

**PART M70****MAINTENANCE OF TRAFFIC SIGNALS AND ITS FIXTURES****CONTENTS**

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**1. GENERAL**

- .1 This Part specifies the requirements for the maintenance of:
  - (a) Traffic Signals Intersections;
  - (b) Pedestrian Activated Crossings;
  - (c) School Crossings;
  - (d) Emergency Services (Sites), and
  - (e) Intelligent Transport System (ITS) fixtures.
- .2 Where this Part specifies an approved product or approved means, the Contractor must provide full details to the Principal's Representative and obtain approval in writing prior to use of the product or means.
- .3 Documents referenced in this Part are listed below:
  - (a) Clause 7 "DPTI Permits for Working on Roads"
  - (b) Clause 9.3 "Damaged or Defective Lantern Equipment"
  - (c) Clause 9.2 "Scheduled Incandescent Lamp Replacement"
  - (d) Part G40 Safety Provisions for Rail
  - (e) Part 175 Adelaide Metropolitan Passenger Rail Network (AMPRN)
  - (f) Part CH20 "Provision for Traffic"

**2. DEFINITIONS**

- .1 In addition to Clause 2 "Definitions" of the General Conditions of Contract the following apply in this Contract:
 

**"ITS Fixtures"** means the roadside advisory and/or traffic monitoring equipment supporting the Intelligent Transport System.

**"Joint Inspection"** means an inspection with the Contractor and Principal's Representative present.

**"Normal Work Times"** means between 7.00am to 5.00pm on any Business Day.

**"Provisional Maintenance"** means the ad-hoc maintenance activities scheduled to be undertaken at the sole discretion of the Principal, who will provide written notification to the Contractor if these services are required.

**"Scheduled Maintenance"** means the scheduled maintenance activities scheduled in Appendix 1 and Appendix 2 that must be provided by the Contractor.

**"Traffic Management Centre"** (TMC) means the DPTI Traffic Management Centre located at Norwood, telephone 1800 018 313, fax 8226 8200.
- .2 The following abbreviations apply to this Part:

BE Bus Excepted

BL	Bus Lane
EAL	Electric Advisory Lantern (stand alone)
ES	Emergency Services (Sites)
CCTV	Closed Circuit Television (Camera)
ITS	Intelligent Transport System
LED	Light Emitting Diode
NE	No Exit
NRT	No Right Turn
NLT	No Left Turn
PC	Pedestrian Crossing
RSC	Road Safety Camera
SC	School Crossing
SG	Signal Group
TMC	Traffic Management Centre (Contact Numbers 1800 018 313 Fax 8226 8200)
TLWC	Turn Left with Care
TRWC	Turn Right with Care
TS	Traffic Signal
WX	Wombat Crossing
RLX	Rail / Tram Crossing

.3 Traffic Signal Sites are defined as follows:

	<b>POLES (may include overhead Mast Arms)</b>	<b>LANTERNS</b>
Traffic Signal (TS) Minor Site	Up to 12 traffic signal poles, including advance warning sign poles where installed.	Up to 24 traffic signal lanterns, including Electrical Advisory Lanterns (e.g. illuminated NRT, NLT, TRWC).
Traffic Signal (TS) Major Site	More than 12 traffic signal poles, includes advance warning poles	More than 24 traffic signal lanterns, includes Electrical Advisory Lanterns (e.g. illuminated NRT, NLT, TRWC).
Traffic Signal At Rail / Tram Crossing Sites	4 to 6 traffic signal poles	6 to 20 traffic signal lanterns
Pedestrian Crossings (PC) Sites	4 to 14 traffic signal poles	6 to 8 three aspect lanterns and 2 to 4 pedestrian walk/don't walk two aspect lanterns
School Crossings (SC) Sites	2 to 3 traffic signal poles	4 to 6 two aspect lanterns
Wombat Crossings (WX) Sites	4 traffic signal poles	4 to 6 two aspect lanterns
Emergency Services (ES) Sites	1 to 6 traffic signal poles	1 to 7 three aspect lanterns
Stand Alone Electrical Advisory Lanterns *	Consists of 1 or more signals located some distance from an intersection	(e.g. NRT, Prepare to Stop)
Road Safety Cameras (RSC) Sites	Consists of Camera and Flash Poles	RSC Sites are located at Traffic Signal, Pedestrian & Rail / Tram Crossings and Stand Alone sites

.4 \* Sites operating these signals are identified in Appendix 1 "Maintenance Site Schedule".

