

# ROADWORKS

## TRAFFIC MANAGEMENT PLAN

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INTERSECTION WORKS  
 ABC Contractors Pty Ltd  
 MRWA Contract 123/14  
 April 2017

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**Declaration**

I XXXXX (AWTM Cert No.XXXX) declare that I have designed this Traffic Management Plan following a site inspection on XX/XX/XX. The Traffic Management Plan prepared, **subject to the variations approved**, is in accordance with the Main Roads Code of Practice and AS 1742.3

Signature: ..... Date: XX/XX/XX

	Name / Company	Accreditation Details	Date	Signed
TMP designed by	XXXXXXX	AWTM XXX	XX/XX/XX	
RTM reviewed and Approved by	XXXXXXX	RTM XXXX	XX/XX/XX	
Compliance Audit to be undertaken by:	XXXXXXX	RTM XXXX	XX/XX/XX	
Service Authority Approval	N/A	N/A		
Road Authority Approval	Road authority approval to implement regulatory traffic signs is given for Traffic Management Plan No. XXX-XXXXX  Signed Date _____ Authorised Officer _____  (Print Name) _____ Position _____			

TMP No TSPL- XXX-XXXXX	Rev. No. X	Date XX/XX/XX
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## CONTENTS

<b>1</b>	<b>INTRODUCTION</b>	<b>7</b>
1.1	PURPOSE AND SCOPE	7
1.2	OBJECTIVES AND STRATEGIES	7
<b>2</b>	<b>PROJECT OVERVIEW</b>	<b>7</b>
2.1	LOCATION.	7
2.2	PROJECT DETAILS AND SITE CONSTRAINTS/IMPACTS	8
<b>3</b>	<b>PROJECT REPRESENTATIVES</b>	<b>11</b>
<b>4</b>	<b>TRAFFIC MANAGEMENT ADMINISTRATION</b>	<b>12</b>
<b>5</b>	<b>SAFETY PLAN</b>	<b>12</b>
5.1	OCCUPATIONAL SAFETY HEALTH	12
5.2	COMPETENCIES	13
5.3	RESPONSIBILITIES	13
5.4	SPECIFIC RESPONSIBILITIES.	14
5.4.1	PROJECT MANAGER	14
5.4.2	SITE SUPERVISOR	15
5.4.3	TRAFFIC MANAGEMENT PERSONNEL	15
5.4.4	TRAFFIC CONTROLLERS	15
5.4.5	WORKERS AND SUBCONTRACTORS	16
5.5	PERSONAL PROTECTIVE EQUIPMENT	16
5.6	PLANT AND EQUIPMENT	16
5.7	INCIDENT/ACCIDENT PROCEDURES	16
5.8	TRIP HAZARDS	17
5.9	PROVISION TO ADDRESS ENVIRONMENTAL CONDITIONS	17
5.9.1	WEATHER	17
5.9.2	TERRAIN	18
5.9.3	VEGETATION	19
5.9.4	EXISTING TRAFFIC AND ADVERTISING SIGNAGE	19

5.9.5	STRUCTURES	19
<b>5.10</b>	<b>WORKSITE ACCESS</b>	<b>19</b>
5.10.1	PEDESTRIAN ACCESS (INCLUDING FACILITIES FOR THE DISABLED)	19
5.10.2	CYCLISTS	19
5.10.3	SITE ACCESS FOR WORKS VEHICLES	19
5.10.4	EMERGENCY VEHICLE ACCESS.	20
5.10.5	PUBLIC TRANSPORT.	20
5.10.6	ACCESS TO ADJOINING DEVELOPMENT/PROPERTIES	20
5.10.7	EXISTING PARKING FACILITIES	20
5.10.8	SPECIAL EVENTS AND OTHER WORKS.	21
5.10.9	SCHOOL CROSSINGS.	21
5.10.10	IMPACT ON ADJOINING ROAD NETWORK	21
5.10.11	HEAVY AND OVERSIZE VEHICLES AND LOADS	21
<b><u>6 HAZARD IDENTIFICATION AND RISK ASSESSMENT AND LEGAL REQUIREMENTS.</u></b>		<b><u>22</u></b>
6.1	RISK CLASSIFICATION TABLES	22
6.2	RISK REGISTER.	25
6.3	LEGAL AND OTHER REQUIREMENTS	28
<b><u>7 EMERGENCY ARRANGEMENTS</u></b>		<b><u>29</u></b>
7.1	EMERGENCY SERVICES	29
7.2	DANGEROUS GOODS	29
7.3	DAMAGE TO SERVICES	29
7.4	FAILURE OF SERVICES	29
7.4.1	FAILURE OF TRAFFIC SIGNALS	29
7.4.2	FAILURE OF STREET LIGHTING	29
7.4.3	FAILURE OF POWER	29
7.5	CONTINGENCY PLANNING.	30
7.5.1	ROAD CRASH OR VEHICLE BREAKDOWN WITHIN SITE.	30
7.5.2	SERIOUS INJURY OR FATALITY.	30
7.6	EMERGENCY CONTACTS	30
<b><u>8 APPROVALS</u></b>		<b><u>31</u></b>

<b>8.1 GENERAL</b>	<b>31</b>
<b><u>9 NOTIFICATION</u></b>	<b><u>31</u></b>
9.1 PUBLIC NOTIFICATION	31
9.2 NOTIFICATION OF OTHER AGENCIES	31
<b><u>10 TRAFFIC ASSESSMENT.</u></b>	<b><u>32</u></b>
10.1 EXISTING & PROPOSED SPEED ZONES	32
10.2 EXISTING TRAFFIC ENVIRONMENT	32
10.3 MINIMUM LANE REQUIREMENTS AND CARRIAGEWAY IMPACTS.	32
10.4 DURATION AND HOURS OF PROPOSED WORKS	32
10.5 INTERSECTION WORKS.	32
10.6 BARRIER REQUIREMENTS	33
<b><u>11 TRAFFIC MANAGEMENT IMPLEMENTATION.</u></b>	<b><u>33</u></b>
11.1 TRAFFIC MANAGEMENT STAGING.	33
11.1.1 STAGE 1	33
11.1.2 STAGE 2	33
11.1.3 STAGE 3	34
11.1.4 STAGE 4	34
11.1.5 STAGE 5	34
11.1.6 STAGE 6	34
11.1.7 NIGHT WORK PROVISIONS	34
11.1.8 AFTER CARE	34
11.2 HAZARD IDENTIFICATION, RISK ASSESSMENT AND CONTROL	34
11.3 TRAFFIC CONTROL DIAGRAMS	35
11.4 SEQUENCE AND STAGING	35
11.5 SIGNAGE AND DEVICE REQUIREMENTS.	36
<b><u>12 COMMUNICATION.</u></b>	<b><u>36</u></b>
12.1 GENERAL	36
<b><u>13 TRAFFIC MANAGEMENT MONITORING.</u></b>	<b><u>36</u></b>

<b>13.1 DAILY INSPECTIONS</b>	<b>36</b>
13.1.1 BEFORE WORK STARTS.	37
13.1.2 DURING WORK HOURS.	37
13.1.3 CLOSING DOWN EACH DAY	38
13.1.4 AFTER HOURS	38
<b>13.2 TMP AUDITING</b>	<b>38</b>
<b>13.3 RECORDS.</b>	<b>38</b>
<b><u>14 TRAFFIC MANAGEMENT IMPLEMENTATION STANDARDS.</u></b>	<b><u>39</u></b>
<b>14.1 SEQUENCE AND STAGING</b>	<b>39</b>
<b>14.2 SIGNAGE</b>	<b>40</b>
14.2.1 ALIGNMENTS AND SIGNAGE DETAILS.	40
14.2.2 REQUIREMENTS FOR SIGNS.	40
14.2.3 TOLERANCES ON POSITIONING OF SIGNS AND DEVICES	41
<b>14.3 FLASHING ARROW SIGNS.</b>	<b>41</b>
<b>14.4 DELINEATION.</b>	<b>42</b>
14.4.1 GENERAL	42
14.4.2 DELINEATION SPACING.	43
<b>14.5 SPEED ZONING.</b>	<b>43</b>
<b>14.6 PROVISION FOR NIGHT WORKS.</b>	<b>44</b>
<b>14.7 TEMPORARY PAVEMENT MARKINGS</b>	<b>44</b>
<b>14.8 AFTERCARE SIGNAGE</b>	<b>44</b>
<b>14.9 TAPER LENGTHS</b>	<b>45</b>
<b><u>15 MANAGEMENT REVIEW</u></b>	<b><u>45</u></b>
<b>15.1 TMP REVIEW AND IMPROVEMENT</b>	<b>45</b>
<b>15.2 VARIATIONS TO STANDARDS AND PLANS</b>	<b>45</b>
<b><u>16 REFERENCES</u></b>	<b><u>46</u></b>
<b><u>APPENDIX A NOTIFICATION OF ROAD WORKS</u></b>	<b><u>47</u></b>
<b><u>APPENDIX B VARIATION TO STANDARDS</u></b>	<b><u>48</u></b>
<b><u>APPENDIX C - RECORD FORMS</u></b>	<b><u>50</u></b>

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<b>DAILY DIARY</b>	<b>50</b>
<b>DAILY INSPECTION SHEET.</b>	<b>51</b>
<b>INCIDENT REPORT FORM.</b>	<b>52</b>
<b>APPENDIX D TRAFFIC CONTROL DIAGRAMS.</b>	<b>54</b>

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GLOSSARY

AS	Australian Standard
AS/NZS	Australian and New Zealand Standard
AWTM	Advanced Worksite Traffic Management / Manager
CoP	Traffic Management for Works on Roads Code of Practice (MRWA)
MRWA	Main Roads Western Australia
OS&H	Occupational Safety and Health
RTM	Roadworks Traffic Manager (accredited by MRWA)
SRSA	Senior Road Safety Auditor
TCD	Traffic Control Diagram
TMP	Traffic Management Plan

## 1 Introduction

### 1.1 Purpose and Scope

This Traffic Management Plan (TMP) outlines the traffic control and traffic management procedures to be implemented by the *Contractor ABC* to manage potential hazards associated with the traffic environment during the project.

### 1.2 Objectives and Strategies

The objectives of the Traffic Management Plan are:

- To provide protection to workers and the general public from traffic hazards that may arise as a result of the construction activity.
- To manage potential adverse impacts on traffic flows to ensure network performance is maintained at an acceptable level.
- To minimise adverse impacts on users of the road reserve and adjacent properties and facilities.

In an effort to meet these objectives the Traffic Management Plan will incorporate the following strategies;

- Providing a sufficient number of traffic lanes to accommodate vehicle volumes.
- Ensuring delays are minimised.
- Ensuring all road users are managed including motorists, pedestrians, cyclists, people with disabilities and people using public transport.
- Ensuring work activities are carried out sequentially to minimise adverse impacts.
- Provision will be made for works personnel to enter the work area in a safe manner in accordance with safety procedures.
- All entry and exit movements to and from traffic streams shall be in accordance with the requirements of safe working practices.

## 2 Project Overview

### 2.1 Location.

The project site is located at the intersection of Road A and Road B in XXXX as shown in Figure 1.0 below.



Figure 1 Site Location

## 2.2 Project Details and Site Constraints/Impacts

ITEM	DESCRIPTION
Project	The project involves improvement works including off-road clearing and pavement widening to provide a passing lane for through traffic at the intersection of Road A and Road B, XXXX.
Classification	Road A is a two lane sealed road that provides connection between Town X and Town Y having a posted speed zone of 110km/h. Road B is a sealed road that provides connection between Road A and Town Z to the north having a posted speed zone of 110km/h. The works proposed classify the traffic management as “non-complex”
Road Authority	Main Roads WA.
Local Government	Shire of XXX.
Client	ABC Contractors.
Prime Contractor	ABC Contractors.



TRAFFIC MANAGEMENT PLAN

ITEM	DESCRIPTION
Sub-Contractor	XYZ Contracting.
Scope of Works	<ul style="list-style-type: none"><li>• Off road clearing work.</li><li>• Construct off road pavement works.</li><li>• Construct new road pavement and tie to existing carriageway.</li></ul>

## TRAFFIC MANAGEMENT PLAN

ITEM	DESCRIPTION
Staging of Work	<p>In terms of traffic management the work will be carried out in six main stages and is intended construction works will only be undertaken during normal daytime work shift hours.</p> <p>The off road works beyond 6 metres from the edge of the nearest traffic lane will be completed using advance signage installed on all approaches to the work site in accordance with AS1742.3.</p> <p>The off road works beyond 3 metres from the edge of the nearest traffic lane will be completed with advance signage installed on all approaches to the work site incorporating a reduced speed zone of 80km/h and the work site being delineated with bollards and/or containment fencing.</p> <p>The off road works between 1.2 metres and 3 metres from the edge of the nearest traffic lane will be completed with advance signage installed on all approaches to the work site incorporating a reduced speed zone of 60km/h and the work site being delineated with bollards and or containment fencing.</p> <p>The tie-in works between the existing carriageway and required road widening works will be completed under a single reverse flow operation with 'stop/slow' being implemented under the direction of accredited traffic controllers. Advance signage will be installed on all approaches to the work site incorporating a reduced speed zone of 40km/h or 60km/h (depending on proximity of workers).</p> <p>Advance signage will be installed on all approaches to the work site out of work shift hours. All excavations shall be backfilled and any hazards within the clear zone shall be removed or protected, the worksite is to be delineated with bollards and/or cones.</p> <p>If necessary, accredited traffic controllers will be used to stop traffic to allow for the manoeuvring of plant and equipment.</p> <p>When traffic controllers are used, the Contractor shall ensure that all required signage has been installed, traffic controllers follow correct procedures and are stationed on the road edge / traffic island clear of through traffic.</p>

## TRAFFIC MANAGEMENT PLAN

ITEM	DESCRIPTION
Project Date	The modification works are expected to be undertaken over a ten week period during April and May, 2017.
Hours / Days of Work	7 AM to 5 PM Monday to Sunday
Duration of Work	10 weeks.
Other Constraints	<p>Due to the existing traffic environment it will be necessary to impose site constraints which will include:</p> <ul style="list-style-type: none"> <li>• Implementing a lane closure with traffic being under the direction of accredited traffic controllers using stop/slow/bats.</li> <li>• Advance advisory signage will be installed on all approaches to the work site for a reduced speed zone of 40km/h, 60km/h or 80km/h.</li> <li>• Ensuring the work site length satisfies AS1742.3 requirements for the anticipated traffic volumes for the stop/slow operation.</li> </ul> <p>The traffic control layout for the worksite location is detailed in the Traffic Control Diagrams (TCD's) included in this Traffic Management Plan.</p>
Concurrent/adjacent Works or Projects	No concurrent works are planned.

