal a royalty free, irrevocable, perpetual license to use any software necessary for the operation and maintenance of the ITS equipment.
 - e) All supplied network and server equipment is covered by a manufacturer support agreement as set out in section 12.2.
 - f) The Contractor must ensure that all supplied ITS equipment is designed to:
 - i) provide quick, easy and safe access for maintenance purposes (including vehicle access where required);
 - ii) be securable or lockable;
 - iii) eliminate the need for traffic control during maintenance activities; or
 - iv) where traffic control during maintenance activities cannot be eliminated as required by section 3.1f)iii), they must be minimised to the greatest extent possible.

- g) Where particular ITS equipment has not already been approved for use by the Principal, the Contractor must submit details to the Principal of all proposed ITS equipment prior to procurement, including:
- i) manufacturer, model number and equipment technical details;
 - ii) rated ambient operating temperature capability;
 - iii) compatibility with STREAMS (where relevant);
 - iv) details of maintenance requirements;
 - v) details of software licensing;
 - vi) details of Design Life;
 - vii) details of equipment MTTF for each replaceable module of the ITS equipment;
 - viii) details of warranties;
 - ix) manufacturer specified inrush, peak and average power consumptions (watts) and electrical loads (amps);
 - x) IP rating;
 - xi) fixing, fastening, and bracketry arrangements; and
 - xii) any ongoing additional operational costs including licensing, and service agreement costs.
- h) Submission of the information required by section 3.1g) for approval by the Principal constitutes a **Hold Point**. The relevant ITS equipment must not be procured until this Hold Point has been released.

3.2 Multiple failures

- a) The Contractor must ensure that each item of supplied ITS equipment satisfies the Defect free requirements set out in RD-ITS-C1 "Installation and Integration of ITS Equipment".
- b) Where a particular item of supplied ITS equipment fails due to the same, similar, or related fault 3 times or more in a 6-month period while within the warranted life required by section 12, the Contractor must replace that item of ITS equipment with a new item.
- c) The Contractor must not reissue, reuse, or otherwise allocate any failed item of ITS equipment as a replacement part.
- d) Where more than 10% of similar items (e.g. an order of multiple LUMS signs, VLSL etc) of supplied ITS equipment exhibit the same or similar fault:
- i) within any 12-month period; and
 - ii) while within the warranted life of that ITS equipment as required by section 12, the Contractor must:
 - iii) provide a written submission to the Principal, including the following details:
 - A. the cause of the fault;
 - B. how it may be prevented from occurring in future; and
 - C. proposed remedial works; and
 - iv) undertake and complete remedial work within 3 months of the fault being identified.
- e) The Contractor must report the outcome of the remedial work undertaken pursuant to section 3.2d)iv) to the Principal within 2 months after the completion of that remedial work.

- f) Where more than 20% of similar items (e.g. an order of multiple LUMS signs, VSLs etc) of supplied ITS equipment exhibit the same or similar fault within the warranted life of that ITS equipment as required by section 12, the Contractor must:
 - i) provide a written submission to the Principal explaining the cause of the fault; and
 - ii) replace all items of that ITS equipment (regardless of whether each particular item of the ITS equipment has suffered a fault or not) at times, and on terms directed by the Principal.

3.3 Inspection prior to installation

The Contractor must inspect all supplied ITS equipment prior to its installation to ensure that the ITS equipment complies with the requirements of the Contract Documents and the Reference Documents. The inspection report must be provided as part of the Quality Management Records.