.5 Note: TS sites may have advance warning signals.

.6 Road Safety Cameras and ITS device locations and cleaning/maintenance schedules are listed in

- (a) Appendix 1; and
- (b) Appendix 2 "CCTV Site Schedule".

### 3. **SUPPLY OF MATERIALS**

.1 Lantern specific parts required to fulfil the terms of this contract, such as LED aspects, lamps, visors, lenses, louvers, seals and lantern door clips will be supplied by the Principal. All other materials, plant,

equipment and labour necessary to provide the services shall be supplied by the Contractor, the cost of which is deemed to be included in the Schedule of Rates.

- .2 Principal supplied materials shall be collected by the Contractor from the DPTI Depot located at 1 Wright Road, Walkley Heights. The Contractor shall give the Principal a minimum of 1 Business Day's notice prior to the collection of materials, which may be collected up to 2 months in advance.
- .3 Any materials damaged by the Contractor shall be replaced at Contractor's expense.

#### **4. QUALITY REQUIREMENTS**

- .1 At a minimum, the Contractor shall provide procedures and/or instructions for the following:
  - (a) setting up and positioning of vehicles at worksites;
  - (b) special requirements at rail crossings;
  - (c) response to condition of signal failure (site blackout or flashing yellow);
  - (d) replacement and identification of correct lamps during routine lamp replacement;
  - (e) replacement of LED aspects, (where required);
  - (f) reporting occurrences of high failure rates; and
  - (g) minimising impact to the environment.
- .2 Further to Part 160WHS MP the Contractor's Safety Plan shall include appropriate procedures, plant, Personal Protective Equipment and appropriate training for:
  - (a) prevention of eye damage from staring directly into the display of LED lanterns;
  - (b) working safely while working on live equipment including changing 230 volt lamps which may become energised during the normal operation of the intersection;
  - (c) identifying and tagging lanterns where there are broken/shattered damaged lamps; and
  - (d) undertaking work on overhead lanterns and equipment (typically attached to mast arms and gantries).

#### **5. PROGRAM OF WORK**

- .1 The program of work shall be in accordance with Appendix 1 and Appendix 2 plus or minus 1 month from the stated month.

#### **6. TRAINING**

- .1 The Principal will conduct an initial training course in accessing lantern equipment for cleaning, lamp replacement and LED aspect replacement (where required), detection of defective or damaged equipment, specific requirements for the testing of School Crossing sites and general reporting requirements.
- .2 Ongoing training is the responsibility of the Contractor. The cost of training is deemed to be included in the rates and no separate payment will be made to the Contractor for training.

#### **7. DPTI PERMITS FOR WORKING ON ROADS**

- .1 Where traffic restrictions are expected to be in place in any one location (eg on any lane) for more than 20 minutes the Contractor shall:
  - (a) notify the Principal' Representative at least 1 week prior to the commencement of the work;
  - (b) complete a "Notification of Works" form available at: <http://www.sa.gov.au/subject/Transport%2C+travel+and+motoring/Transport+industry+services/Road+construction+and+maintenance/Getting+permission+to+carry+out+roadworks> and a Traffic Management Plan and submit it to the TMC;
  - (c) obtain a Permit Number from the TMC;
  - (d) contact the TMC approximately 15 minutes prior to commencement of the work and quote the TMC Permit Number; and
  - (e) notify the TMC at the completion of the works.
- .2 The Contractor shall be deemed to be fully informed that the Principal reserves the right to direct that some or all of the work at specified sites provided in the Notification of Works Form be rescheduled.

## 8. DESCRIPTION OF WORKS AND REQUIREMENTS

### Scheduled Short Term Works

- .1 Scheduled Short Term Works is work that does not restrict traffic in any location (eg on any lane) for more than 20minutes.
- .2 The Contractor shall give the Principal's Representative at least 1 week's notice of all work before commencement. This information shall be e-mailed, or by other means as agreed with the Principal's Representative, to:
  - (a) [DPTI.Traffic Management Centre@sa.gov.au](mailto:DPTI.TrafficManagementCentre@sa.gov.au); and
  - (b) [DPTI.Electrical AssetAdmin@sa.gov.au](mailto:DPTI.ElectricalAssetAdmin@sa.gov.au)
- .3 A TMC Permit Number will be issued to the Contractor by the Principal's Representative for scheduled short term works. This number shall be quoted in all communication with the TMC.