### 3 Project Representatives

Road Authority	Main Roads WA.
Road Authority Representative	S Guy 0400 000 001
Local Government	Shire of XXX
Contact	A Manager 1300 635 845
Client	ABC Contractor.

## TRAFFIC MANAGEMENT PLAN

Contact	A Contractor 0004 000 000
Prime Contractor	ABC Contractor.
Project Manager / Site Contact	P Manager 0004 000 700
Sub-Contractor	Contact prime Contractor.
Supervisor / Site Contact	S Supervisor 0004 000 700

### 4 Traffic Management Administration

TMP Design	TMP Design Company
Contact Details	A Designer 0004 222 2222.
Traffic Management by	TMP Control Company
Site Contact	T Controller 0004 111 111.

### 5 Safety Plan

#### 5.1 Occupational Safety Health

All persons and organisations undertaking these works or using the roadwork site have a duty of care under statute and common law to themselves, their employees and all site users, lawfully using the site, to take all reasonable measures to prevent accident or injury.

All traffic management works and control devices shall be in accordance with

- AS 1742 – Manual of uniform traffic control devices
  - Part 1 – General introduction and index of signs
  - Part 2 – Traffic control for general use
  - Part 3 – Traffic control for works on roads
  - Part 4 – Speed controls
- AS/NZS ISO 31000– Risk Management – Principles and Guidelines

- AS/NZS 4602– High visibility safety garments
- Disability Services Act
- Guide to Preparation of Traffic Management Plans
- Local Government Act
- Main Roads Act
- MRWA Specification 202
- Occupational Safety & Health Act
- Occupational Safety & Health Regulations
- Road Traffic Act
- Road Traffic Code
- Traffic Controllers' Handbook
- Traffic Management for Events Code of Practice
- Traffic Management for Works on Roads Code of Practice
- Traffic Management Plan Preparation Guidelines
- Truck and Trailer Mounted Attenuator National Guidelines

### 5.2 Competencies

ABC Contractors (the Contractor) have engaged TMP Design Company to prepare this Traffic Management Plan and associated controls for the works.

The Contractor will ensure that at all times during working hours a supervisory person will be available who is accredited in “Basic Worksite Traffic Management” as well as ensuring that traffic controllers used on the project are experienced in high traffic volume situations and have completed the recommended accredited courses in traffic control.

### 5.3 Responsibilities

The Project Manager has the ultimate responsibility to ensure the TMP is implemented for the prevention of injury and property damage to employees, contractors, sub-contractors, road users and all members of the public.

The Project manager will ensure all site personnel are fully aware of their responsibilities, and that traffic controllers are appropriately trained and accredited and that sufficient controllers are available to ensure appropriate breaks are taken.

All personnel engaged in the field activities will follow the correct work practices as required by AS1742.3.

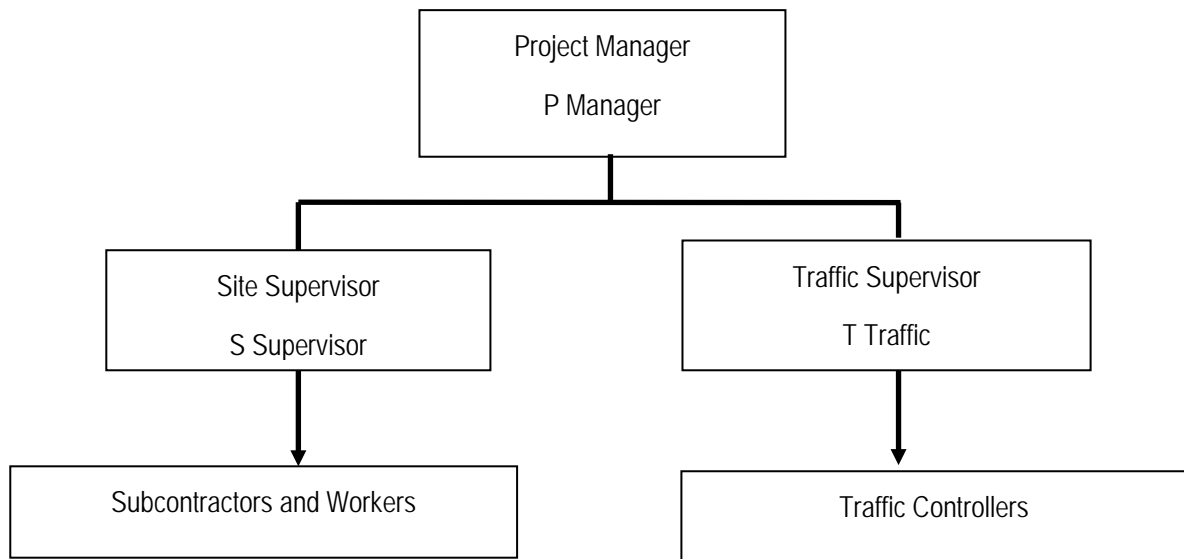
All personnel will not commence or continue work until all signs, devices and barricades are in place and operational in accordance with the requirements of the TMP.

All personnel responsible for traffic control shall ensure that the number, type and location of signs, devices and barricades are to a standard not less than Appendix F of this plan and AS1742.3 (except where specifically detailed in this TMP with reasons for the variations). Should a situation arise that is not covered by this TMP or AS1742.3, the Road Authority Representative shall be notified.

The Road Authority Representative may direct erection, relocation or removal of signs or devices, which, in the opinion of the Road Authority Representative, are not in accordance with the TMP and do not provide sufficient safety for road users. If such directions are not complied with, the Road Authority Representative may arrange for erection, relocation or removal by others at the cost of the Contractor.

#### 5.4 Specific Responsibilities.

The following diagram outlines the responsibility hierarchy of this contact.



##### 5.4.1 Project Manager

The project manager shall:

- Ensure all traffic control measures of this TMP are placed and maintained in accordance with this plan and the relevant Acts, Codes, Standards and Guidelines.
- Ensure suitable communication and consultation with the affected stakeholders is maintained at all times

- Ensure inspections of the Traffic Controls are undertaken in accordance with the TMP, and results recorded. Any variations shall be detailed together with reasons.
- Review feedback from field inspections, worksite personnel and members of the public, and take action to amend the traffic control measures as appropriate following approval from the Road Authority's Representative.
- Arrange and/or undertake any necessary audits and incident investigations.

### 5.4.2 Site Supervisor

The site supervisor is responsible for overseeing the day-to-day activities, and is therefore responsible for the practical application of the TMP, and shall:

- Instruct workers on the relevant safety standards, including the correct wearing of high visibility safety vests.
- Ensure traffic control measures are implemented and maintained in accordance with the TMP.
- Undertake and submit the required inspection and evaluation reports to management.
- Render assistance to road users and stakeholders when incidences arising out of the works affect the network performance or the safety of road users and workers.
- Take appropriate action to correct unsafe conditions, including any necessary modifications to the TMP.

### 5.4.3 Traffic Management Personnel

- The Traffic Management Company responsible for the implementation of the traffic management shall be registered on the State Road Traffic Management Company Registration Scheme.
- At least one person on site shall be accredited in Basic Worksite Traffic Management, and shall have the responsibility of ensuring the traffic management devices are set out in accordance with the TMP
- At least one person accredited in Advanced Worksite Traffic Management shall be available to attend the site at short notice at all times to manage variations, contingencies and emergencies, and to take overall responsibility for traffic management.

### 5.4.4 Traffic Controllers

Traffic Controllers shall be used to control road users to avoid conflict with plant, workers, traffic and pedestrians, and to stop and direct traffic in emergency situations.

Traffic Controllers shall:

- Work for a company registered on the State Road Traffic Management Company Registration Scheme.
- Operate in accordance with Section 4.6 and Appendix B of AS1742.3
- Be accredited in Basic Worksite Traffic Management
- Hold a current Traffic Controller's accreditation
- Take appropriate breaks as required by AS1742.3 and/or OS&H Regulations.

### 5.4.5 Workers and Subcontractors

Workers and Subcontractors shall:

- Correctly wear high visibility vests, in addition to other protective equipment required (e.g. footwear, eye protection, helmet sun protection etc), at all times whilst on the worksite
- Comply with the requirements of the TMP and ensure no activity is undertaken that will endanger the safety of other workers or the general public
- Enter and leave the site by approved routes and in accordance with safe work practices

### 5.5 Personal Protective Equipment

All personnel entering the work site shall correctly wear high visibility vests to AS/NZS 4602, in addition to other protective equipment required on a site-by-site basis (e.g. protective footwear, eye protection, helmet, sun protection, respiratory devices etc.) at all times whilst on the worksite.

### 5.6 Plant and Equipment

All plant and equipment at the workplace shall meet statutory requirements and have the required registration, licences or certification where required. All mobile equipment shall be fitted with suitable reversing alarms. All mobile plant and vehicles shall be fitted with a pair of rotating flashing yellow lamps in accordance with AS1742.3 clause 3.12.1. All workers will be made aware of the safe work practice at the time of the site induction.

### 5.7 Incident/Accident Procedures

In the event of an incident or accident, whether or not involving traffic or road users, all work shall cease and traffic shall be stopped as necessary to avoid further deterioration of the situation. First Aid shall be administered as necessary, and medical assistance shall be called for if required. For life threatening injuries an ambulance shall be called on telephone number 000. The Police shall also be called on 000 for traffic crashes where



life threatening injuries are apparent. Any traffic crash resulting in non-life threatening injury shall immediately be reported to the WA Police Service on 131 444.

Broken down vehicles and vehicles involved in minor non-injury crashes shall be temporarily moved to the verge as soon as possible after details of the crash locations have been gathered and noted. Where necessary to maintain traffic flow, vehicles shall be temporarily moved into the closed section of the work area behind the cones, providing there is no risk to vehicles and their occupants or workers. Suitable recovery systems shall be used to facilitate prompt removal of broken down or crashed vehicles. Assistance shall be rendered to ensure the impact of the incident on the network is minimised.

Details of all incidents and accidents shall be reported to the Site Supervisor and Project Manager using the incident report form at Appendix "D".

### 5.8 Trip Hazards

The worksite and its immediate surroundings shall be suitably protected and free of hazards, which could result in tripping by non-motorised road users. Hazards, which cannot be removed, shall be suitably protected to prevent injury to road users, including those with sight impairment. Where level differences are significant, suitable barriers, which preclude pedestrian access shall be used.

Where works extend beyond daylight hours and adjacent lighting is insufficient to illuminate hazards to non-motorised road users, appropriate temporary lighting shall be installed.

The worksite shall be kept tidy to reduce the risk to workers.

### 5.9 Provision to Address Environmental Conditions

#### 5.9.1 Weather

Weather is not expected to adversely impact on the effectiveness of the traffic control detailed on the attached TCD's. Notwithstanding this, should adverse weather conditions be encountered during the works, the following contingency plans shall be activated.

##### 5.9.1.1 Rain

In the event of rain, an on-site assessment shall be made and sign spacing and tapers may be extended by up to 25% to account for increased stopping distances. "Slippery When Wet" signs may be placed as required and all changes shall be recorded in the daily diary.

Where rain occurs, traffic management personnel shall audit the site and where signage and / or devices are not clearly visible, Traffic Controllers shall adjust signage to improve visibility or if necessary provide additional signage and delineation. Where stopping

distances are adversely affected by wet surfaces, Traffic Controllers shall adjust spacing between signs to provide increased reaction time for drivers. All changes shall be noted in the daily diary.

### 5.9.1.2 Floods

Should works be affected by flooding to the extent that the worksite becomes impassable or risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site and direct traffic around the flooded area. Emergency services and the Road Authority shall be notified immediately and Traffic Controllers shall remain onsite until emergency services and the Road Authority personnel arrive and take control of the site.

### 5.9.1.3 Sun Glare

Where sun glare is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, Traffic Controllers shall adjust sign locations and provide additional delineation and traffic control devices necessary to address the risk from glare. Additionally, in the event that traffic control is adversely affected by glare at sunset and sunrise, traffic controllers will assist in maintaining low traffic speeds.

All changes are to be noted in the daily diary.

### 5.9.1.4 Fog/Dust/Smoke

Where fog, dust or smoke is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, traffic management personnel shall adjust sign locations and provide additional delineation and traffic control devices necessary to address the risk from glare. All changes are to be noted in the daily diary.

Should works be affected by fog, dust or smoke to the extent that risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site. Emergency services and the Road Authority shall be notified immediately and Traffic Controllers shall remain onsite until emergency services and the Road Authority personnel arrive and take control of the site.

### 5.9.2 Terrain

There are no identified impacts associated with the terrain of the site. Notwithstanding this, should the initial set out inspection indicate adverse impacts associated with the terrain, traffic control should be modified to address identified issues and changes noted in the daily diary.

### 5.9.3 Vegetation

There are no identified impacts associated with vegetation at the site. Notwithstanding this, should the initial set out inspection indicate adverse impacts associated with vegetation, traffic control shall be modified to address identified issues and changes noted in the daily diary.

### 5.9.4 Existing Traffic and Advertising Signage

There are no identified impacts associated with existing traffic signage; where existing traffic signage is located within the traffic control zone, and is contrary to the temporary traffic control the signs shall be covered.

There are no identified impacts associated with advertising signage. Notwithstanding this, should the initial set out inspection and the night inspection indicate adverse impacts associated with advertising signage, traffic control shall be modified and changes noted in the daily diary.

### 5.9.5 Structures

There are no identified impacts associated with structures. Notwithstanding this, should the initial set out inspection and the night inspection indicate adverse impacts associated with structures, traffic control shall be modified and changes noted in the daily diary.

## 5.10 Worksite Access

### 5.10.1 Pedestrian Access (including Facilities for the disabled)

There is no specific facility or service nearby that would increase normal use of the road facilities by people with disabilities and other vulnerable road users.

There are no schools in the vicinity of the worksite.

There are no pedestrian facilities in the vicinity of the worksite.

### 5.10.2 Cyclists

Where necessary, traffic controllers will direct and assist cyclists through the worksite during the works as detailed on the Traffic Control Diagrams.

### 5.10.3 Site Access for Works Vehicles

Construction vehicles entering and exiting the traffic stream shall be mindful of the conditions that may affect the safety of these movements.

All entry and exit movements will be in accordance with the Road Traffic Code and shall be undertaken in the following manner:

Access points shall be notified to work personnel and suppliers.

Vehicles shall:

- Decelerate slowly and signal their intention by indicator to leave the traffic stream.
- Activate the vehicle's rotating yellow lamp, where fitted, once a speed of 20 km/h. has been reached and at least 50m prior to the exit location.
- Switch on the vehicle hazard lights once the vehicle is stationary.
- Where risks associated with unassisted exit or entry to or from the traffic stream are high, Traffic Controllers should be used to assist entry and exit movements.

