

# ROADS AND MARITIME SERVICES (RMS)

## QA SPECIFICATION R308

### MAINTENANCE OF ROAD WEATHER INFORMATION SYSTEMS

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#### REVISION REGISTER

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**GUIDE NOTES**  
(Not Part of Contract Document)

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# MAINTENANCE OF ROAD WEATHER INFORMATION SYSTEMS

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IC-QA-R308

VERSION FOR: DATE:
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## FOREWORD

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### REVISIONS TO PREVIOUS VERSION

This document has been released as RMS Specification R308 Edition 1 Revision 0.

All revisions to the previous version (other than minor editorial and project specific changes) are indicated by a vertical line in the margin as shown here, except when it is a new edition and the text has been extensively rewritten.

### PROJECT SPECIFIC CHANGES

Any project specific changes have been indicated in the following manner:

- (a) Text which is additional to the base document and which is included in the Specification is shown in bold italics e.g. ***Additional Text***, and
- (b) Text which has been deleted from the base document and which is not included in the Specification is shown struck out e.g. ~~Deleted Text~~.

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## RMS QA SPECIFICATION R308

### MAINTENANCE OF ROAD WEATHER INFORMATION SYSTEMS

## 1 General

### 1.1 SCOPE

This document sets out requirements for the Maintenance of Road Weather Information Systems (RWISs) (the “Services”). The Specification is formed only when this document is read together with RMS QA R300 ITS Maintenance Services – General Requirements.

RWIS includes the detection device(s) and all supporting components of the system and site. The requirements herein is for Services relevant to a RWIS site, so that they remain in good condition, operate as designed, and meet the specified performance requirements.

Major components of a RWIS site are listed below:-

- a) Road Weather Information Systems (RWISs) unit as defined for all types. Includes enclosures, Environmental Sensory Systems (for Snow, Ice, Fog, Rain and Humidity etc), all associated electronics, electrical and mechanical components contained there in,
- b) Controller Cabinet is structure mounted, ground mounted, or integrated with other cabinets. Includes all control systems electronics, electrical and mechanical components contained there in (e.g. Master/Slave Controller(s) (where applicable); local sensors controls (e.g. Vehicle detection loop switches; Environmental Sensory Systems),
- c) Support steel structure for mounting of all types of RWISs. Includes all associated fixtures i.e. service platforms, handrails, meshes, brackets, fasteners, safety rails/cables/roller hooks, fixed lifting devices, fixed ladders and surface treatments.
- d) Externally mounted fixtures i.e. antennas, sensors, LED/lantern conspicuity devices, Variable Message sign (VMS) (where used), Variable Speed Limit Signs (VSLS) (where used), or recording equipment installed onto RWIS enclosure, support structure and controller cabinet,
- e) Electrical power distribution system from service point of supply (metered/un-metered supply point) up to the RWIS. Includes all power cables, switch devices, distribution devices, voltage conversion devices, stabilization devices, fuses, glands, connectors, surge protection devices, cabling, pits/conduits and clamping fixtures,
- f) Communication distribution system from the service point of supply up to the RWIS. Includes all copper & fibre cables, routers, modems, splitters, converter patch boards, protection devices, glands, connectors, clamping fixtures and Radio/Wireless communication equipment,
- g) Power back up system (where provided). Includes auxiliary power generator, Uninterrupted Power Supply (UPS), Solar panels, battery(s) and charging units,
- h) Site civil infrastructure. Includes concrete pathways, platforms, retaining walls, safety barriers, handrails, drains, landscaping, and
- i) Signage at site could be static post mounted, painted or labels. Includes site identification on controller cabinets, safety signs and pavement markings.

### 1.2 DEFINITIONS AND ABBREVIATIONS

The following definitions and abbreviations, in combination with those listed in R300, are applicable to this Specification.

**1.2.1 Definitions**

<b>Term</b>	<b>Description</b>
Enclosure	A housing providing an appropriate degree of environmental protection against contact with live parts (AS/NZS 60529).
Power backup equipment	Includes backup power generator, UPS, batteries and charging units, photovoltaic power supply (where applicable), power regulators, etc.
Protocol	RMS Communications Protocol For Roadside Devices (RMS Specification TSI-SP-003)
Supply Point (also known as Connection Point)	The junction of the electricity distributor's low voltage network conductors with the consumer's mains, i.e. the point at which the power supply is connected to the Utility network.
Supports	All structural components, brackets, clamps, straps and parts thereof, used to support the RWIS Equipment.
Site/work site	Road Weather Information System site.
RWIS Site Master	The RWIS Controller that acts as the central link between the site and the TMC; and controls the RWIS Site Slaves.