4 Environmental conditions requirements

- a) The Contractor must ensure that all supplied ITS equipment is capable of continuous, normal operation under the following conditions when installed in compliance with the installation instructions, without degradation to system performance or life expectancy:
 - i) installed directly in sunlight (unless the relevant item of ITS equipment is designed to be installed in a permanently sheltered position);
 - ii) ambient air temperature external to an ITS enclosure in the range of -15°C and +55°C;
 - iii) maximum wind conditions expected to occur at the intended installation site;
 - iv) coastal environment;
 - v) varied light intensity due to moving or changing shadows;
 - vi) where the ITS equipment is housed within an ITS enclosure, humidity of up to 90% non-condensing within the ITS enclosure;
 - vii) unique site conditions at the specified location, including:
 - A. thick smoke;
 - B. fog; and
 - C. electromagnetic interference;
 - viii) vibrations reasonably expected in the installed location, including any increased vibration or air velocity for ITS equipment to be located inside Tunnels as a result of Tunnel ventilation systems;
 - ix) exposure to vandalism; and
 - x) exposure to infestation by vermin.
- b) The Contractor must ensure that, following installation and once in operation, the supplied ITS equipment causes minimal adverse effect on the surrounding environment in which it is installed, including with respect to:
 - i) noise;
 - ii) light; and
 - iii) heat.

5 Operational reliability requirements

- a) The Contractor must ensure that the supplied ITS equipment is designed and selected (and installed if the Contract Documents include installation) to optimise MTBF and minimise the MTTR.
- b) The Contractor must submit details of the MTBF and MTTR for the supplied ITS equipment as part of the Design Documentation.

6 STREAMS

- a) Unless otherwise specified in Contract Documents, the Contractor must ensure that all supplied ITS equipment is interoperable and compatible with STREAMS.
- b) The Contractor must provide evidence of STREAMS interoperability and compatibility as required by section 6a) to the Principal as part of the Design Documentation.

7 Operation and control system

7.1 Physical interfaces

The Contractor must ensure that physical interfaces between supplied ITS equipment:

- a) utilise industry-standard connections;
- b) are adequately electrically and physically protected against environmental conditions where necessary; and
- c) are captive, in the following order of precedence:
 - i) automatic “click” type (such as RJ-45);
 - ii) manual “click” type (such as retention clips); and
 - iii) screw-type.

7.2 Communications transmission acknowledgement

- a) The Contractor must ensure that all supplied ITS equipment complies with the following communications transmission requirements:
 - i) all communications to a device from a transmitting device must be acknowledged by the receiving device; and
 - ii) failure to receive an acknowledgement from the receiving device within the required period set out in section 7.2b) must be recognised by the transmitting device which must then initiate an alarm.
- b) For the purposes of section 7.2a)ii) the “required period” means:
 - i) the time limits imposed by STREAMS, where applicable; or
 - ii) the time limits set by the manufacturer of the receiving device.

7.3 Failure modes and resilience

- a) The Contractor must ensure that all supplied ITS equipment complies with the following failure mode and resilience requirements:
 - i) ITS equipment alarms must be capable of being latched until they are acknowledged and cleared by the Traffic Management Centre or the Principal’s maintenance staff;

- ii) the supplied ITS equipment must comply with any operational requirements for failure modes described elsewhere in the Contract Documents, in other Master Specification Parts or in relevant Australian standards;
 - iii) upon restoration of power, the control system, ITS equipment and associated systems must inhibit any new alarms until steady-state is achieved; and
 - iv) where a telecommunications link fails, the ITS equipment must be capable of automatically re-establishing communications as soon as possible after the telecommunications link is restored.
- b) The Contractor must ensure that, in the event of a power, hardware or communications failure, the supplied ITS equipment must:
- i) automatically enter a defined safe state; and
 - ii) automatically restart in a defined safe manner after the restoration of power or communications.

7.4 Computers and diagnosis devices

- a) The Contractor must ensure that:
- i) all computers supplied by the Contractor use a current version of the Microsoft Windows operating system; and
 - ii) any software that it provides is interoperable and compatible on the Microsoft Windows system.
- b) The Contractor must provide:
- i) all devices and software required for configuring the supplied ITS equipment; and
 - ii) any device or software necessary to maintain, diagnose, interrogate or operate the ITS equipment.