Vehicles fitted with rotating amber lamps shall have the vehicle's rotating lamp activated prior to entering the traffic stream and shall undertake the following.

- Switch off the vehicle hazard lights.
- Indicate intention to enter the traffic stream using direction indicators.
- Ensure there is a suitable gap from oncoming traffic to allow for a safe entry manoeuvre; and,
- Turn off the rotating yellow lamp(s) once a speed of 40 km/h is reached.

Entry and exit manoeuvres shall be avoided in close proximity to intersections. Work personnel shall not cross traffic streams on foot unless absolutely necessary.

#### 5.10.4 Emergency Vehicle Access.

At all times when employees are on site, the Site Supervisor will take whatever action is practicable to assist emergency vehicles, tow trucks and/or service vehicles to gain access to crash or vehicle breakdown sites which are causing, or have the potential to cause an obstruction to traffic flow or imperil the safety of road users.

#### 5.10.5 Public Transport.

Public transport will not be affected by the works.

#### 5.10.6 Access to Adjoining Development/Properties

Where access to properties is impacted by the proposed works or the associated traffic control systems arrangements will be made to maintain property access wherever practicable to do so. Property owners or occupiers adjacent to the work site will be advised of the works via advance written notification informing them of the works, the likely duration and the possible impact on property access

#### 5.10.7 Existing Parking Facilities

There is no on street parking that needs to be catered for.

5.10.8 Special Events and Other Works.

Assessment confirms that there are no Special events planned during the project or other works expected in the vicinity of the construction site. As such, no impacts are expected.

5.10.9 School Crossings.

There are no school crossings in the vicinity of the worksite.

5.10.10 Impact on Adjoining Road Network

The works are not expected to impact on adjoining road network.

5.10.11 Heavy and Oversize Vehicles and Loads

The through road is a RAV route. Heavy vehicle services have been contacted and the required sealed width for most Oversized Vehicles and Loads will be 3.5 metres. Any loads that require additional seal width will be provided with the project managers contact details to let them know that they are coming. The project needs to provide for this. HVS will need to be updated by the project manager regarding the status of this project.

## 6 Hazard Identification and Risk Assessment and Legal Requirements.

The following details the preliminary assessment of site hazards likely to be encountered, the level of risk associated with each and the control proposed. Note that the risk level is the level of assessed risk *without* the controls in place. The controls listed have been determined as being appropriate in reducing the risk to a level that is acceptable.

### 6.1 Risk Classification Tables

#### QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Consequence	Description
1	Insignificant	Mid-block hourly traffic flow per lane is equal to or less than the allowable lane capacity detailed in AS1742.3. No impact to the performance of the network. Affected intersection leg operates at a Level of Service (LoS) of A or B. No property damage.
2	Minor	Mid-block hourly traffic flow per lane is greater than the allowable road capacity and less than 110% of the allowable road capacity as detailed in AS1742.3. Minor impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of C. Minor property damage.
3	Moderate	Midblock hourly traffic flow per lane is equal to and greater than 110% and less than 135% of allowable road capacity as detailed in AS1742.3. Moderate impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of D. Moderate property damage.
4	Major	Midblock hourly traffic flow per lane is equal to and greater than 135% and less than 170% of allowable road capacity as detailed in AS1742.3. Major impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of E. Major property damage.
5	Catastrophic	Midblock hourly traffic flow per lane is equal to and greater than 170% of allowable road capacity as detailed in AS1742.3. Unacceptable impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of F. Total property damage.

**OSH QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT**

Level	Consequence	Description
1	Insignificant	No treatment required
2	Minor	First aid treatment required.
3	Moderate	Medical treatment required or Lost Time Injury
4	Major	Single fatality or major injuries or severe permanent disablement
5	Catastrophic	Multiple fatalities.

**QUALITATIVE MEASURES OF LIKELIHOOD**

Level	Likelihood	Description
A	Almost certain	The event or hazard: is expected to occur in most circumstances, will probably occur with a frequency in excess of 10 times per year.
B	Likely	The event or hazard: Will probably occur in most circumstances, will probably occur with a frequency of between 1 and 10 times per year.
C	Possible	The event or hazard: might occur at some time, will probably occur with a frequency of 0.1 to 1 times per year (i.e. once in 1 to 10 years).
D	Unlikely	The event or hazard: could occur at some time, will probably occur with a frequency of 0.02 to 0.1 times per year (i.e. once in 10 to 50 years).
E	Rare	The event or hazard: may occur only in exceptional circumstances, will probably occur with a frequency of less than 0.02 times per year (i.e. less than once in 50 years).

**IMPORTANT NOTE:** The likelihood of an event or hazard occurring shall first be assessed over the duration of the activity (i.e. “period of exposure”). For risk assessment purposes the assessed likelihood shall then be proportioned for a “period of exposure” of one year.

Example: An activity has a duration of 6 weeks (i.e. “period of exposure” = 6 weeks). The event or hazard being considered is assessed as likely to occur once every 20 times the activity occurs (i.e. likelihood or frequency = 1 event/20 times activity occurs = 0.05 times per activity). Assessed annual likelihood or frequency = 0.05 times per activity x 52 weeks/6 weeks = 0.4 times per year. Assessed likelihood = Possible.

TRAFFIC MANAGEMENT PLAN

**QUALITATIVE RISK ANALYSIS MATRIX – RISK RATING**

Likelihood	Consequence				
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Almost certain (A)	Low 5	High 10	High 15	Very High 20	Very High 25
Likely (B)	Low 4	Medium 8	High 12	Very High 16	Very High 20
Possible (C)	Low 3	Low 6	Medium 9	High 12	High 15
Unlikely (D)	Low 2	Low 4	Low 6	Medium 8	High 10
Rare (E)	Low 1	Low 2	Low 3	Low 4	Medium 7

**MANAGEMENT APPROACH FOR RESIDUAL RISK RATING**

Residual Risk Rating	Required Treatment
Very High	Unacceptable risk. <b>HOLD POINT.</b> Work cannot proceed until risk has been reduced.
High	High priority, OSH MR and Roadworks Traffic Manager (RTM) must review the risk assessment and approve the treatment and endorse the TCD prior to its implementation.
Medium	Medium Risk, standard traffic control and work practices subject to review by accredited AWTM personnel prior to implementation.
Low	Managed in accordance with the approved management procedures and traffic control practices.



## TRAFFIC MANAGEMENT PLAN

### 6.2 Risk Register.

Item	Risk Event	Consequence (worst most likely)	Pre – treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
1.	High traffic speed may increase the potential for conflict between through traffic and construction personnel.	Injury to road workers.	B	4	VH (16)	Traffic planning requires traffic controls to be installed to direct traffic around the work site and a reduction in the speed zone of the carriageways approaching and passing the works.	D	4	M (8)
2.	A road user may misread the required alignment vehicles are to take on account of modifications required to accommodate road works. This could result in through vehicles colliding with work personnel or work vehicles.	Injury to road workers.	C	3	M (9)	Traffic planning requires traffic controls to be installed to direct traffic around the work site and a reduction in the speed zone of the carriageways approaching and passing the works. The TMP and Traffic Control Diagrams detail the temporary controls and advance warning and directional signage to be used in accordance with the requirements of AS 1742.3. Traffic Controllers are to be on site during reversible flow to direct road users.	D	3	L (6)
3.	Incorrectly designed and / or installed traffic controls may result in inadequate protection of the worksite with a subsequent increased potential for crashes and injury.	Injury to road workers.	D	3	L (6)	Qualified and experienced personnel have been employed in the preparation of the TMP and associated TCD's and experienced personnel will be used to implement and maintain the traffic control onsite.	E	3	L (3)
4.	Traffic Control workers may be hit by vehicles during set up of the traffic control signage and devices	Injury to traffic control personnel	C	4	H (12)	Ensure traffic control workers are adequately trained/experienced and following appropriate procedures in accordance with AS 1742.3 when implementing traffic management.	D	4	M (8)

## TRAFFIC MANAGEMENT PLAN

Item	Risk Event	Consequence (worst most likely)	Pre – treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
5.	Sun glare may result in a decreased readability of the traffic control delineation and signage and may increase the potential for crashes.	Injury to road users.	D	3	L (6)	The TMP requires that the Contractor undertakes a daily audit of the traffic control and make adjustments as are necessary to ensure effectiveness is maintained. Experienced personnel specialising in the erection and maintenance of traffic control will be used. All signage shall be Class 1 retro-reflective.	E	3	L (3)
6.	The restrictions placed on the traffic lanes by the works could result in roadway capacity being decreased to the point where unacceptable delays and congestion occur.	Unacceptable delays. Adverse public reaction.	E	3	L (3)	The traffic flows expected are within capacity levels and issues should not be experienced.	E	3	L (3)
7.	Restrictions and delays associated with the traffic control may cause unacceptable delays to emergency services.	Delay may result in failure to respond to emergency in time resulting in a fatality.	D	3	L (6)	The TMP details the consultation and communication mechanisms undertaken with Emergency services and how these will be managed. It also requires that all works personnel respond to emergency traffic to facilitate safe and unhindered passage.	E	3	L (3)
8.	The interaction of work personnel with through traffic may result in increased potential for conflict and serious injury.	Injury to work personnel.	B	4	VH (16)	The TMP provides for temporary traffic controls to be installed around the work site which will reduce the likelihood of conflict. Traffic Control is to be installed and maintained by appropriately qualified and experienced personnel.	D	4	M (8)
9.	The restrictions placed on the traffic lane width and corner geometry by the traffic management for heavy haulage traffic could result in increased potential for conflict and injury.	Injury to work personnel and property damage.	C	3	M (9)	The TMP provides for the use of accredited traffic controllers to be used where required to direct traffic through the intersection. Where large or oversized vehicles are moving through the worksite, traffic controllers shall be used to ensure sufficient carriageway width is provided and any workers adjacent to the traffic lanes or within a hazardous area are instructed to move	D	3	L (6)

## TRAFFIC MANAGEMENT PLAN

Item	Risk Event	Consequence (worst most likely)	Pre – treatment Risk			Treatment	Residual Risk		
			L	C	RR		L	C	RR
						clear of the traffic.			
10.	Night after care: Head Light Glare	Headlight glare may result in motorists misreading temporary signs installed at ground level.	C	3	M (9)	Once the traffic control installation is complete, traffic control personal shall conduct a drive through assessment of devices to ensure that headlight glare from on-coming vehicles does not jeopardize their visibility. Where the devices are adversely affected their location shall be rectified. All signs to be Class 1 Retro-reflective material All personnel shall wear High Visibility Retro-reflective Vest	D	3	L (6)
11.	Traffic controllers maintaining traffic management for long periods may become fatigued and this may decrease the quality, safety and standard of traffic direction given to road users which may result in an increased potential for crashes.	Injury to work personnel and property damage.	C	4	H (12)	The TMP requires that traffic controllers are provided with rest breaks in accordance with as 1742.3.	D	4	M (8)
12.	Vehicles break-down within construction areas may cause unacceptable delays and disruption to traffic.	Unacceptable delays. Adverse public reaction.	C	3	M (9)	The TMP incorporates procedures for the management of vehicle breakdown and provision of assistance where necessary.	D	3	L (6)
13.	Insufficient delineation of construction site or temporary carriageways at night may result in crashes and injury.	Injury to road users.	C	3	M (9)	Qualified and experienced personnel have been employed in the preparation of the TMP and associated TCD's and experienced personnel will be used to implement and maintain the traffic control onsite.	D	3	L (6)
14.	Hazards left within the clear zone after hours may be hit by errant vehicles.	Injury to road users	D	4	M (8)	Any excavations are to be backfilled and all hazards protected or removed from the clear zone after hours. Aftercare traffic management to be in place.	Eliminated		

### 6.3 Legal and other requirements

The Contractor recognises that the traffic management plan has been developed and shall be implemented with due consideration and in accordance with the following legislative, environment and industry standards where applicable.

- Occupational Safety and Health Act 1984 and Regulations 1996
- Road Traffic Act
- Road Traffic Code 2000
- Australian Standard 1742.3 – Traffic control devices for works on roads
- AS/NZS ISO 31000: 2009 Risk Management – Principals and guidelines
- Australian Standard – Mobility and Access Standard for People with Disabilities AS 1428
- MRWA – Traffic Management for Works on Roads Code of Practice

The Contractor shall ensure that the requirements of these documents and other relevant information will be monitored and the Traffic Management Plan adjusted to meet changing requirements where necessary.

## 7 Emergency Arrangements

### 7.1 Emergency Services

Emergency services shall be notified via DFES of the proposed works nature, location, date and times as well as contact details for the site supervisor.

### 7.2 Dangerous Goods

Should any incident arise involving vehicles transporting dangerous goods, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area.

Emergency services shall be notified via DFES of the proposed works nature, location, date and times as well as contact details for the site supervisor. All site personnel shall be briefed on evacuation and control procedures.

### 7.3 Damage to Services

In the event that gas services are damaged, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area. The Police Service and relevant supply authority shall be called immediately. Damage to any other services shall be treated in a similar manner except machinery may remain operational and access may be maintained where it is safe to do so.

All site personnel shall be briefed on evacuation and control procedures.

### 7.4 Failure of Services

#### 7.4.1 Failure of Traffic Signals

There are not traffic signals near the site.

#### 7.4.2 Failure of Street Lighting

There is no street lighting at the site.

#### 7.4.3 Failure of Power

In the event that power infrastructure is damaged and poses a risk through live current, Traffic Controllers (and other personnel if necessary) shall be deployed immediately to secure the site and prevent entry to the area affected by live power. Western Power shall be notified immediately.

## 7.5 Contingency Planning.

### 7.5.1 Road Crash or Vehicle Breakdown within Site.

Road plant within the work area that may impact on any services requiring access to a crash site will be cleared from the area quickly as necessary.

On-site traffic controllers will be equipped with mobile communications to advise and/or liaise with emergency services to ensure a prompt response should the need arise.

There will be accredited First Aid personnel on site to assist where required.

### 7.5.2 Serious Injury or Fatality.

In the case of serious injury or fatality occurring within the traffic control zone all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. Traffic Controllers (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area.

Emergency services shall be notified of the incident and all road workers and traffic management personnel shall preserve the scene leaving everything in situ, until direction is given by Police or Work safe.

A site specific detour route and / or road closure point will be determined, signed and controlled by traffic management personnel and advised to Police. Detour routes will be determined so as to cater for all types of vehicles required to use them.

All site personnel shall be briefed on control procedures covering incidents and crashes that result in serious injury or fatalities.

## 7.6 Emergency Contacts

In the event of an emergency the following relevant authorities must be contacted and advised of nature of works, location, type of emergency and contact details for the site supervisor.