**1.2.2 Abbreviations**

<b>Term</b>	<b>Description</b>
ESS	Environmental Sensory Station (Snow and Ice Advisory System, Fog Detection Station and Wet Weather Station)
OEM	Original Equipment Manufacturer
O&M	Operations and Maintenance
RCD	Residual current device
SMS	Short Message Service

**1.3 RELEVANT DOCUMENTS AND ORDER OF PRECEDENCE**

This document must be read together with RMS QA R300 – ITS Maintenance Services – General Requirements.

Other relevant RMS Maintenance Specifications, and O&M manuals are listed in **Annexure R308/A**.

In the event of any conflicting requirements between documents, the order of precedence must be:

1. Statutory and legislated requirements;
2. This specification (QA Specification R308) read in conjunction with QA Specification R300.
3. Other RMS ITS Maintenance specifications - listed in Annexure R308/A.
4. RMS ITS Equipment specifications - listed in Annexure R308/A.
5. O&M manuals - listed in Annexure R308/A.
6. Australian Standards.



## **2 MAINTENANCE SERVICES**

You must undertake maintenance services of the RWIS system and site components as described in clause 1.1 and in accordance with the approved Asset Maintenance Plan and Forward Works Program.

### **2.1 PLANNED MAINTENANCE**

Planned Maintenance Services must adhere to requirements given in QA Specification R300, ITS Maintenance Services – General Requirements. A combination of inspections/checks and preventative maintenance activities constitute planned maintenance to ensure continued serviceability and availability of a RWIS asset.

Minimum planned maintenance inspection/checks are;

- a) RWIS sensor operation,
- b) Condition of RWIS enclosure, support structure, controller cabinet and other externally mounted accessories for damage, disfigurement (including vandalism), peeling or damaged galvanizing/paint surface coating and corrosion,
- c) Presence of moisture, dirt, vermin/insects inside RWIS enclosure, Controller cabinet, pits, exposed ducts and steel structure crevices, and
- d) Wearing off or damaged site infrastructure i.e. concrete pathways, platforms, retaining walls, safety barriers, handrails, drains, landscaping etc.

**Annexure R308/B** is a sample Planned Maintenance Service checklist for both checks/inspections and preventative maintenance items.

Planned maintenance frequency and checks are to be submitted and approved by RMS prior to implementation.

### **2.2 REACTIVE MAINTENANCE**

#### **2.2.1 Fault Attendance Service**

You must provide a fault attendance service on a twenty-four (24) hours per day, seven (7) days per week basis for all RWIS faults.

Typical causes of RWIS faults include, but are not limited to:

- a) Master/Slave controllers and associated equipment malfunctions,
- b) Sensor failure,
- c) detection system failure, where used (loops, radar, optical devices),
- d) Icing,
- e) conspicuity lantern failure,
- f) power & communication equipment malfunctions,
- g) power and communication cabling and wiring damage,

- h) overheating of electronics inside sign and controller enclosures,
- i) moisture or dust ingress,
- j) accident damage,
- k) storm damage, and
- l) Vandalism.

All repair works must be in accordance with RMS Specifications listed in Clause 1.3 or as amended.

### **2.2.2 Procedure**

You must make arrangements to continually monitor the fault notifications and the Fault Management System(s) for RWIS.

These systems, hosted by RMS, currently include:

- CMCS FMS web page for fault log intranet (where applicable); and
- PEGA Case Manager (where applicable).
- Telephonic (SMS) fault notifications to OEM (where applicable);

You will be provided with access (e.g. remote login via VPN or through telephony) to these systems. You may also develop your own software interface to read the CMCS “flat file” which is periodically updated with RWIS fault status. In that case you will be provided with access to the CMCS “flat file” and a description of its structure.

Upon fault notification, you must review the nature and urgency of the problem and prioritise your response. You must dispatch appropriately skilled resource(s)/technician(s) to attend the site as soon as possible, but in any case within the specified response time (see clause 2.3.3 for Response Time and Repair Time). Notification of the fault is either via phone callout or at the start of shift of your resource(s)/technician(s). It is expected that your skilled resource(s)/technician(s) review current faults at the start of their shift to determine their work priorities.