### Scheduled Long Term Works

- .4 Scheduled Long Term Works is work that restricts traffic in any one location (eg on any lane) for more than 20 minutes and shall be undertaken in accordance with Clause 7 "DPTI Permits for Working on Roads".

### Scheduled Bulk Overhead Lantern Maintenance and Overhead CCTV Cleaning Works

- .5 Scheduled Bulk Overhead Lantern Maintenance and Overhead CCTV Cleaning Works shall be undertaken in accordance with Clause 7 "DPTI Permits for Working on Roads".

### Traffic Signals at Rail and Tram Crossing Sites

- .6 Traffic Signals at Rail and Tram Crossing Sites are listed in Appendix 1. The Contractor shall ensure that all personnel working at these sites:
  - (a) Have attended a Rail Safety Awareness Course available at [railsafety@sa.gov.au](mailto:railsafety@sa.gov.au) and have satisfied the requirements of the course, including any refresher training required.
  - (b) Be deemed to be fully informed regarding the requirements of the following DPTI Specification Parts:
    - .1 Part 161 Safety Provisions for Rail; and
    - .2 Part 175 Adelaide Metropolitan Passenger Rail Network (AMPRN) Provisions available at : [http://www.dpti.sa.gov.au/contractor\\_documents/specifications\\_division\\_1](http://www.dpti.sa.gov.au/contractor_documents/specifications_division_1)

### Heavily Trafficked Sites and Rail / Tram Crossing Sites

- .7 Scheduled Maintenance at signalised intersections designated as "Heavily Trafficked Sites" and "Rail / Tram Crossing Sites" shall be undertaken outside of normal work times, unless a risk assessment by the Contractor deems this work to be safe during normal work hours. These sites have high traffic volumes, traffic congestion and added safety requirements. Heavily Trafficked Sites and Rail / Tram Crossing Sites are listed in Appendix 1.
- .8 Prior to work proceeding for the Scheduled Maintenance at Heavily Trafficked Sites and Rail / Tram Crossings Sites each individual site is to have a risk assessment carried out by the Contractor and to have any necessary permits required for the work. A risk assessment should consider the minimal effect on the site and crossing with the operating times of the trains and trams, pedestrian activity and traffic conditions.
- .9 The Contractor shall inform the TMC and the Principal's Representative at least 24 hours prior to working outside of normal work times. Details required include:
  - (a) sites where work is to be carried out; and
  - (b) the date, and approximate start and finish time of all work.
- .10 At completion of work outside of normal work times the Contractor shall notify the TMC.
- .11 Refer to Part 120C "Provision for Traffic" for further requirements regarding restrictions to working time at these sites.

## 9. SCHEDULED MAINTENANCE OF CROSSINGS AND TRAFFIC SIGNALS

### Cleaning of Lanterns

- .1 The Contractor shall use an approved glass cleaning product to thoroughly remove dirt, grease, grime, cobwebs and other foreign matter in accordance with Table 9.1.

<b>TABLE 9.1: LANTERN CLEANING</b>		
<b>LANTERN TYPE</b>		<b>SURFACES TO BE CLEANED</b>
Incandescent (230 Volt and 10 Volt Krypton)	Lanterns	The inside and outside surfaces of all lenses and reflector surface only.
Incandescent (10 Volt Quartz Halogen) (recognisable by the fact that lamps are removed from the rear of the traffic signal reflector)	Lanterns	The outside surfaces of all lenses only. The inside lens and reflector are not required to be cleaned.
Light Emitting Diode (LED) Lanterns.		The outside surfaces of lenses only.

- .2 The inside and outside surfaces of all cowls, louvers (where fitted) and the lantern body and target (backing) boards where fitted shall be thoroughly cleaned, using an approved cleaning product to remove dirt, grease, grime, cobwebs and other foreign matter. Electrical Advisory Lanterns (eg illuminated NRT, NLT, TRWC) shall be cleaned externally only.
- .3 The Contractor shall ensure that:
  - (a) any inoperative lamps are replaced (excluding visibly damaged lamps, refer Clause 9.3 “Damaged or Defective Lantern Equipment”);
  - (b) all lantern doors are closed and secured;
  - (c) broken or missing clips, threaded elbows and wing nuts are replaced;
  - (d) target boards, visors and louvers are not damaged and are in place and resecured or repaired as required;
  - (e) graffiti and posters are removed from all traffic signal components including lanterns, poles, Road Safety Camera poles, target boards and controller boxes by an approved means;
  - (f) (on completion of work all displays are checked for correct operation and lamps found to be faulty are replaced; and
  - (g) general maintenance work is to be recorded on Appendix 3 “General Maintenance Report”.