<b>Emergency Service</b>	<b>E-mail/Website</b>	<b>Phone (Emergency)</b>
WA Police Service	<a href="mailto:State.Traffic.Intelligence.Planning.&amp;Co-ordination.Unit@police.wa.gov.au">State.Traffic.Intelligence.Planning.&amp;Co-ordination.Unit@police.wa.gov.au</a>	000
St. John Ambulance	<a href="mailto:ambulanceoperations@stjohnambulance.com.au">ambulanceoperations@stjohnambulance.com.au</a>	000
DFES	<a href="http://www.dfes.wa.gov.au/contactus/pages/dfesoffices.aspx">www.dfes.wa.gov.au/contactus/pages/dfesoffices.aspx</a>	000
Power	<a href="http://www.westernpower.com.au/customerservice/contactus/">http://www.westernpower.com.au/customerservice/contactus/</a>	13 13 51
Gas	<a href="mailto:enquiries@atcogas.com.au">enquiries@atcogas.com.au</a>	13 13 52

MRWA TOC	<a href="mailto:dltocoperators@mainroads.wa.gov.au">dltocoperators@mainroads.wa.gov.au</a>	9323 4848
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## 8 Approvals

### 8.1 General

Refer to front cover for register of approvals by road and service authorities.

## 9 Notification

Prior to works commencing it is considered necessary to advise all road users of the forthcoming works, the likely timeframe of the works and the road conditions likely to be encountered. Advice shall consist of the following:

- Liaison with emergency services (i.e. Police, St John Ambulance, Fire and Emergency Services).
- Liaison as necessary with affected business proprietors and/or residents.
- Liaison with the Local Government Authority.

### 9.1 Public Notification

The public shall be notified of the works and traffic management arrangements via:

- Notice to Motorists in the weekend West Australian placed two weeks in advance, one week in advance and at the commencement works;
- Letter drop to all residents within the traffic control zone one week ahead of the scheduled works; and,
- VMS boards during the works

### 9.2 Notification of Other Agencies

In accordance with the CoP all relevant agencies shall be notified using the 'Notification of Roadworks' form attached at Appendix "A". A distribution list is provided on the bottom of the form. Other agencies shall be notified as required.

## 10 Traffic Assessment.

### 10.1 Existing & Proposed Speed Zones

Both Road A and Road B are subject to a 110 km/h speed zone.

The speed limit will be reduced to 40kph, 60km/h or 80km/h during the various work site alignments.

### 10.2 Existing Traffic Environment

Traffic data is not available for either Road A or Road B however based on an onsite count the combined volume of traffic on Road A is less than 200 vehicles per hour and 50 vehicles per hour for Road B. This is a low traffic volume and traffic management is not required to be in accordance with the Main Roads Traffic Management at Roadworks on State Roads Policy and Application Guidelines.

### 10.3 Minimum Lane Requirements and Carriageway Impacts.

Table 4.10 in AS1742.3 suggests that the mid block capacity of a road is in the vicinity of 1,000 vehicles per lane per hour (vplph) and 500 vplph within 200 metres of an intersection.

There is potential for adverse impacts on traffic by construction activities if the works are not adequately planned for and managed. In order to ensure an appropriate level of service is maintained for road users the following initiative will be undertaken:

- Implement a single lane reversible flow operation to maintain an operating traffic lane having a minimum width of 3.2m with traffic on all approaches being under the direction of accredited traffic controllers.
- Ensuring the length of the single lane reversible flow operation satisfies traffic flows as set out in AS1742.3.

### 10.4 Duration and Hours of Proposed Works

The modification works are expected to be undertaken over a 10 week period between April and May 2017 with work shift hours being 7 AM to 5 PM Monday to Friday and 7 AM to 3 PM on a Saturday.

### 10.5 Intersection Works.

The work is located at the intersection of Road A and Road B.

An assessment of the intersection was undertaken based on the on-site traffic counts undertaken for both roads and the requirements of Table 4.9 of AS1742.3 for implementing a single lane reversible flow operation.



Based on the maximum combined traffic flow recorded on site being 200 vehicles per hour the desirable maximum length of a single lane reversible flow operation is in the order of 550 metres.

Based on this it is expected that there will be minimal impacts on the level of service for the proposed 140 metre work site.

### 10.6 Barrier Requirements

Barriers will not be used on site.

## 11 Traffic Management Implementation.

### 11.1 Traffic Management Staging.

In terms of traffic management, the roadwork will occur in six stages, which are outlined below.

Temporary 40km/h, 60km/h or 80km/h speed zones will be imposed on the approaches to and past the worksite.

The road works will be completed with the implementation of advance advisory signage and delineated with bollards as required for the work site clearance to the operating traffic lanes.

The approach and departure signage, lane closure and traffic control devices shall be installed in accordance with the attached Traffic Control Diagrams, MRWA Traffic Management for Works on Roads Code of Practice and Australian Standard AS 1742.3 for the duration of each stage.

#### 11.1.1 Stage 1

Stage 1 works will involve off road works outside of 6 metres from the edge of the operating traffic lane. The works will involve clearing of vegetation from the work site as well as clearing of back slope, service relocations and table drain diversion. These works will be conducted using TCD 001.

#### 11.1.2 Stage 2

Stage 2 works will involve off road works between of 3 meters and 6 metres of the edge of the operating traffic lane. The works will involve beginning the formation work and boxing out. A temporary 80 km/h speed zone will be imposed past the worksite. These works will be conducted using TCD 002.

### 11.1.3 Stage 3

Stage 3 works will involve off road works between 1.2 metres and 3 metres of the operating traffic lane. These works will involve continuing the formation work and boxing out from stage 2 as well as extending culvert headwalls and relocating permanent traffic signs. A temporary 60 km/h speed zone will be imposed past the worksite. These works will be conducted using TCD 003.

### 11.1.4 Stage 4

Stage 4 works will involve off road works within 1.2 metres of the operating traffic lane. These works will involve finalising the formation work and boxing out from stage 2 and 3. A temporary 40 km/h speed zone will be imposed past the worksite. These works will be conducted using TCD 004.

### 11.1.5 Stage 5

The tie-in works to the existing carriageway, laying and compacting the base course will be completed under a single lane reversible flow operation. Stage 5 works will involve works within the closed traffic lane between 1.2 m and 3 m of the operating traffic lane, a temporary 60 km/h speed zone will be imposed past the worksite using TCD 005.

### 11.1.6 Stage 6

Stage 6 works will involve pavement marking and sealing works within 1.2 m of the operating traffic lane, this will be completed under a single lane reversible flow operation and a temporary 40 km/h speed zone will be imposed past the worksite using TCD 006.

### 11.1.7 Night Work Provisions

No night works will be undertaken.

### 11.1.8 After care

At the end of each day all excavations are to be back filled and any hazards removed from the clear zone. Refer to TCD's 007 and/or 008 depending on the scenario.

## 11.2 Hazard Identification, Risk Assessment and Control

In establishing adequate controls for the hazards identified ABC Contractors Pty Ltd have used a structured approach via the use of the hierarchy of control as outlined below:

- Elimination
- Substitution
- Engineering
- Administration
- Personal Protection Equipment

## TRAFFIC MANAGEMENT PLAN

ABC Contractors Pty Ltd traffic management practices require that the site Supervisor evaluate all traffic arrangements before they are open to traffic and immediately following the opening to traffic. Adjustments are to be made as required and recorded in the daily diary, including reasons for the changes. The Supervisor is also required to evaluate the traffic arrangements where site conditions change. New hazards that arise throughout the work will be subject to risk assessment and incorporated onto the Risk Register.

### 11.3 Traffic Control Diagrams

The Traffic Control Diagrams outlined in Appendix “D” and listed below have been provided for the following stages to demonstrate the type of controls that will be implemented throughout the term of the contract

<b>Drawing Number</b>	<b>Version</b>	<b>Details</b>
TCD-001	A	Off road works 6 metres or more from the edge of the operating traffic lane.
TCD-002	A	Off road works between 3 metres and 6 metres from the edge of the operating traffic lane.
TCD--003	B	Off road works between 1.2 metres and 3 metres from the edge of the operating traffic lane.
TCD--004	B	Off road works within 1.2 metres of the edge of the operating traffic lane.
TCD-005	A	Tie-in works under a single lane reversible flow operation works within 1.2 m
TCD-006	A	Tie-in works under a single lane reversible flow operation works between 1.2 m and 3 m.
TCD-007	A	Aftercare – Outside of 3 m of travelway
TCD-008	A	Aftercare – when new seal layed

### 11.4 Sequence and Staging

All activities relating to installation, staging and removal of signage, lane closures and work activities shall be recorded in the Daily Diary detailing that the time at which they occur. The sequence of traffic control is shown on the Table below.

<b>Step</b>	<b>Details</b>
1	Stage 1 Erect approach and departure advisory signage on approaches to worksite.
2	Install delineation devices and lane closures as required.
3	Undertake and complete stage works.
4	Stage 2 Modify approach signage and delineation as required
5	Undertake and complete stage works.

## TRAFFIC MANAGEMENT PLAN

Step	Details
6	Repeat steps 4 and 5 until works are completed.
7	Remove approach and departure advisory signage.

### 11.5 Signage and Device Requirements.

Signage requirements are shown on each Traffic Control Diagram.

Should the use of additional (not shown on the TCD or listing of devices) or reduced number of devices be required due to unforeseen needs, they shall be recorded within the Daily Diary as a variation to the TMP, following prior approval.

## 12 Communication.

### 12.1 General

Prior to works commencing it is considered necessary to advise all road users of the forthcoming works, the likely timeframe of the works and the road conditions likely to be encountered. Advice shall consist of the following:

- Liaison with emergency services (i.e. Police, St John Ambulance, Fire and Emergency Services).
- Liaison with Local authorities regarding local issues.
- Liaison as necessary with affected residents.

## 13 Traffic Management Monitoring.

### 13.1 Daily Inspections

Prior to works commencing the Site Supervisor shall undertake to communicate the Traffic Management Plan to all key stakeholders and affected parties.

On completion of setting out the traffic control measures, the site is to be monitored for a suitable period of time. If traffic speeds on the approaches to the work site are assessed as being above the temporary posted speed zone for the work site, the Site Supervisor is to initiate action to modify the approach signage and tapers in accordance with the requirements of AS1742.3. All such actions are to be recorded in the Daily Diary. Should road users be observed to continue to travel in excess of the posted speed limit, the police are to be requested to attend the site to enforce the temporary posted speed limit.

## TRAFFIC MANAGEMENT PLAN

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The Advanced Worksite Traffic Management accredited supervisory person at the worksite may conditionally approve changes made to a complex traffic management plan subject to review and endorsement of the change by an RTM as soon as practicably possible.

The Traffic Management Contractor shall ensure that all temporary signs, devices and controls are maintained at all times. To achieve this, procedures in line with the requirements outlined in AS1742.3 Appendix A will be instituted. The monitoring program shall incorporate inspections:

- Before the start of work activities on site,
- During the hours of work,
- Closing down at the end of the shift period, and
- After hours.

A daily record of the inspections shall be kept indicating:

- When traffic controls were erected.
- When changes to controls occurred and why the changes were undertaken.
- Any significant incidents or observations associated with the traffic controls and their impacts on road users or adjacent properties.

The Traffic Management Contractor shall ensure that personnel are assigned to monitor the traffic control scheme. Inspections shall at least satisfy the following requirements.

### 13.1.1 Before Work Starts.

- Inspect all signs and devices to ensure they are undamaged and comply with the requirements depicted on the Traffic Control Diagrams.
- Switch off all lamps check and clean as necessary.
- Confirm Traffic Management plan for the day's activities.
- After any adjustments have been made to the signs and devices, conduct a drive through inspection to confirm effectiveness.

### 13.1.2 During Work Hours.

- Designate and ensure that appropriate work personnel drive through the site periodically to inspect all signs and devices and ensure they are undamaged and comply with the requirements depicted on the Traffic Control Diagrams.
- Conduct on the spot maintenance/repairs as required.
- When traffic controllers are on the Job, ensure they remain in place at all times. Relieve controllers as necessary to ensure attentiveness is retained.

- Re position signs or required by work processes throughout the day and keep records of any changes.

### 13.1.3 Closing Down Each Day

- Conduct a pre-close down inspection, allowing time for any appropriate maintenance works;
- Remove any unnecessary signage (e.g. Prepare to Stop, Symbolic Workers on Road).
- Install barriers and lights where required.
- Drive through site and confirm all signs and devices are operating correctly.
- Record details of inspection and any changes made to layout.

### 13.1.4 After Hours

- Appoint personnel to conduct after dark checks. Observe any signs / devices not working, missing or damaged and record in diary.
- Appoint personnel to conduct checks on non-work days (e.g. week ends). Observe any signs / devices not working, missing or damaged and record in diary.
- Provide after hours contact names and numbers for implementation of maintenance and repairs arising from the above inspections.

## 13.2 TMP Auditing

One compliance audit (using the 'Compliance Audit Checklist for Traffic Management for Works on Roads' - attached) shall be conducted following setting up of the traffic management and prior to commencement of the works.

Audit findings, recommendations and actions taken shall be documented and copies forwarded to the Project Manager and the Road Authority's Representative.

## 13.3 Records.

A daily diary recording all inspections including variations to the approved TMP shall be kept using Standard Forms "Daily Diary".

The Traffic Supervisor is to record all inspections made on a daily basis and at those times prescribed by the Traffic Management Implementation Standards. Upon completion of each day the Traffic Supervisor shall provide copies of the daily diary record to the Project Manager.

The Traffic Supervisor is to record all variations made to the approved Traffic Management Plan on a daily basis and indicate clearly the nature of the variations and the reason for the variations. Upon completion of each day the Traffic Supervisor shall provide copies of the variation record to the Project Manager.

### 14 Traffic Management Implementation Standards.

#### 14.1 Sequence and Staging

Before work commences, signs and devices at approaches to the work area shall be erected in accordance with the adopted TCD, in the following order:

- Advance warning signs.
- All intermediate advance and positional signs and devices required in advance of the taper or start of the work area.
- All delineating devices required to form a taper including flashing arrow signs or temporary hazard markers where required.
- Delineation past the work area or into a side track.
- Other warning signs or regulatory signs.

Delineation devices such as cones and bollards should be placed in the same sequence, i.e. those furthest in advance of the work placed first.

The following requirements shall be observed when implementing traffic management signs and devices:

- Display of a vehicle mounted warning device on a work vehicle off the roadway.
- Sight distance to the vehicle mounted warning device of 250 m.
- A lookout person to warn workers on road on the roadway of approaching traffic.