Upon arriving on site you must log the time of attendance in PEGA Case Manager together with your initial findings and any other relevant information (e.g. estimated time to repair). Alternatively, if PEGA Case Manager is unavailable, you may notify the TMC by phone.

You must assess whether the condition of the site poses any safety hazards to motorists or the public and make the site safe as a matter of priority.

In the event of a power failure, you must first contact the electricity distributor from off-site to ascertain that the cause of the outage is upstream of the RWIS supply point. You must still ascertain from site that there are no other power equipment failures at the RWIS site and then enter the appropriate fault response details in PEGA Case Manager.

In the event of a communications failure, you must first contact the service providers i.e. Telstra, Optus etc to ascertain that the failure is external to the RWIS system. Once confirmed, you must log communications faults with the appropriate third party communications service provider and follow-up to expedite rectification of the fault. You must still ascertain from site that there are no other communication equipment failures at the RWIS site and then enter the appropriate fault response details in PEGA Case Manager.

### **2.2.3 Response Times for Fault Attendance**

Response time starts from the initial fault occurrence time stamp in the appropriate electronic Fault Management System or from the time of the fault call (whichever is earlier) and is the sum of following;

- Remote investigation time to ascertain nature of defect(s)
- Equipment/parts/materials preparation time, and
- Travel time to site.

Response times for initial site attendance upon notification of a RWIS fault is guided by the criterion in **Annexure R308/D**.

Service provider to locate maintenance crews to facilitate their travel time to site.

### **2.2.4 Repair Time**

**Repair time** at site is the time taken to trouble-shoot the fault, completely repair the asset and make it available for service. Asset downtime directly effects operational availability. Swift, efficient and well coordinated repairs will bring the asset back into operation quickly and positively affect performance targets.

You must inform RMS as soon as possible of any abnormal delays, reasons for delayed repairs and estimate of the time required to complete the repairs.

### **2.2.5 Repetitive Failures**

Where the same reported fault requires callouts on two (3) occasions within a fourteen (14) day period you must carry out root cause analysis, identify and implement appropriate actions to prevent recurrence.

Where these actions recommend replacement or major renewal of the RWIS asset and these works have not been included in the current Forward Works Program (FWP) you must submit a Business Case to RMS for approval. The Business Case must be based on a life cycle cost comparison of the proposed action against a “business as usual” maintenance approach. If RMS agrees with your recommendations the renewal or replacement works will be included in the next FWP.

Till the recommended and approved replacement works in the FWP are completed, the availability target (%) will be reviewed and a lower KPI may be accepted or under unsustainable operating conditions, the asset excluded from the KPI assessment until replaced.

### **2.2.6 Requests for RMS Assistance**

Where a technical problem cannot be resolved by you, you may request assistance from RMS. When requesting assistance you must be able to demonstrate to RMS that the technical problem is complex and/or outside your scope of services, e.g. system integration issues with RMS or TMC systems.

If the technical problem cannot be resolved by RMS remotely, a site visit meeting will be arranged by RMS at a mutually agreeable time. You must attend the site with relevant documents and information related to the technical problem.

## **2.3 INCIDENT SUPPORT**

An Incident Support report should be raised when;

- an incident is known to your team,
- or when requested by the TMC, and
- or by the relevant SMC Service Provider.

In the event of an incident, response time and repair time for Reactive Maintenance applies.

On site attendance, you must assess whether the condition of the site poses any safety hazards to the public and make the site safe as a matter of priority.

You must also prioritise and rectify all other faults and defects as if for Reactive Maintenance.

You must record the Incident Support details in PEGA Case Manager. If PEGA Case Manager is unavailable or inaccessible the report form in **Annexure R308/D** may be used on site. PEGA Case manager should be updated on first available opportunity.

You must assist RMS with all insurance claims and recovery actions arising from the incident.

Incident Support reports must be submitted as part of your monthly report to RMS.

## **3 PARTS AND EQUIPMENT**

### **3.1 SUPPLY**

You must arrange and manage supply of all parts equipment, materials and technical services from OEM suppliers for the purpose of making available the RWIS site. Quality of parts, equipment and technical services from OEMs is to be assured.

When supply disruptions occur due to unavailability or obsolescence of a part or equipment, a Replacement part or equipment is to be recommended to RMS as a business case. RMS may approve use of the Replacement part or equipment after necessary technical review and testing.