8 Battery powered ITS equipment

- a) This section 8 applies where batteries with solar or another form of battery charging form part of the Contractor's ITS design for providing power to the supplied ITS equipment and this design has been submitted as part of the Design Documentation and approved by the Principal.
- b) The Contractor must ensure that batteries used to power ITS equipment:
- i) have no memory effect;
 - ii) for installations which rely on solar panels to recharge batteries, are able to operate the connected ITS equipment load at the relevant site continuously and without recharge for 72 hours; and
 - iii) for installations which rely on methods other than solar to recharge batteries, such as part time mains or other part time power availability, are able to operate the connected ITS equipment load at the relevant site continuously and without recharge for a period nominated in the Contract Documents.
- c) The Contractor must ensure that the power supply and battery charging system used in battery powered ITS equipment includes:
- i) a facility to protect the batteries from overcharging and excessive discharge;
 - ii) power supply delivery to the ITS equipment or ITS system during changeover from charging to battery to ensure supply is continuous; and
 - iii) where the installation is to be monitored by STREAMS, alarm and monitoring outputs (to indicate an alarm or status at the specific site location) to the Traffic Management

Centre via STREAMS (a simple device interface or Modbus TCP/IP may be used for this purpose) for:

- A. battery voltage (status);
- B. solar panel voltage status (if solar powered);
- C. high battery voltage alarm;
- D. low battery voltage alarm;
- E. power supply/charging system fault; and
- F. if the installation includes a cabinet with a door, a door open alarm.

9 Mechanical and physical requirements

9.1 General

The Contractor must ensure that the supplied ITS equipment:

- a) meets all mechanical and physical requirements of the Contract Documents; and
- b) complies with the following requirements:
 - i) the materials and methods of construction of the ITS equipment must be such that the ITS equipment has the strength and durability to withstand expected conditions of:
 - A. transportation;
 - B. installation;
 - C. integration; and
 - D. operation,when installed in the intended location;
 - ii) subject to section 9.1b)iii), all ITS equipment surfaces must be free from sharp corners and projections that may catch clothing, body parts or otherwise cause injury;
 - iii) ITS equipment surfaces may include sharp corners and projections specifically designed and intended for unauthorised access prevention purposes;
 - iv) contact between dissimilar metals comprising the ITS equipment must comply with the requirements of:
 - A. the Contract Documents; and
 - B. AS 1664 Aluminium structures; and
 - v) suitable washers and fixings must be used to prevent damage and corrosion to:
 - A. ITS equipment surfaces; and
 - B. surface treatments applied to the ITS equipment.

9.2 Storage, packaging and transportation

- a) The Contractor must ensure that all ITS equipment is securely packed and sealed to prevent damage in storage or transportation.
- b) The Contractor must:
 - i) store all ITS equipment and materials in a safe, dry, and secure location until required for installation; and

- ii) ensure that all ITS equipment and materials being stored pursuant to section 9.2b)i) are not stored directly on the ground.
- c) Where ITS equipment is fitted with batteries, the Contractor must ensure that:
 - i) the batteries are capable of withstanding the expected time of storage under section 9.2b)i):
 - A. without requiring charging; and
 - B. without degradation to their whole of life performance; or
 - ii) where the batteries do require periodic or constant charging during storage, appropriate charging is performed throughout the duration of the storage under section 9.2b)i).

10 Replacement parts

- a) The Contractor must ensure that replacement ITS equipment and parts will be available for a minimum of 7 years from the date of first delivery.
- b) The Contractor must ensure that replacement ITS equipment and parts are available within 14 days of placing an order for the relevant equipment or part during the required 7-year period contemplated by section 10a).
- c) As part of the Quality Management Records and the Maintenance Plan, the Contractor must provide:
 - i) a list of critical ITS equipment and parts; and
 - ii) a recommendation for spare and replacement parts to be held in stock.
- d) For the purposes of section 10c), critical ITS equipment and parts must include those parts which, if failed:
 - i) would cause significant loss of function or control of the ITS installation; and
 - ii) create a significant risk to public safety or to the ITS equipment.