Where a work area is moving progressively along the road, relocation of the signs ahead should take place in the above sequence. Those behind should be relocated in the reverse sequence.

Signs and devices that are erected before they are required shall be covered by a suitable material. The cover shall be removed immediately prior to the commencement of work.

Removal of traffic control signs and devices should be undertaken in the reverse order of erection, progressing from the work area out toward the approaches.

Refer to Traffic Control Diagrams in specific Traffic Management Plans for individual worksite details. General sequence for implementing, maintaining and dismantling traffic control shall be as below.

### 14.2 Signage

#### 14.2.1 Alignments and signage details.

The requirements for the closure and realignment of lanes and any other traffic arrangement necessary to accommodate the works shall be detailed in specific Traffic Management Plan work staging and on the Traffic Control Diagrams. All traffic control shall be implemented and maintained in accordance with the requirements of Australian Standard AS 1742.3, Main Roads WA Traffic Management for Works on Roads, Code of Practice and these Standard Practices.

#### 14.2.2 Requirements for signs.

All signs used shall conform to the designs and dimensions as shown in Australian Standard AS 1742.3 and the Main Roads WA Traffic Management for Works on Roads, Code of Practice.

Prior to installation, all signs and devices shall be checked by the Site Supervisor or a suitably qualified person to ensure that they are in good condition and meet the following requirements:-

- Mechanical condition - Items that are bent, broken or have surface damage shall not be used.
- Cleanliness - Items should be free from accumulated dirt, road grime or other contamination.
- Colour of fluorescent signs - Fluorescent signs whose colour has faded to a point where they have lost their daylight impact shall be replaced.
- Retroreflectivity. - Signs for night-time use whose retroreflectivity is degraded either from long use or surface damage and does not meet the requirements of AS 1906 shall be replaced.
- Battery operated devices - shall be checked for lamp operation and battery condition.



Where signs do not conform either to the requirements of AS 1742.3 or would fail to pass any of the above checks, they shall be replaced on notice.

Signs and devices shall be positioned and erected in accordance with the locations and spacings shown on the drawings. All signs shall be positioned and erected such that:-

- They are properly displayed and securely mounted;
- They are within the driver's line of sight;
- They cannot be obscured from view;
- They do not obscure other devices from the driver's line of sight;
- They do not become a possible hazard to workers or vehicles; and
- They do not deflect traffic into an undesirable path.

Signs and devices that are erected before they are required shall be covered by a suitable opaque material. The cover shall be removed immediately prior to the commencement of work.

Where there is a potential for conflict of information between existing signage and temporary signage erected for the purpose of traffic control, the existing signs shall be covered. The material covering the sign shall ensure that the sign cannot be seen under all conditions i.e. day, night and wet weather. Care will be taken to ensure existing signs are not damaged by the covering material or by adhesive tape.

### 14.2.3 Tolerances on positioning of signs and devices

Where a specific distance for the longitudinal positioning of signs or devices with respect to other items or features is stated, for the spacing of delineating devices or for the length of tapers or markings, the following tolerances may be applied: -

- (a) Positioning of signs, length of tapers or markings:
  - (i) Minimum, 10% less than the distances or lengths given.
  - (ii) Maximum, 25% more than the distances or lengths given.
- (b) Spacing of delineating devices:
  - (i) Maximum, 10% more than the spacing shown.
  - (ii) No minimum.

These tolerances shall not apply where a distance, length or spacing is already stated as a maximum, a minimum or a range.

### 14.3 Flashing Arrow Signs.

Where flashing arrow signs are required to better delineate lane tapers, these signs will comprise a matrix of lamps or light emitting elements in the form of an arrow that is flashed in a cyclical manner to provide advance warning. The sign shall have a minimum dimension of 2400 mm. x 1200 mm. and conform to the requirements of AS/NZS 4192. The Project Site Supervisor shall ensure that all equipment used meets the Australian Standard.

### 14.4 Delineation.

#### 14.4.1 General

Cones shall be used for delineation unless other treatment is specified in the Traffic Management Plan or on the Traffic Control Diagrams. All cones shall be at least 700 millimetres in height and constructed from fluorescent orange or red material that is resilient to impact and will not damage vehicles when hit at low speed. Cones will be fitted with suitable white retro-reflective tape placed in accordance with AS 1742.3.

Cones shall be designed to be stable under reasonably expected wind conditions and air turbulence from passing traffic.

The base of the cones will be secured so that they are not dislodged by traffic. Cones will be inspected at intervals necessary to ensure any mis-alignment or displacement is identified and corrected prior to this causing disruption to traffic.

Where specified, cones will be supplemented with stationary unidirectional yellow lights conforming to AS 1165 and spaced at 15 metre intervals.

Where specified, temporary frangible or otherwise non-hazardous delineator posts or bollards may be used for edge protection and taper delineation. Posts or bollards shall have a maximum dimension of 60 millimetres when measured along the longest side of a square or rectangular section or across the diameter of a circular section. Base design shall permit easy fixing to either sealed or unsealed surfaces and not intrude into traffic lanes greater than 50 millimetres from the face of the post or bollard.

All posts or bollards shall be erected in accordance with the Traffic Control Diagrams. Posts and bollards shall be a minimum of 1000 mm. high, capable of being fixed to the road pavement by a suitable road adhesive or by fastening bolts or spikes. Fixing shall be in accordance with manufacturer's recommendations.

Posts and bollards shall be fitted with suitable white retro-reflective tape placed in accordance with AS 1742.3.

All posts or bollards will be inspected daily and where displaced or missing made good immediately. All delineator posts are to be completely removed at the completion of all stages of construction and prior to the placement of asphalt surfacing. If adhesive is used to affix the posts this shall be completely removed from the road surface so that a flush surface is obtained.

#### 14.4.2 Delineation spacing.

All cones and post type delineators shall be spaced according to Table 3.7 of AS 1742.3 unless specified in each TCD.

**TABLE 3.7**  
**RECOMMENDED MAXIMUM SPACING OF CONES AND BOLLARDS**

Purpose and usage	Traffic speed, km/h (see Clause 1.4.16)	Recommended maximum spacing, m
All purposes	≤50	4
Centre-line on approach to a traffic controller position	All cases (see Clause 4.6.4)	4
Outer edge of traffic lanes—e.g. works on shoulder or parking lane	51 to 70	18
	>70	24*
Separating opposing traffic on a 2-lane, 2-way road—e.g. partial or complete lane closure	51 to 70	12
	>70	18
Separating opposing traffic on a multilane undivided road—e.g. as part of a lane closure	51 to 70	12
	>70	18
Adjacent to a closed lane on a multilane undivided road	51 to 70	18
	>70	24
Merge tapers (see Clause 4.8.2)	51 to 70	9
	>70	12
Lateral shift tapers (see Clause 4.8.2)	51 to 70	12
	>70	18
Protecting freshly painted lines	51 to 70	24
	>70	60†

\* This spacing may be extended to 60 m where the length of the line of cones or bollards exceeds 1 km but not adjacent to locations where there are workers on foot.

† This spacing may need to be reduced on curves or crests, or if the row of cones is not clearly defined at night.

#### 14.5 Speed zoning.

Temporary speed zones shall be implemented as detailed the staged traffic control diagrams during work shift hours in accordance with the Traffic Management Plan and guidelines contained in Australian Standard AS 1742.3.

Speed zones shall be in accordance with the guidelines contained in Australian Standard AS 1742.3 and as prescribed in the Traffic Management Plan and detailed on the Traffic Control Diagrams.

### 14.6 Provision for night works.

All signs used at night are to be Class 1 Retro-reflective material and delineation will be either retro-reflective or be sufficiently illuminated.

Flashing lamps shall be used to draw attention to signs and all personnel engaged on night work shall wear high visibility retro-reflective jackets.

### 14.7 Temporary Pavement Markings

Temporary pavement markings shall be installed after each individual stage of works prior to the application of the ultimate pavement marking in accordance with the following:

- After profiling works lanes shall be delineated by temporary RRPMS.
- After asphalt works have been carried out lanes shall be delineated by either ultimate pavement markings, temporary RRPMS or temporary painted pavement markings.
- Temporary RRPMS shall be installed at not less than 4m spacing and not greater than 12m spacing.

### 14.8 Aftercare Signage

Aftercare signage shall be installed between work shifts as determined to be applicable on site and applicable to the state of completion of the road works and pavement markings in accordance with the following requirements:

- Aftercare signage shall be the installation of 'Roadwork Ahead', 'End Roadwork' and temporary speed zone signage on the approach and departure to the work site and being set out in accordance with AS 1742.3 and as detailed on the attached TCD's.
- The actual work areas shall be delineated with bollards and temporary hazard markers.
- The temporary speed zone shall be maintained during out of work hours where necessary with opaque material covering existing speed zone signs where required.

- All symbolic worker signage shall be removed or laid flat during out of work hours.
- Where new pavement is sealed with road metal Symbolic Windscreen Damage (T3-9) signs shall be installed where the loose surface remains between successive work shifts.
- New Work No Lines Marked (T3-11) signs shall be installed where existing separation lines have been removed and have not yet been reinstated or where temporary RRPMs are used for lane delineation purposes.
- No Lines Marked Do Not Overtake Unless Safe (T3-12) signs shall be installed where existing barrier lines or painted medians have been removed and have not yet been reinstated.

### 14.9 Taper Lengths

A temporary speed zone along the South Street approaches to the work site is to be modified to 40km/h.

Required length of merge taper for 40km/h per AS1742.3: 15 m

Merge taper length to be provided: 60 m

## 15 Management Review

### 15.1 TMP Review and Improvement

As this project is of a short-term nature, a review of the effectiveness of the TMP will be undertaken by the Project Manager as part of the close-out procedure.

### 15.2 Variations to Standards and Plans

There are no departures from the requirements of AS 1742.3-2009 or MRWA Traffic Management for Works on Roads Code of Practice (April 2011). The work hours have been adjusted to fall within the hours when traffic volumes will permit the necessary traffic lane closures.

On-site variations, if required, shall generally only be made following approval by the Road Authority's Representative and recorded in the daily diary. In emergency situations, on-site variations shall be made and recorded in the daily diary, and the Road Authority's Representative notified as soon as practicable. Any variations to Standards will be recorded on the form shown in the Appendices.

## 16 References

- AS 1742 – Manual of uniform traffic control devices
  - Part 1 – General introduction and index of signs
  - Part 2 – Traffic control for general use
  - Part 3 – Traffic control for works on roads
  - Part 4 – Speed controls
- AS/NZS ISO 31000– Risk Management – Principles and Guidelines
- AS/NZS 4602– High visibility safety garments
- Disability Services Act
- Guide to Preparation of Traffic Management Plans
- Local Government Act
- Main Roads Act
- MRWA Specification 202
- Occupational Safety & Health Act
- Occupational Safety & Health Regulations
- Road Traffic Act
- Road Traffic Code
- Traffic Controllers' Handbook
- Traffic Management for Events Code of Practice
- Traffic Management for Works on Roads Code of Practice
- Traffic Management Plan Preparation Guidelines
- Truck and Trailer Mounted Attenuator National Guidelines
- Utility Providers Code of Practice for Western Australia

## TRAFFIC MANAGEMENT PLAN

### Appendix A Notification of Road works

Anticipated start date		April 2017		Anticipated finish date		May 2017	
Daily work hours		Varies		Weekend work applicable		Yes <input checked="" type="checkbox"/> No	
Location of works (Road/Street, Suburb)		Intersection of Road A and Road B, Shire of XXX.					
Description of works		Carriageway modification works to provide a passing lane					
Road type (eg two lane undivided)		Two lane State Road					
Posted Speed Limit		110km/h	Worksite speed limit	40, 60 80 km/h	After hours speed limit		60 km/h
Brief description of traffic management during works		Advisory signage, delineation and Lane closure.					
Description of traffic management devices used		Advance advisory signs, bollards, hazard boards.					
What is the anticipated effect on traffic flows?		Minor – minor delays only		Will there be restricted width for oversize escorted vehicles?		Yes	No <input checked="" type="checkbox"/>
Are lanes closed at signals?		Yes	No <input checked="" type="checkbox"/>	N/A	Are signal loops or hardware affected?		Yes No <input checked="" type="checkbox"/> N/A
Will signal phases need time changes?		Yes	No <input checked="" type="checkbox"/>	N/A	Will signals need to revert automatically?		Yes No <input checked="" type="checkbox"/> N/A
Date of signal "black out"		N/A		Times of signal "black out"		N/A	
Will Police attendance be required?		Yes	No <input checked="" type="checkbox"/>	Dates for Police attendance (See note below) <sup>(1)</sup>		N/A	
Are warden-controlled school crossings located in area of works?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Will crossings be altered during works?		Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Construction Authority		Shire of XXX					
Postal address		xxxx					
Telephone	1300-635-845	Facsimile	(08) 9364 0285	Email	admin@XXX.wa.gov.au		
Contact							
Telephone		Mobile		Email			
Construction contractor		ABC Contractors Pty Ltd					
Postal address		1 Some Place CARLISLE WA 6101					
Telephone	5551 7370	Facsimile	5551 7375	Email	Pm@abc.com.au		
Contact		P Manager					
Telephone	5551 7370	Mobile	0555 920 224	Email	Pm@abc.com.au		
After hours contact	P Manager	Telephone	5551 7370	Mobile	0555 920 224		
Traffic management contractor		TBA					
Postal address							
Telephone		Facsimile		Email			
Contact							
Telephone		Mobile		Email			
After hours contact		Telephone		Mobile			
<b>Notification is to be given at least three (3) weeks in advance where Police attendance is required, one (1) week otherwise – except in an emergency</b>							
WA Police State Traffic Coordination		<a href="mailto:State.Traffic.Intelligence.Planning.&amp;Co-ordination.Unit@police.wa.gov.au">State.Traffic.Intelligence.Planning.&amp;Co-ordination.Unit@police.wa.gov.au</a>					
WA Police Student Pedestrian Policy Unit		<a href="mailto:student.pedestrian.policy.unit@police.wa.gov.au">student.pedestrian.policy.unit@police.wa.gov.au</a>					
MRWA Customer Information Centre		<a href="mailto:enquiries@mainroads.wa.gov.au">enquiries@mainroads.wa.gov.au</a>					
MRWA Heavy Vehicle Operations		<a href="mailto:hvo@mainroads.wa.gov.au">hvo@mainroads.wa.gov.au</a>					
St John's Ambulance		<a href="mailto:ambulanceoperations@stjohnambulance.com.au">ambulanceoperations@stjohnambulance.com.au</a>					
Fire & Emergency Services		<a href="http://www.dfes.wa.gov.au/contactus/pages/dfesoffices.aspx">www.dfes.wa.gov.au/contactus/pages/dfesoffices.aspx</a>					
Local Government		<a href="http://www.shireofx.wa.gov.au">www.shireofx.wa.gov.au</a>					

## Appendix B Variation to Standards

### APPLICATION FOR APPROVAL TO VARY REQUIREMENTS OF AUSTRALIAN STANDARDS AS1742.3 OR MRWA TRAFFIC MANAGEMENT CODES OF PRACTICE

- Section A** – Identify the Principal Agency / person commissioning the activity. (Does not include contractors, subcontractors or traffic management company/traffic planners etc).
- Section B** – Identify activity location, start / finish date and time, type of traffic management, description location of activity.
- Section C** – Identify the person that has prepared the Traffic Management Plan, this person shall have AWTM accreditation.
- Section D** – For Works undertaken on a State road or on behalf of Main Roads Western Australia the details of the risk assessment process identified in this application form must be documented and endorsed<sup>1</sup> by an accredited Roadworks Traffic Manager.