### **3.2 HOLDING STOCK**

At all times, you must hold in stock adequate minimum levels of parts and equipment to meet Planned and Reactive Maintenance needs.

Service provider is to determine minimum stock levels for parts, equipment and materials based on RWIS maintenance scope.

An inventory of spares for parts, equipment, materials and technical services is to be maintained by the service provider. Inventory is to update minimum stock levels and holding stock periodically to match the RWIS maintenance scope.

Inventory of spares is to be updated for Replacement parts and equipment, on approval by RMS.

### **3.3 DISPOSAL OF DAMAGED, DEFECTIVE, OBSOLETE OR REDUNDANT PARTS & EQUIPMENT**

Due to maintenance or incidents, parts and equipment which are damaged, defective, obsolete or redundant are required to be removed from the Work Site and disposed. Such removal is to be done after formal information and agreement with RMS.

Such parts and equipment are to be distinctly and permanently marked prior to disposal by indicating their condition.

Disposal of parts and equipment is to be done as follows:

- a) Repair or refurbish the parts or equipment and hold them as spares in store for future use. For purposes of quality assurance, repaired or refurbished parts are to be treated the same as Replacement parts & equipment (Clause 3.1). Their repair history is to be maintained and made available to RMS when requested.
- b) Carry out disposal of parts or equipment that are beyond-economical-repair (BER) by recycling. Items being disposed must be physically disfigured prior to recycling at a certified facility. Certificate of disposal must be provided.

## **4 PERFORMANCE REQUIREMENTS (ASSET SPECIFIC)**

You must meet the included Key Result Areas (KRAs) and Key Performance Indicators (KPIs) for performance of your Services.

Your asset Inspection and Planned Maintenance Services must support a design life for each RWIS asset i.e. site availability should be sustained during design life for different components at a RWIS site, which varies as follows;

- RWIS electronics and electrical components- Fifteen (15) years.
- Steel fabricated Support Structures, Brackets and Fixtures – Fifty (50) years.
- Concrete & Masonry construction at Site – Thirty (30) years.
- Power back-up system / Batteries – Five (5) years.

Premature asset failures requiring major renewal or replacement of the asset (other than due to Incidents or Force Majeure events) may reduce your overall Stewardship Performance KPI score.

Performance requirements which are specific to RWIS Equipment are detailed below.

### **4.1 AVAILABILITY (OPERATIONAL)**

RMS QA R300 defines Availability for ITS assets. Performance calculation method is provided in the contract. The performance target for RWIS availability is **95%** (if standalone) or **98%** (if part of TFS).

Availability as defined in R300 will be measured monthly by you across all RWIS assets in your Zone.

Failure to meet the Availability performance targets will impact on your Asset Performance KPI score.

## **5 REPORTING AND RECORD KEEPING**

### **5.1 REPORTING**

You must provide a monthly performance report to RMS on work achievement against the FWP and asset performance statistics by the second week of the following month. The report must include the following items:

- (i) Availability
- (ii) Response Time
- (iii) Repair Effectiveness

See R300 for Availability, Response Time and Repair Effectiveness definitions.

You must report on the status of fault attendance and repairs through the appropriate Fault Management Systems in accordance with Clause 6.3 in R300.

These reports will be included in the KPI assessments by end of every month according to the contract.

### **5.2 RECORD KEEPING**

You must keep and maintain accurate records of all repairs, calibrations, replacements, and design alterations made to any RWIS Equipment/site.

All Functional Check Service and Planned Maintenance Service attendances must be recorded in the electronic fault management system. Details of each attendance must also be manually recorded with you and should include the date and details of service carried out and the technician's name.

You must maintain all necessary records to support the monthly evaluation of actual performance against the specific performance targets.

You must retain records of all accident/damage repairs for a period of at least five (5) years.

## **ANNEXURE R308/A – REFERENCE DOCUMENTS**

### **A1 RMS ITS MAINTENANCE SPECIFICATIONS**

RMS QA R302 Maintenance of Variable Message Signs

RMS QA R303 Maintenance of Variable Speed Limit Signs

RMS QA R305 Maintenance of Tidal Flow Systems

### **A2 RMS ITS EQUIPMENT SPECIFICATIONS**

RMS TSI-SP-003 Communications Protocol For Roadside Devices

RMS TSI-SP-008 General Requirements For Variable Message Signs

### **A3 O&M MANUALS**

Refer to respective O&M Manuals for the based on make and model of Equipment of each RWIS.  
O&M Manual is supplied by OEM.