11 O&M Manuals

- a) The Contractor must prepare and provide O&M Manuals, including Maintenance Manuals specifically addressing all maintenance requirements relevant to all supplied ITS equipment, and Operation Manuals specifically addressing all operation requirements relevant to all supplied ITS equipment in accordance with the following:
 - i) the O&M Manuals must be submitted in accordance with PC-CN2 "Asset Handover", and:
 - A. where the Contractor is required to supply the ITS equipment only, at the same time the ITS equipment is supplied; or
 - B. where the Contractor is required to supply, install and commission the ITS equipment, as soon as practicable following commissioning of the relevant item of supplied ITS equipment;
 - ii) maintenance related requirements set out in section 11 must be included as part of the Maintenance Plan (which forms part of the Maintenance Manual);
 - iii) operational related requirements set out in section 11 must be included as part of the Operation Manual; and
 - iv) the Contractor must:
 - A. subject to section 11a)iv)B, supply 3 bound hard copies and electronic copies of the O&M Manuals for each type of supplied ITS equipment as part of each of the submissions; and

- B. where generic documents, such as the user manual for a specific type of ITS equipment, are relevant to more than one site installation, only one copy of the O&M Manual applicable to that type of ITS equipment must be provided.
- b) Each O&M Manual for each type of supplied ITS equipment must include all of the information required by this section in both the Maintenance Manual and the Operation Manual and:
- i) set out the following information about each type of supplied ITS equipment in a clear and logical manner:
 - A. ITS equipment specifications provided by the ITS equipment manufacturer which must include:
 - I. technical data sheets including physical and electrical specifications;
 - II. all major components of the supplied ITS equipment;
 - III. detailed specifications and performance characteristics including MTBF and MTTR data of the supplied ITS equipment;
 - IV. warranty periods and a description of warranty claim procedures and conditions; and
 - V. maintenance and support periods and a description of procedures and conditions relevant to the maintenance and support agreements required by section 12.2b);
 - B. ITS equipment test sheets, including device serial numbers, firmware and software versions and test results;
 - C. operating procedures, including:
 - I. setting of operational parameters;
 - II. safety requirements; and
 - III. safety data sheets;
 - D. diagnostics and troubleshooting procedures;
 - E. recommended maintenance schedule and procedures which must:
 - I. list maintenance activities recommended by the ITS equipment manufacturer; and
 - II. list any additional activities and routine maintenance procedures which are recommended by the Contractor;
 - F. compliance or approval certificates relevant to each type of ITS equipment;
 - G. recommended spare and replacement parts as contemplated by section 10c);
 - H. layout, fabrication, interconnection and assembly drawings, diagrams, and system schematics including:
 - I. detailed "block diagrams" to indicate the logic and operation;
 - II. interconnection drawings;
 - III. configuration number;
 - IV. model numbers; and
 - V. evidence of compatibility between the ITS components;
 - I. wiring and termination diagrams; and
 - J. clear cross-referencing between related sections of the manuals (for example, if a section of the O&M Manual that relates to an ITS cabinet which controls multiple

ITS devices, that section must cross-refer to the relevant sections of the O&M Manual regarding those ITS devices and vice-versa).

12 Warranty and service support

12.1 Warranty

- a) For the purposes of PC-CN3 “Construction Management”, the Contractor must:
 - i) obtain a manufacturer’s warranty of at least 2 years from the date of supply for all supplied ITS equipment; or
 - ii) if the Contract Documents includes installation of the supplied ITS equipment, 2 years from the date of commissioning, which satisfies the requirements of PC-CN3 “Construction Management”.
- b) In addition to the requirements of section 12.1a), the following ITS equipment must include a manufacturer’s 5 year warranty which satisfies the requirements of PC-CN3 “Construction Management”:
 - i) all electronic signs as defined in RD-ITS-S4 “Supply of Electronic Signs”;
 - ii) traffic signal controllers;
 - iii) traffic signal lanterns;
 - iv) UPS;
 - v) batteries; and
 - vi) in-pavement lighting.