All applications to be addressed to the applicable Main Roads Regional office. For contact information please refer to the online Application kits and guidelines to undertake works. ([www.mainroads.wa.gov.au](http://www.mainroads.wa.gov.au) >Our Roads > Conducting Works on Roads).

For all other applications the details of the risk assessment process identified in this application form must be documented and endorsed<sup>1</sup> by the person responsible for approving the traffic management plan.

Contact with the appropriate road authority should be made prior to lodgement of this application to determine its suitability and for any additional requirements.

- Section E** - Risk implication<sup>2</sup>, identification and assessment process must be undertaken in accordance with Risk Management – Principles and Guidelines AS/NZS ISO 31000. The likelihood and consequences should be rated after the application of any additional counter measures taken utilising Tables from Annexure's 202B and 203B, Main Roads WA - Specification 202 and 203 respectively.
- Incomplete or applications not signed<sup>1</sup>** by the RTM will not be processed.

A	Applicant (Principal for the Works)					
	Postal address					
	Suburb		State		Postcode	
	Project Manager				Telephone	
	Email				Facsimile	

B	Anticipated start date				Anticipated finish date					
	Daily work hours:		From		To		Weekend work applicable			
							Yes <input type="checkbox"/>	Sat <input type="checkbox"/>	Sun <input type="checkbox"/>	No <input type="checkbox"/>
	Location of works (Road/Street Suburb),									
	Road type (eg undivided, two lane)									
	Description of works									
	Are alterations to permanent traffic signals required?				Yes <input type="checkbox"/>		No <input type="checkbox"/>		N/A <input type="checkbox"/>	
Posted Speed Limit				Worksite speed limit				After hours speed limit		

C	TMP Designer									
	Accreditation Number									
	Postal address									
	Suburb		State		Postcode					
	Email		Telephone				Facsimile			
	Endorsement signature						Date			



## TRAFFIC MANAGEMENT PLAN

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D	RTM Endorsing Variation					
	Accreditation Number					
	Postal address					
	Suburb		State		Postcode	
	Email		Telephone		Facsimile	
	Endorsement signature <sup>1</sup>					Date

<b>For Internal Use Only</b>					
Approving Road Authority					
Approving Officer Position					
Application Approved	Yes <input type="checkbox"/>	No <input type="checkbox"/>	If Not Why Not		
Additional Conditions					
Approved By: Signature		Title		Date	File

## Appendix C – Record Forms

### Daily Diary

Record details of all changes to the Traffic Management Plan.

PROJECT DETAILS:

LOCATION:

DATE:

Contract No.

TMP Document No.

TCD Dwg No.

Revision No. 0

Date:		Time:	Location:			
Inspection/ changes	By:	Signed:	Changes authorised	By:	Signed:	
Detail/Comments:						

Date:		Time:	Location:			
Inspection/ changes	By:	Signed:	Changes authorised	By:	Signed:	
Detail/Comments:						

Date:		Time:	Location:			
Inspection/ changes	By:	Signed:	Changes authorised	By:	Signed:	
Detail/Comments:						



## TRAFFIC MANAGEMENT PLAN

### Incident Report Form.

Any incident occurring onsite shall be reported using the following incident report format.

Region	Incident Report No.
Contract Number	Contractor

Major Incident Reports must be forwarded to the Superintendent within 48 hours of the incident occurring or becoming apparent.

Contractors shall use this Form for reporting of Traffic incidents on works under Contract and this form supplements the OSH Incident Reporting Form.

A Details of Incident	Reported to: <input type="checkbox"/> Supervisor <input type="checkbox"/> TMR <input type="checkbox"/> Other	Atmospheric Conditions	Light Conditions
OSH Incident Report No		Clear <input type="checkbox"/>	Day Light <input type="checkbox"/>
Fatality <input type="checkbox"/>		Overcast <input type="checkbox"/>	Night Time <input type="checkbox"/>
Injury <input type="checkbox"/>	<b>Road Surface</b>	Raining <input type="checkbox"/>	Dawn/Dusk <input type="checkbox"/>
Property Damage <input type="checkbox"/>	Unsealed <input type="checkbox"/>	Fog/Smoke/Dust <input type="checkbox"/>	<b>Street Lighting</b>
Police Attended Yes/No	Sealed <input type="checkbox"/>		On <input type="checkbox"/>
Time and Date of incident	<b>AM / PM</b>	<b>Road Condition</b>	Off <input type="checkbox"/>
	Day    Month    Year	Wet <input type="checkbox"/>	Not Provided <input type="checkbox"/>
		Dry <input type="checkbox"/>	

Other relevant details, (Last maintenance grade, watering and dust conditions):

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**B Details of Traffic Management in place:**

TCD No:		Name of individual that prepared the TCD	
Time last inspected:		Accreditation No:	
TCD Approved:	Day    Month    Year	TMP Approved:	Day    Month    Year

**C Descriptions of Vehicles:**

Detail (make, model/ped/cyclist/VRU)	Registration No	Direction of Travel	Age of Driver
Vehicle 1			
Vehicle 2			
Vehicle 3			

Comments:

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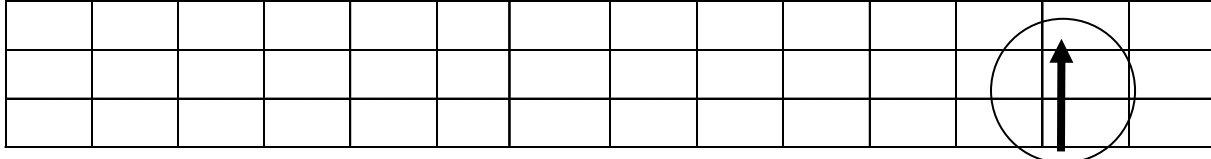
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**D Description of Incident:**  
Draw the incident including the direction of travel, traffic control signs, fixed structures and north point.



TRAFFIC MANAGEMENT PLAN


<b>E Attachments:</b>	The following copies MUST be submitted with this Incident Report.	
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Approved TMP  Approved TCP  Approvals for temporary speed restrictions  Daily Diary

<b>F Police Report:</b>
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Accident reported to Police:  YES  NO Report made by  Phone  Fax  Mail or E-mail

Date Report Made Day Month Year Police WA Reference Number

<b>G Details of Person Completing this Incident Form:</b>
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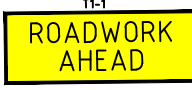
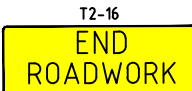
Name: Contractor Name:

Position:

Date: Signature:

Appendix D Traffic Control Diagrams.





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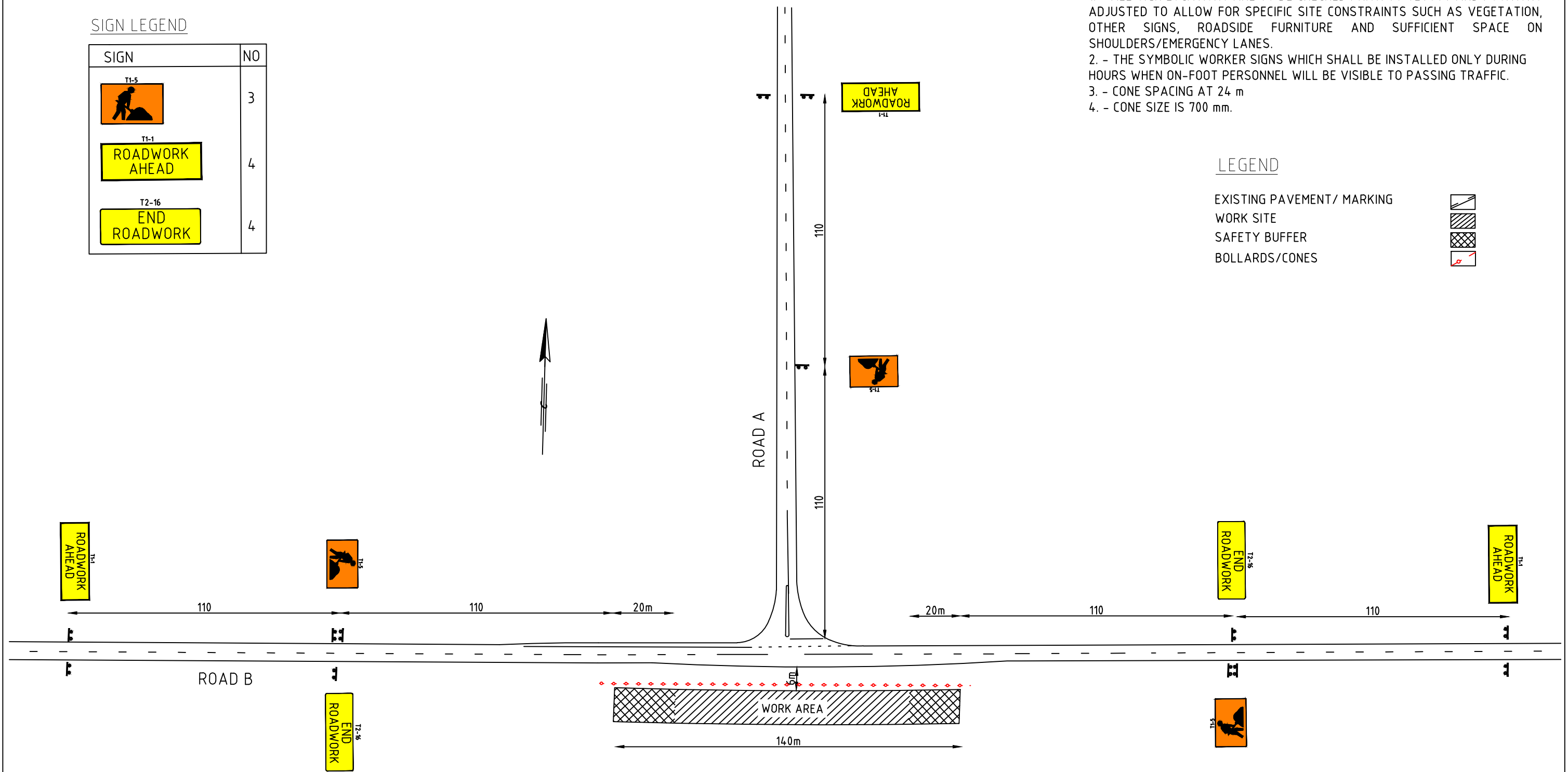
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	3
	4
	4

NOTES

1. - ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
2. - THE SYMBOLIC WORKER SIGNS WHICH SHALL BE INSTALLED ONLY DURING HOURS WHEN ON-FOOT PERSONNEL WILL BE VISIBLE TO PASSING TRAFFIC.
3. - CONE SPACING AT 24 m
4. - CONE SIZE IS 700 mm.

LEGEND

EXISTING PAVEMENT/ MARKING	
WORK SITE	
SAFETY BUFFER	
BOLLARDS/CONES	



No.	DATE	DESCRIPTION	APPR.
B	15.07.14	MRWA AMENDMENTS	
A	09.01.14	GENERAL AMENDMENTS	RG
-	26.11.13	FOR CLIENT REVIEW	RG
AMENDMENTS			

  
**mainroads**  
 WESTERN AUSTRALIA

MAIN ROADS WA


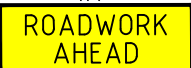
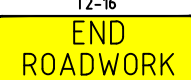


Scale	NTS
Date	15/07/2014

Title

WORK AREA 6m OR MORE CLEAR OF TRAFFIC  
POSTED SPEED: 110KM/H

Dwg No.	TCD-001
Rev.	B






SIGN LEGEND

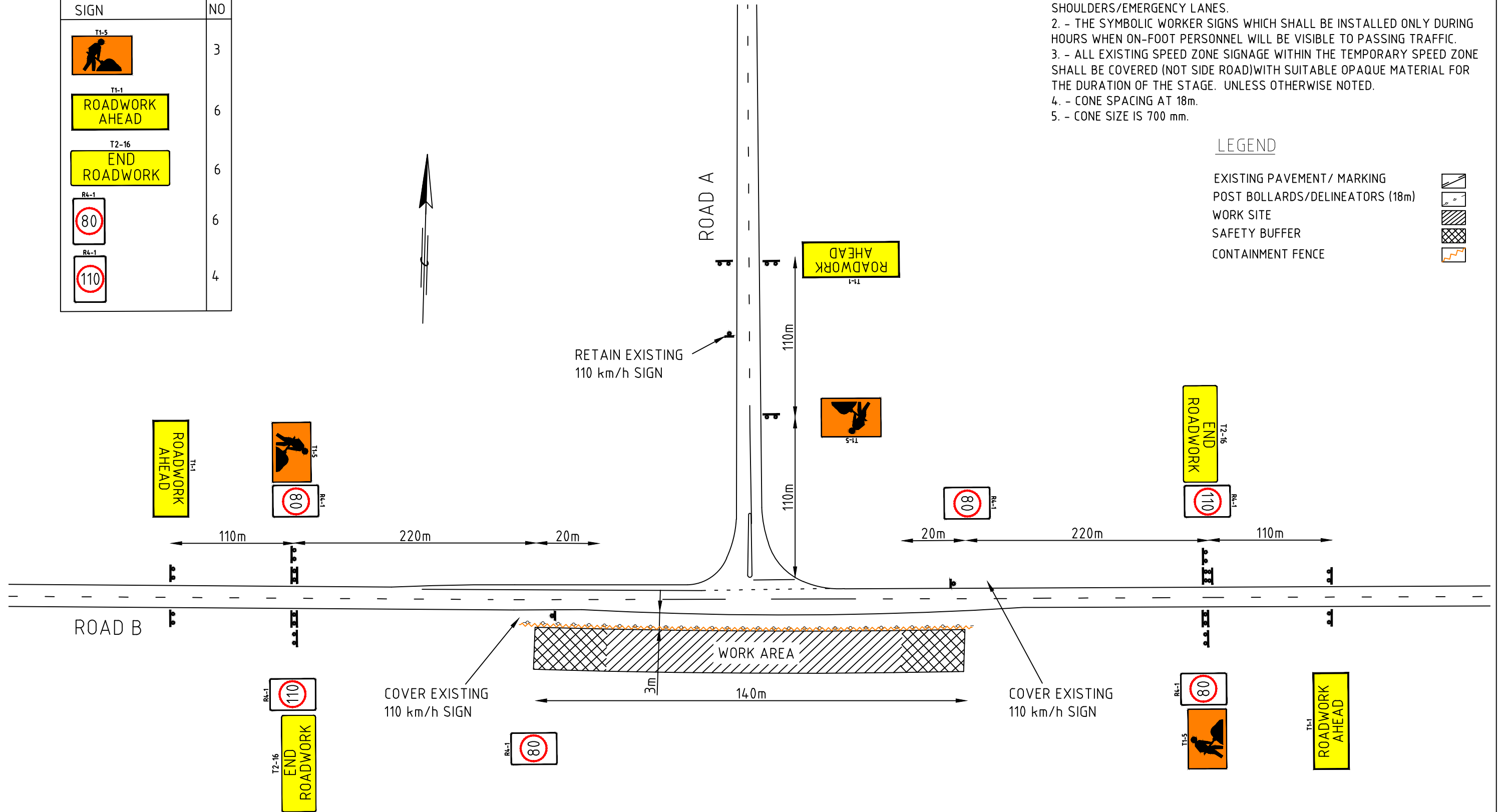
SIGN	NO
	3
	6
	6
	6
	4

NOTES

1. - ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
2. - THE SYMBOLIC WORKER SIGNS WHICH SHALL BE INSTALLED ONLY DURING HOURS WHEN ON-FOOT PERSONNEL WILL BE VISIBLE TO PASSING TRAFFIC.
3. - ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED (NOT SIDE ROAD) WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE STAGE. UNLESS OTHERWISE NOTED.
4. - CONE SPACING AT 18m.
5. - CONE SIZE IS 700 mm.