### **A4 AUSTRALIAN STANDARDS**

Not Used.

## ANNEXURE R308/B – SAMPLE PLANNED MAINTENANCE SERVICE REPORT

**RWIS ID:** ..... **LOCATION:** .....

**REPORT DATE:** .....

1. Mark as actioned for each item with a ✓ in the “ACTIONED” columns.
2. If any item requires further attention, write reasons in comments column and mark that item with a ✓ in the “for further action (FFA)” column.
3. Enter date in dd/mm/yy format and time in 24 hour format.

PREVENTATIVE MAINTENANCE ITEMS	ACTIONED	COMMENTS	FFA
<b>Controller Cabinet</b>			
Clean Cabinet and check for moisture ingress. Repair as necessary.			
Check all labels and replace as necessary			
Check Communication and Power pits for water and other damage, clean as necessary			
Check exterior for damage or graffiti. Repair damage or remove graffiti. Report date of damage to RMS.			
Check condition, replace and lubricate door locks, hinges & seals as required			
Check that log sheet and WEA drawings are complete and intact. If WAE drawings missing or damaged, prepare hand sketches at site and forward to RMS to reproduce.			
Physically check switchboard and RCD items. Reset circuit breakers.		RCD tripping current:  RCD tester make and model:	



Measure RCD tripping current (in mA)			
Locate MEN connection inside the cabinet			
Visually/physically check wiring/terminations/earthing items, tighten if required.			
Check and secure Earth connection. Measure Earth insulation reading using insulation tester		Reading between Earth stake & Door :  Reading between Earth stake & Mains Earth:  _____	
Check if surge protector is installed		Surge protector make and model:  _____	
<b>Controller and communication equipment</b>			
Inspect electronics of RWIS controller and communication equipment for symptoms of electrical or thermal fatigue.  Repair or replace as needed			
Remove mains power; verify uninterrupted controller operation. Check existing battery voltage and charger operation.		Date on battery label or proof of purchase:  Date of expiry of battery OEM's warranty:	
Replace and label battery as specified, if date reached / 400 recharge cycles to 80% depth of charge.			
Check communication equipment jumper settings  Use Maintenance software to check for data corruptions over the complete communications link (ISDN, Ethernet, 3G, etc). Comment findings.			
Retrieve RWIS fault log. Repair or report as necessary.			

<b>RWIS Sensors</b>		
Inspect RWIS sensors for symptoms of electrical or thermal fatigue. Repair or replace as necessary.		
<b>RWIS –Sign enclosure</b>		
Check Sign support post and walkway platform structure including ladder for damage / corrosion / peeling galvanisation or paint.		
Check sign view from target distance; Clear tree branches if interfering with display.		
Check maintenance walkway for bridging plates security.		
Clean/vacuum gantry walk way/bridging plates of leaves etc.		
Check outside of sign enclosure for any peeling of paint, damage, graffiti or corrosion. Remove defect as necessary		
Check inside of sign enclosure for water leakage or presence of moisture damage. Locate leakage point, report and repair as necessary.		
Clean sign light sensor cover. Reseal if needed or replace if damaged.		
Check conspicuity doors or access points for rusted screws, replace if necessary		
Check cooling fan operation. Repair or replace as necessary		
Check thermoelectric cooling modules (e.g. Peltier), for evidence of condensation on the cold side. Repair or replace as necessary.  Comment “NA” if not available with RWIS make and type.		
Remove any weeds or grass near cabinet and equipment		

Inspect for damaged or missing covers, doors or hatches and replace as necessary.			
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1. Mark condition of each item with a ✓ in “PASSED/REPAIRED” columns.
2. Mark condition CF or NCF in the FAILED column to categorize.
3. If any item requires further attention, write reasons in comments column and mark item with a ✓ in the “for further action (FFA)” column.
4. Enter date in dd/mm/yy format and time in 24 hour format.

FUNCTIONAL INSPECTION ITEMS	PASSED	FAILED	REPAIRED	COMMENTS	FFA
<b>RWIS Site Master</b>					
Check operation of Site Master Controller.					
Battery backup  Remove mains power – verify uninterrupted controller operation.  Restore mains power, check charge voltage.				Charge Voltage: _____	
Controller operations – Check LED operations on control module.					
Vehicle loop detector - Check operation					
Solar Panels – Measure charge voltage.				Charge Voltage: _____	
SMS Modem – Verify SMS is sent when weather condition is triggered				Message sent: _____	
Check ISDN physical link is established between Site Master Controller and optical fibre backbone.					
Check radio link is established between Site Master Controller and TMC.					