12.2 Service support

- a) The Contractor must ensure that all supplied network and server equipment is covered by a maintenance and support agreement (e.g. Cisco SMARTNET agreement or equivalent) addressing both:
 - i) hardware: support, repairs and replacement; and
 - ii) software: technical support, maintenance and upgrades.
- b) The Contractor must procure that the maintenance and support agreement required by section 12.2a):
 - i) is made in favour of the Principal;
 - ii) has a minimum period of the greater of:
 - A. 5 years starting from completion of OST; and
 - B. the duration of the Defects Liability Period; and
 - iii) includes the following service levels:
 - A. network and server equipment defined by the Principal as operations-critical: 24hrs per day, 7 days per week, 4 hour response time (24x7x4); and
 - B. other network and server equipment: 8 hours per day, 5 days per week, next business day response (8x5xNBD).
- c) The Contractor must submit details of the maintenance and support agreement required by section 12.2a) to the “TMC Team Leader, TrafficNet” when the relevant ITS equipment is delivered. Provision of the maintenance and support agreement pursuant to this section 12.2 constitutes a **Hold Point**.

- d) A copy of the maintenance and support agreement required by section 12.2a) must also be included as part of the Quality Management Records.

13 Testing

- a) All test results and reports detailed below must be provided to the Principal as part of the Quality Management Records:
- i) Factory Acceptance Testing (FAT) of all supplied ITS equipment must be undertaken in accordance with the requirements of PC-CN1 "Testing and Commissioning". The FAT must include all performance parameters that can be tested under laboratory or factory conditions to demonstrate that each item of supplied ITS equipment complies with the requirements of this Master Specification Part; and
 - ii) tests confirming electromagnetic compatibility requirements of AS/NZS 61000.6.1:2006 Electromagnetic compatibility (EMC) Generic standards - Immunity for residential, commercial and light industrial environments, as relevant to the particular type of ITS equipment immunity and electromagnetic compatibility emissions.
- b) Where the ITS equipment is being supplied for a specific project which requires additional testing as detailed in RD-ITS-C1 "Installation and Integration of ITS Equipment", the Contractor must facilitate that additional testing in compliance with PC-CN1 "Testing and Commissioning" prior to delivery and submit all related test results and reports to the Principal as part of the Quality Management Records.

14 Training

- a) Where the Contract Documents specify that the ITS equipment is to be supplied, installed and commissioned by the Contractor, the training requirements of RD-ITS-C1 "Installation and Integration of ITS Equipment" apply.
- b) Where the Contract Documents specify that the Contractor is to supply the equipment only, training must be provided:
- i) as specified in the Contract Documents; or
 - ii) if the Contract Document do not include specific training requirements, in accordance with the requirements of specified in RD-ITS-C1 "Installation and Integration of ITS Equipment".

15 Hold Points

Table RD-ITS-S1 15-1 details the review period or notification period, and type (documentation or construction quality) for each Hold Point referred to in this Master Specification Part.

Table RD-ITS-S1 15-1 Hold Points

Section reference	Hold Point	Documentation or construction quality	Review period or notification period
3.1h)	Submission of ITS equipment details for products not already approved for use by the Principal	Documentation	20 Business Days review
12.2c)	Submission of maintenance and support agreement for network equipment	Documentation	20 Business Days review
16c)	Submission of As-Built Records and technical data	Documentation	20 Business Days review

16 Verification requirements and records

- a) The Contractor must supply the following information to the Principal:
 - i) As-Built Records for the supplied ITS equipment, including asset database data sets as required by PC-EDM5 “Digital Engineering” and PC-CN2 “Asset Handover”; and
 - ii) technical data including manufacturer, model, hardware, firmware or software version of all supplied ITS equipment.
 - b) The records and data required by section 16a) must be supplied:
 - i) where the Contractor is required to supply the ITS equipment only, at the same time the ITS equipment is supplied; or
 - ii) where the Contractor is required to supply, install and commission the ITS equipment, as soon as practicable following commissioning of the relevant item of supplied ITS equipment.
 - c) Submission of the records and data required by section 16a) will constitute a **Hold Point**.
-