**Scheduled Incandescent Lamp Replacement**

- .4 Scheduled lamp replacement involves the replacement of existing incandescent lamps (except those in ‘yellow’ and ‘walk’ displays) with appropriate new lamps at 12 month intervals. Yellow and walk lamps are not to be replaced unless faulty.
- .5 The Contractor shall use lamps that are of the correct wattage, voltage and type for the lantern size.
- .6 At School Crossings, only faulty lamps are to be replaced. Checking and testing of the School Crossing is to be carried out by operating the auto-manual switch with the appropriate key and returning the operation of the School Crossing to auto and removing the key at the completion of the test.
- .7 At Emergency Services sites, only faulty lamps are to be replaced.
- .8 The Principal may direct adjustments to the schedule during a maintenance cycle.
- .9 Unless directed otherwise, incandescent lamp wattage values shall comply with Table 9.2:

<b>TABLE 9.2: NOMINAL LAMP WATTAGE</b>				
<b>Lantern Type</b>	<b>230V Low Voltage (Watts)</b>	<b>Incandescent: Voltage</b>	<b>10V Extra Low Voltage (Watts)</b>	<b>Krypton: 10 Volt Quartz Halogen: Extra Low Voltage (Watts)</b>
300 mm Vehicle	100		45	50
200 mm Vehicle	60		30	35
200 mm Pedestrian	60		20	35

**Damaged or Defective Lantern Equipment**

- .10 While undertaking Scheduled Maintenance, the Contractor shall inspect the lantern equipment for any physical damage or defective operation. Details of any damage or defects observed shall be reported to the Principal the next Business Day on Appendix 5 “Defective Lantern and Damaged Equipment Report”.
- .11 Details that shall be reported include:

- (a) damaged reflectors;
  - (b) broken or damaged reflector carrier;
  - (c) discoloured or distorted lenses;
  - (d) lanterns with obvious low light output;
  - (e) lanterns that have deteriorated beyond repair;
  - (f) lanterns that have ingress of water;
  - (g) lanterns not correctly aligned;
  - (h) damaged louvre vanes;
  - (i) other faulty and damaged parts and or equipment;
  - (j) LED lanterns with 'LED string' failure – i.e. 3 or more strings either out, flickering or noticeably dim;
  - (k) LED lanterns with complete aspect failure; and
  - (l) damaged Target (Backing) Boards.
- .12 The Contractor shall not attempt the replacement of lamps that appear to be in a dangerous condition (eg cracked, broken or badly discoloured lamp glass). Lanterns found defective or damaged shall be tagged red for urgent or yellow for non-urgent repairs. A tag shall be placed on the lantern hose (flexible conduit) of the defective or damaged lanterns. Tags shall be supplied by the Contractor. Equipment that may be in a dangerous condition or may give an incorrect or conflicting display shall be treated as urgent. The TMC shall be notified immediately.

#### **Other Scheduled Maintenance**

- .13 Push Buttons - Pedestrian, Audio Tactile and Cyclist Push Buttons at TS and PC sites shall be thoroughly cleaned and disinfected with an approved product and their correct operation checked.
- .14 Pedestrian Motion Detectors - The outside lens surface of the Pedestrian Motion Detectors shall be cleaned with an approved product to remove dirt, grease, cobwebs, grime and other foreign matter. The Contractor shall ensure the alignment is not altered during cleaning.
- (a) Details of any damage or defects observed shall be reported the next Business Day on Appendix 5.
- .15 Stand Alone Electrical Advisory Lanterns (e.g. NRT) - The outside surfaces of the lenses or displays shall be thoroughly cleaned using an approved glass cleaning product to remove dirt, grease, grime, cobwebs and other foreign matter.