Check radio link is established between Site Master Controller and OEM.				
Check communication occurs with TMC.				
Check communication occurs with OEM.				
Check communication occurs with the Site Slaves.				
<b>Sensors - Site Master</b>				
Visually check sensors for damaged or exposed wiring.				
<p>Snow and Ice Road Sensor</p> <p>In Auto mode cover road sensor with ice – lanterns should start flashing. Check message displayed.</p> <p>Remove ice – lanterns should stop flashing Check message displayed.</p>			<p>Message displayed: _____</p> <p>Message displayed: _____</p>	
<p>Fog Sensor</p> <p>Simulate fog – speed limit drops. Check</p> <p>Remove fog – previous speed is restored.</p>			<p>VSLs speed display: _____</p> <p>VSLs speed display: _____</p>	
<p>Wet Weather Sensor</p> <p>Apply water to the sensor – wet condition is triggered.</p> <p>Remove water – wet condition is cleared.</p>			<p>Display Status: _____</p> <p>Display Status: _____</p>	
<b>RWIS Site Slave (where applicable) - repeat for each Site Slave</b>				
Check operation of Site Slave Controller.				
Check all sensors in accordance with Sensors checklist (above).				

Check ISDN physical link to Site Master.					
Check radio link to Site Master.					
Check Conspicuity/Flashing Lanterns.					
Disconnect ISDN Link and check operation of local controller					
Reconnect ISDN Link and verify normal operation.					
Turn all circuit-breakers OFF and reset; RWIS should report a fault log entry and clearance indicating the related power failure					
Check for high resistance joints					
Check for damaged cables					
Clean and lubricate all mechanical components then cover to test functionality					
Check MEN and earthing					
<b>Sensors - Site Slave</b>					
Visually check sensors for damaged or exposed wiring.					
<p>Snow and Ice Road Sensor</p> <p>In Auto mode cover road sensor with ice – lanterns should start flashing. Check message displayed.</p> <p>Remove ice – lanterns should stop flashing Check message displayed.</p>				<p>Message displayed:</p> <p>Message displayed:</p>	
<p>Fog Sensor</p> <p>Simulate fog – speed limit drops. Check</p> <p>Remove fog – previous speed is restored.</p>				<p>VSLS speed display:</p> <p>VSLS speed display:</p>	

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**Maintenance of Road Weather Information Systems**

Wet Weather Sensor  Apply water to the sensor – wet condition is triggered.  Remove water – wet condition is cleared.				Display Status:  Display Status:	
<b>VMS (where used)</b>					
In accordance with RMS QA R302. Checklist attached (Y/N)?					
<b>VSLs (where used)</b>					
In accordance with RMS QA R303. Checklist attached (Y/N)?					
Retrieve RWIS fault log; verify fault log is reporting sign and controller errors					

**TECHNICIAN:** .....**COMPANY:** .....

**SIGNATURE:** ..... **DATE SIGNED:** .....

**DATE SENT TO RMS:** .....

**ANNEXURE R308/C – SAMPLE INCIDENT SUPPORT REPORT**

**RWIS ID:** ..... **LOCATION:** .....

**INCIDENT DATE:** ..... **REPORT DATE:** .....

Incident Details	
When reported	
Who reported	
Was Incident or fault a dangerous situation? (Y/N)	
Police attendance? (Yes/No) Police Report #:	
Details of any vehicles involved	
Attending supervisor and team at site. Date and time.	
Immediate Safety measures taken. Date & time.	
Power Supply Point / post identification number	

Initial Repair undertaken. Date & time	
Details of long term repair. Whom forwarded to for action.	
Description of replaced equipment and cost of equipment plus materials	
Number of hours claimed for complete repair	
Notes & Comments	

**TECHNICIAN:** ..... **COMPANY:** .....

**SIGNATURE:** ..... **DATE SIGNED:**.....

**DATE SENT TO RMS:** .....



## **ANNEXURE R308/D – FAULTS TYPES AND RESPONSE TIMES**

Response times for initial site attendance upon notification of RWIS faults are detailed in R300 (Clause 6.2.1 Response Times and **Annexure D**). R300 categorizes ITS assets as either High Priority or Normal Priority and assigns suitable response times.