LEGEND

EXISTING PAVEMENT/ MARKING	
POST BOLLARDS/DELINEATORS (18m)	
WORK SITE	
SAFETY BUFFER	
CONTAINMENT FENCE	



No.	DATE	DESCRIPTION	APPR.
B	15.07.14	MRWA AMENDMENTS	
A	09.01.14	GENERAL AMENDMENTS	RG
-	26.11.13	FOR CLIENT REVIEW	RG
AMENDMENTS			



MAIN ROADS WA


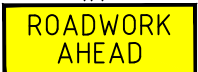
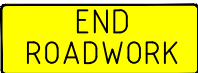




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Title	WORK AREA BETWEEN 3m - 6m TO TRAFFIC POSTED SPEED: 110KM/H
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Dwg No.	TCD-002
Rev.	B








SIGN LEGEND

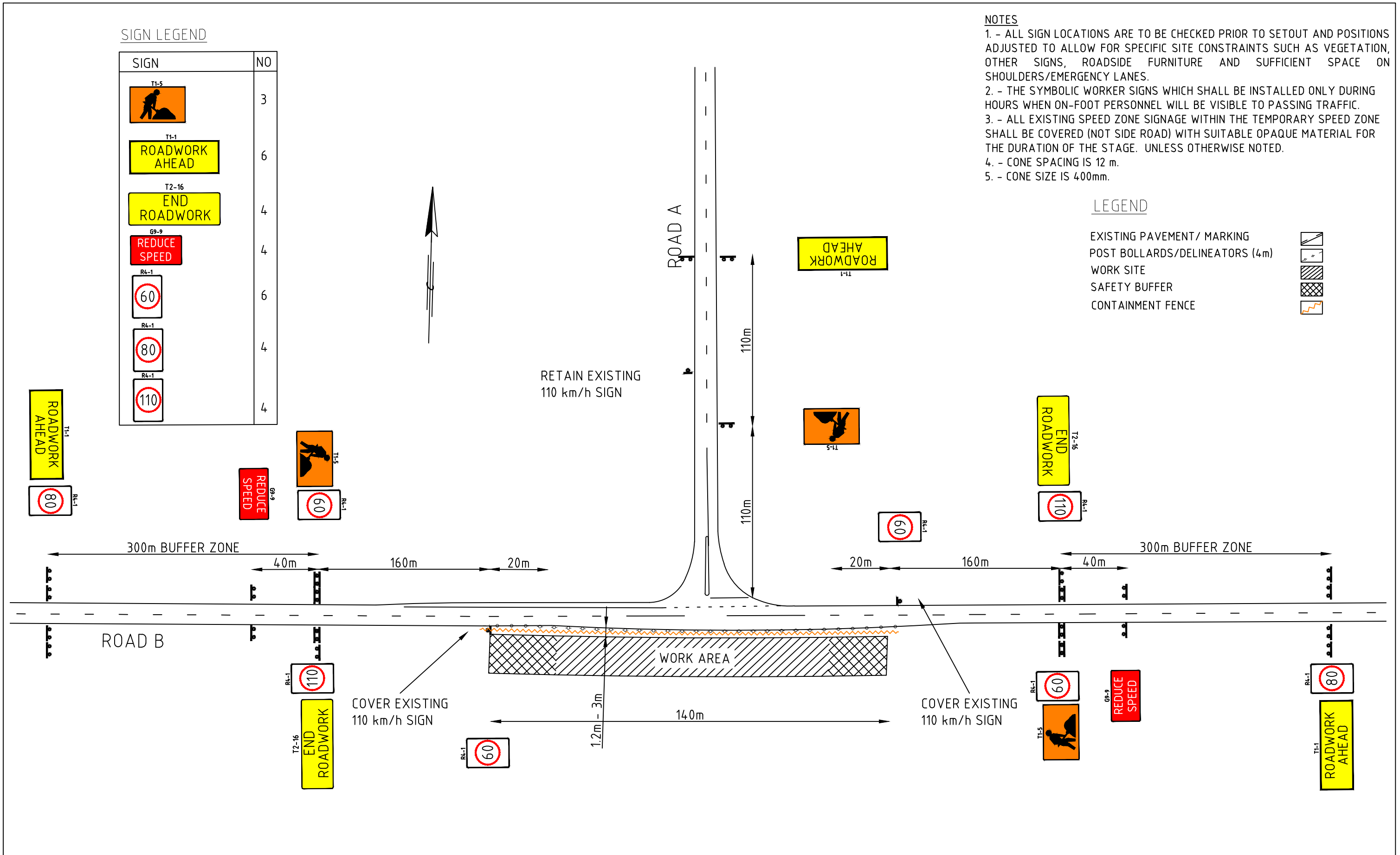
SIGN	NO
	3
	6
	4
	4
	6
	4
	4


NOTES

1. - ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
2. - THE SYMBOLIC WORKER SIGNS WHICH SHALL BE INSTALLED ONLY DURING HOURS WHEN ON-FOOT PERSONNEL WILL BE VISIBLE TO PASSING TRAFFIC.
3. - ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED (NOT SIDE ROAD) WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE STAGE. UNLESS OTHERWISE NOTED.
4. - CONE SPACING IS 12 m.
5. - CONE SIZE IS 400mm.

LEGEND

EXISTING PAVEMENT/ MARKING	
POST BOLLARDS/DELINEATORS (4m)	
WORK SITE	
SAFETY BUFFER	
CONTAINMENT FENCE	








				Scale NTS	Title  WORK AREA BETWEEN 1.2m - 3m TO TRAFFIC POSTED SPEED: 110KM/H	Dwg No. TCD-003
MAIN ROADS WA				Date 15/07/2014		Rev. B
No.	DATE	DESCRIPTION	APPR.			
B	15.07.2014	MRWA AMENDMENTS				
A	09.01.14	GENERAL AMENDMENTS	RG			
-	26.11.13	FOR CLIENT REVIEW	RG			
AMENDMENTS						


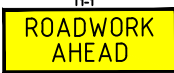
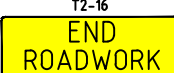





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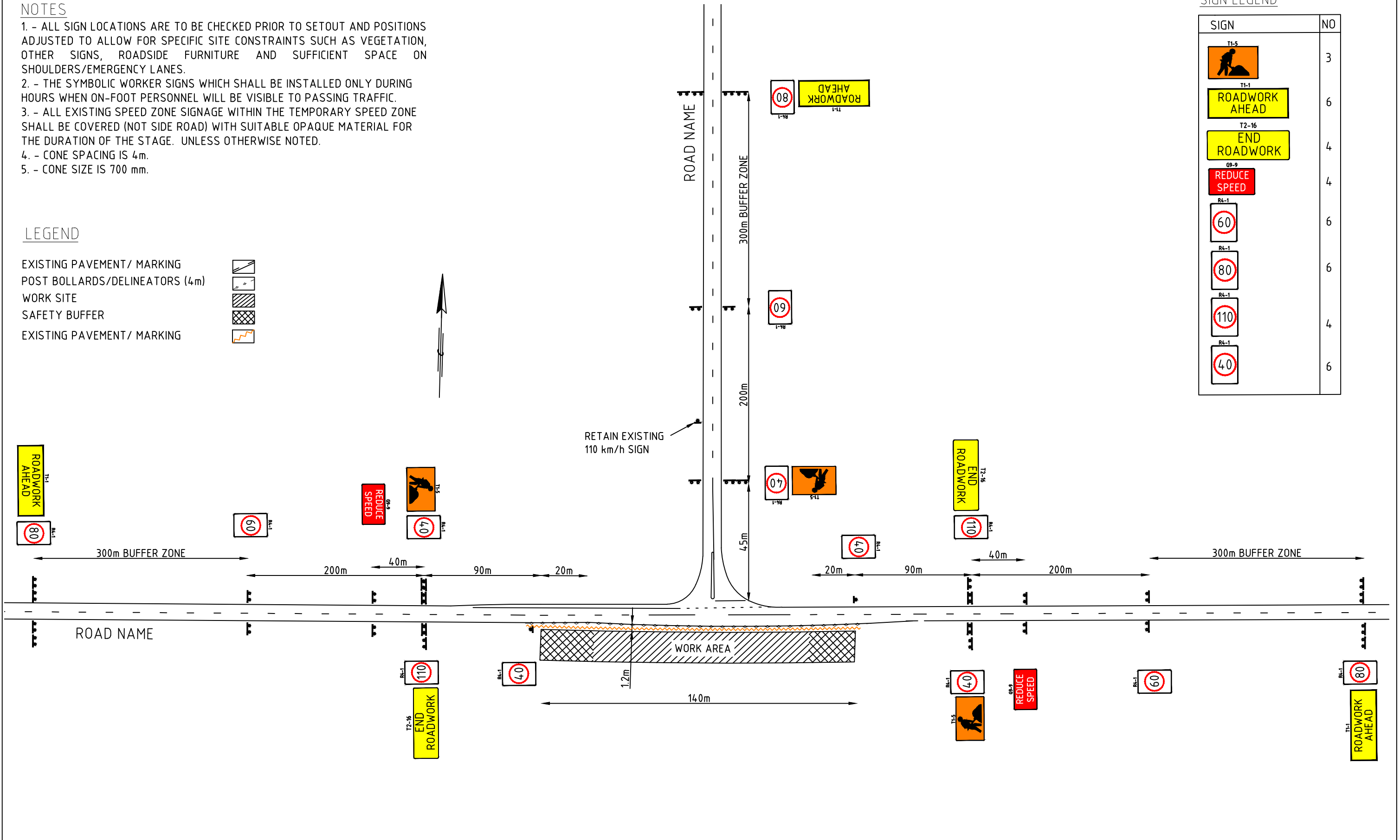
1. - ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
2. - THE SYMBOLIC WORKER SIGNS WHICH SHALL BE INSTALLED ONLY DURING HOURS WHEN ON-FOOT PERSONNEL WILL BE VISIBLE TO PASSING TRAFFIC.
3. - ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED (NOT SIDE ROAD) WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE STAGE. UNLESS OTHERWISE NOTED.
4. - CONE SPACING IS 4m.
5. - CONE SIZE IS 700 mm.

**LEGEND**

- EXISTING PAVEMENT/ MARKING 
- POST BOLLARDS/DELINEATORS (4m) 
- WORK SITE 
- SAFETY BUFFER 
- EXISTING PAVEMENT/ MARKING 

**SIGN LEGEND**

SIGN	NO
	3
	6
	4
	4
	6
	6
	4
	6



No.	DATE	DESCRIPTION	APPR.
B	15.07.14	MRWA AMENDMENTS	
A	09.01.14	GENERAL AMENDMENTS	RG
-	26.11.13	FOR CLIENT REVIEW	RG
AMENDMENTS			

  
**mainroads**  
 WESTERN AUSTRALIA  
 MAIN ROADS WA

Scale	NTS
Date	15/07/2014






Title  
 WORK AREA WITHIN 1.2m TO TRAFFIC  
 POSTED SPEED: 110KM/H

Dwg No.	TCD-004
Rev.	B


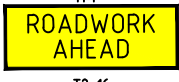
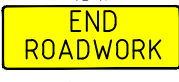