### **10. SCHEDULED MAINTENANCE OF ITS FIXTURES**

#### **Road Safety Cameras**

- .1 The Contractor shall:
- (a) check for clear/unimpeded access to the site;
  - (b) report any significant build-up of grass or weeds about the base of the site; and
  - (c) thoroughly clean the outside surfaces of the lenses of the Camera with an approved glass cleaning product to remove dirt, grease, grime, cobwebs and other foreign matter.

#### **Closed Circuit Television Camera (CCTV)**

- .2 CCTV cleaning shall be scheduled on a twelve monthly basis.
- .3 The Contractor shall clean the outside lens of the Camera with an approved product to remove dirt, grease, cobwebs, grime and any other foreign matter.
- .4 On completion of cleaning CCTVs at a site the Contractor shall contact the TMC prior to leaving the site. The TMC will need to check that the cameras are still operating, that the vision is clear and that no camera has been moved.
- .5 Details of any damage or defects observed shall be reported the next Business Day on Appendix 5.

**11. SIGNAL OPERATION**

- .1 Traffic signals shall not be switched off. All traffic signals shall remain operating during routine lamp replacement and during any maintenance work. If a fault develops at a site where the Contractor is working, the Contractor shall notify the TMC immediately of the relevant details.

**12. DAMAGE, DEFECTS AND GENERAL CONDITION OF SITE**

- .1 At each site, the Contractor shall inspect the equipment and site for any physical damage or defective operation, including the following:
  - (a) controller, signal poles and Road Safety Camera poles for looseness or damage;
  - (b) pedestrian, Audio Tactile and Cyclist Push Buttons for damage or defects;
  - (c) ITS Equipment for physical damage or defective operation;
  - (d) pedestrian walkways, e.g. ramps and surfaces for tripping hazards or damage;
  - (e) service pit lids and surrounds for tripping hazards or damage;
  - (f) road surface for potholes, depressions, rutting or damage;
  - (g) line marking for bad fading, missing lines or symbols or damage;
  - (h) fencing for missing damaged panels and or poles;
  - (i) vehicle detector loops for severe distortion, movement or damage;
  - (j) static signs for badly faded or damaged faces (includes road signs);
  - (k) pedestrian Motion Detectors for damage or defects; and
  - (l) CCTV installations for damage.
- .2 Details of any damage or defects observed shall be reported to the Principal on Appendix 4 "Site Defect Report" or Appendix 5 as applicable.

**13. PROVISIONAL MAINTENANCE**

- .1 Where directed by the Principal's Representative, the Contractor shall undertake the timely replacement of failed lamps / LED aspects (either individually or in small numbers). This work is Provisional Maintenance.
- .2 The Principal may provide the Contractor with a list of signalised locations where lamp / LED aspect failure has been reported. This information will include the site and colour of the failed lamp/aspect, but may not necessarily include the exact location and direction. The Contractor shall attend to and rectify all lamp / LED aspect failures within the time specified in the list (three Business Days unless otherwise specified) upon receipt of the list. This service shall be available during normal working hours on a continuous basis for the duration of this Contract.
- .3 The Contractor shall replace failed lamps and ensure the new lamp/s are of the correct wattage, voltage and type of lamp as the failed lamp for the appropriate lantern size. This does not apply to replacement of LED aspects.
- .4 If the Contractor has attended a fault and replaced the failed lamp / LED aspect but the problem is not rectified, then the Contractor shall immediately notify the TMC and specify the exact location, including site number, pole number, direction and colour of the aspect.
- .5 Faulty lamps found and replaced while conducting Scheduled Maintenance in accordance with Clause 9.2 "Scheduled Incandescent Lamp Replacement" at a site are excluded from Lamp Fault Attendance. No separate payment will be made for the cost of the replacement of lamps in these circumstances.

**14. RECORDS**

- .1 The Contractor shall maintain accurate records of maintenance on the following forms and shall submit maintenance records to the Principal's Representative within the stated timeframes:

Record	Time to be Submitted (Business Days from completion of work)
Appendix 1 "Maintenance Site Schedule"	Monthly
Appendix 2 "CCTV Site Schedule"	5
Appendix 3 "General Maintenance Report"	5
Appendix 4 "Site Defect Report"	1

Appendix 5 "Defective Lantern and Damaged Equipment Report"	1
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- .2 These records of works shall be submitted to the Principal's Representative by email, fax, or by other agreed means.

**15. HOLD POINTS**

- .1 There are no Hold Points referenced in this Part.
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