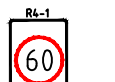

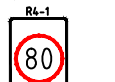


**NOTES**

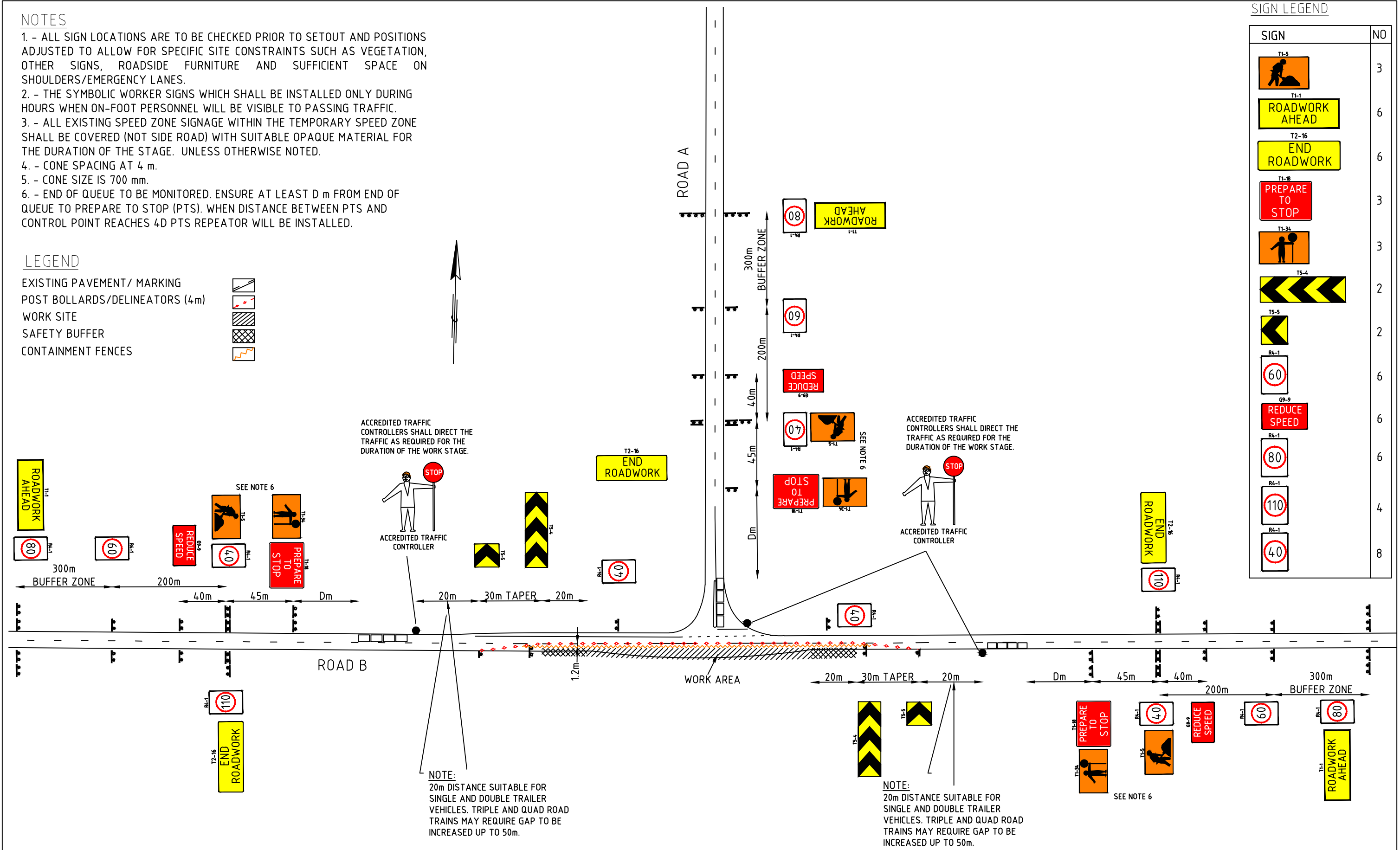
1. - ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
2. - THE SYMBOLIC WORKER SIGNS WHICH SHALL BE INSTALLED ONLY DURING HOURS WHEN ON-FOOT PERSONNEL WILL BE VISIBLE TO PASSING TRAFFIC.
3. - ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED (NOT SIDE ROAD) WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE STAGE. UNLESS OTHERWISE NOTED.
4. - CONE SPACING AT 4 m.
5. - CONE SIZE IS 700 mm.
6. - END OF QUEUE TO BE MONITORED. ENSURE AT LEAST D m FROM END OF QUEUE TO PREPARE TO STOP (PTS). WHEN DISTANCE BETWEEN PTS AND CONTROL POINT REACHES 4D PTS REPEATOR WILL BE INSTALLED.

**LEGEND**

- EXISTING PAVEMENT/ MARKING 
- POST BOLLARDS/DELINEATORS (4m) 
- WORK SITE 
- SAFETY BUFFER 
- CONTAINMENT FENCES 

**SIGN LEGEND**

SIGN	NO
	3
	6
	6
	3
	3
	2
	2
	6
	6
	6
	4
	8



No.	DATE	DESCRIPTION	APPR.
A	15.07.14	MRWA AMENDMENTS	
-	23.06.14	FOR CLIENT REVIEW	RG
AMENDMENTS			



Scale: NTS

Date: 15.07.14

MAIN ROADS WA

Title: INTERSECTION TIE-IN WORKS  
 WORKS WITHIN 1.2m OF NEAREST OPEN TRAFFIC LANE  
 110km/h to 40km/h SPEED RESTRICTION-REVERSABLE FLOW  
 TRAFFIC MANAGEMENT LAYOUT

Dwg No.	TCD-005
Rev.	A

**NOTES**

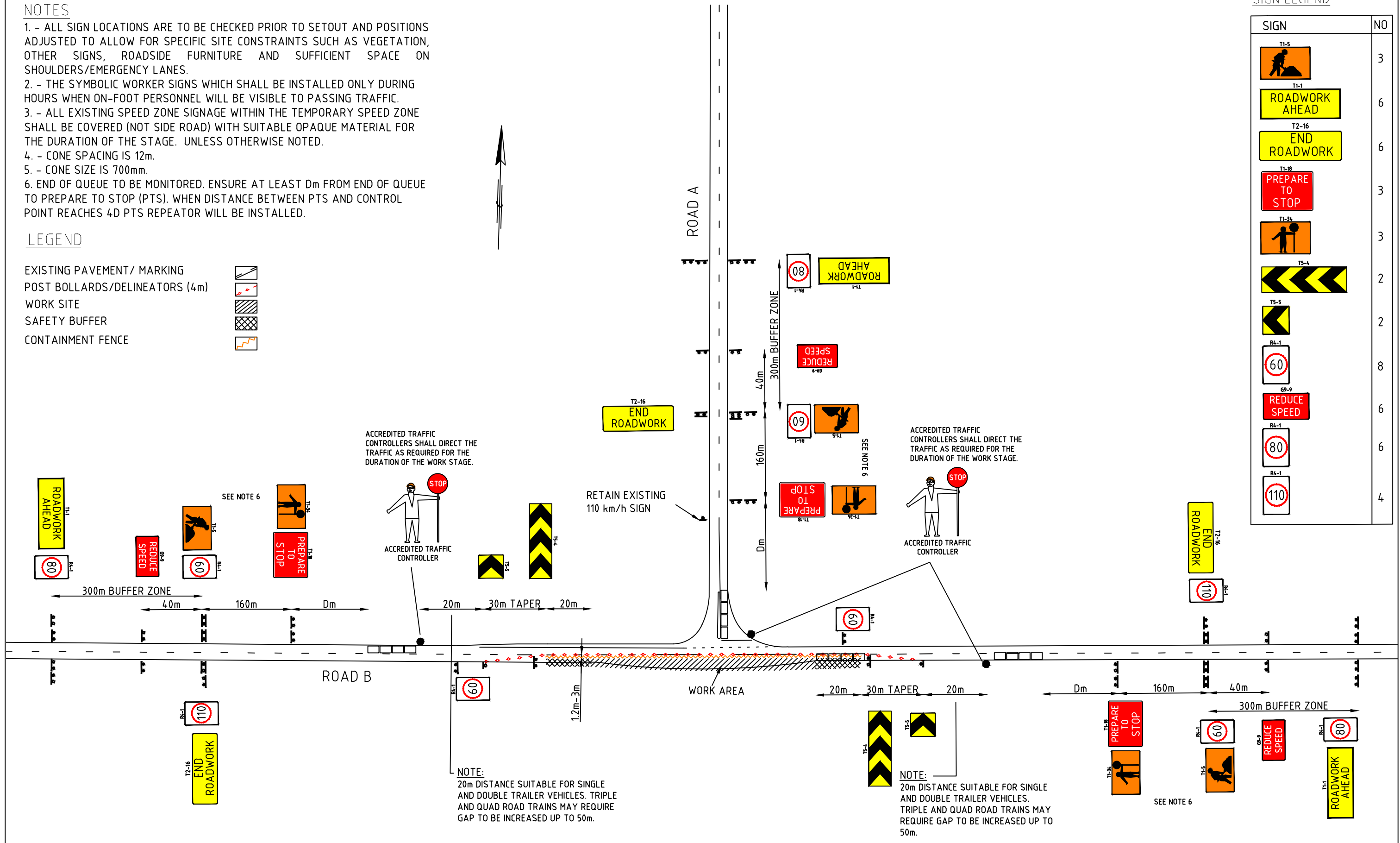
1. - ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
2. - THE SYMBOLIC WORKER SIGNS WHICH SHALL BE INSTALLED ONLY DURING HOURS WHEN ON-FOOT PERSONNEL WILL BE VISIBLE TO PASSING TRAFFIC.
3. - ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED (NOT SIDE ROAD) WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE STAGE. UNLESS OTHERWISE NOTED.
4. - CONE SPACING IS 12m.
5. - CONE SIZE IS 700mm.
6. END OF QUEUE TO BE MONITORED. ENSURE AT LEAST Dm FROM END OF QUEUE TO PREPARE TO STOP (PTS). WHEN DISTANCE BETWEEN PTS AND CONTROL POINT REACHES 4D PTS REPEATOR WILL BE INSTALLED.

**LEGEND**

EXISTING PAVEMENT/ MARKING	
POST BOLLARDS/DELINEATORS (4m)	
WORK SITE	
SAFETY BUFFER	
CONTAINMENT FENCE	

**SIGN LEGEND**

SIGN	NO
	3
	6
	6
	3
	3
	2
	2
	8
	6
	6
	4



No.	DATE	DESCRIPTION	APPR.
A	15.07.14	MRWA AMENDMENTS FOR CLIENT REVIEW	RG
-	23.06.14		
AMENDMENTS			

**mainroads**  
WESTERN AUSTRALIA

Client: MAIN ROADS WA

Scale	NTS
Date	15.07.2014

Title: INTERSECTION TIE-IN WORKS  
WORKS WITHIN 1.2m-3m OF NEAREST OPEN TRAFFIC LANE  
110km/h TO 60km/h SPEED RESTRICTION-REVERSABLE FLOW  
TRAFFIC MANAGEMENT LAYOUT

Dwg No.	TCD-006
Rev.	A





SIGN LEGEND

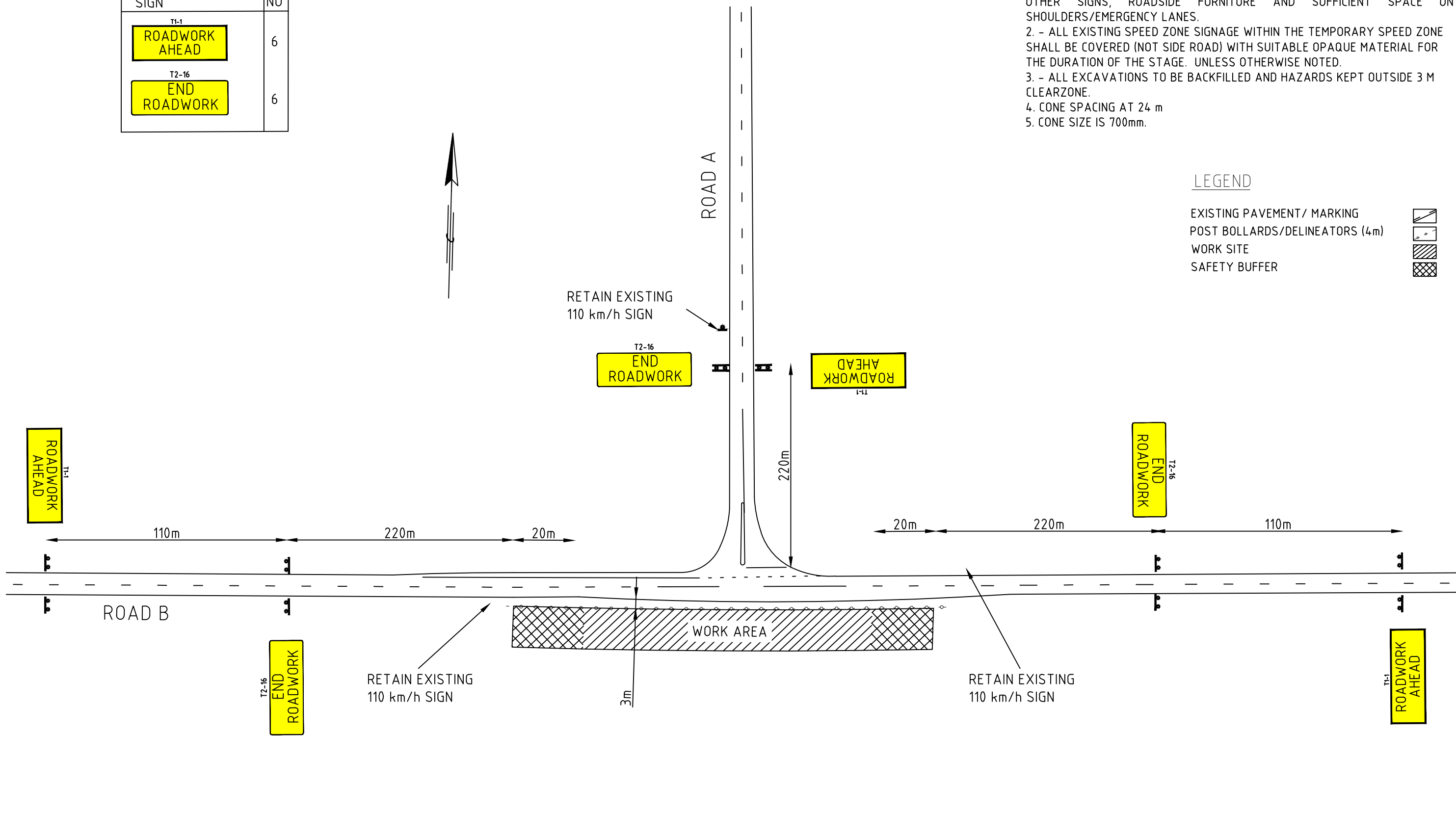
SIGN	NO
T1-1 ROADWORK AHEAD	6
T2-16 END ROADWORK	6

NOTES

1. - ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
2. - ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED (NOT SIDE ROAD) WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE STAGE. UNLESS OTHERWISE NOTED.
3. - ALL EXCAVATIONS TO BE BACKFILLED AND HAZARDS KEPT OUTSIDE 3 M CLEARZONE.
4. CONE SPACING AT 24 m
5. CONE SIZE IS 700mm.

LEGEND

EXISTING PAVEMENT/ MARKING	
POST BOLLARDS/DELINEATORS (4m)	
WORK SITE	
SAFETY BUFFER	



No.	DATE	DESCRIPTION	APPR.
A	15.07.14	MRWA AMENDMENTS	
-	24.06.14	FOR CLIENT REVIEW	RG
AMENDMENTS			

 **mainroads**  
WESTERN AUSTRALIA



MAIN ROADS WA

Scale	NTS
Date	15/07/2014

Title  
HAZARDS OUTSIDE OF 3 m OF TRAVELWAY  
WORK AREA 3m TO TRAFFIC  
POSTED SPEED: 110KM/H  
AFTER CARE TRAFFIC MANAGEMENT LAYOUT

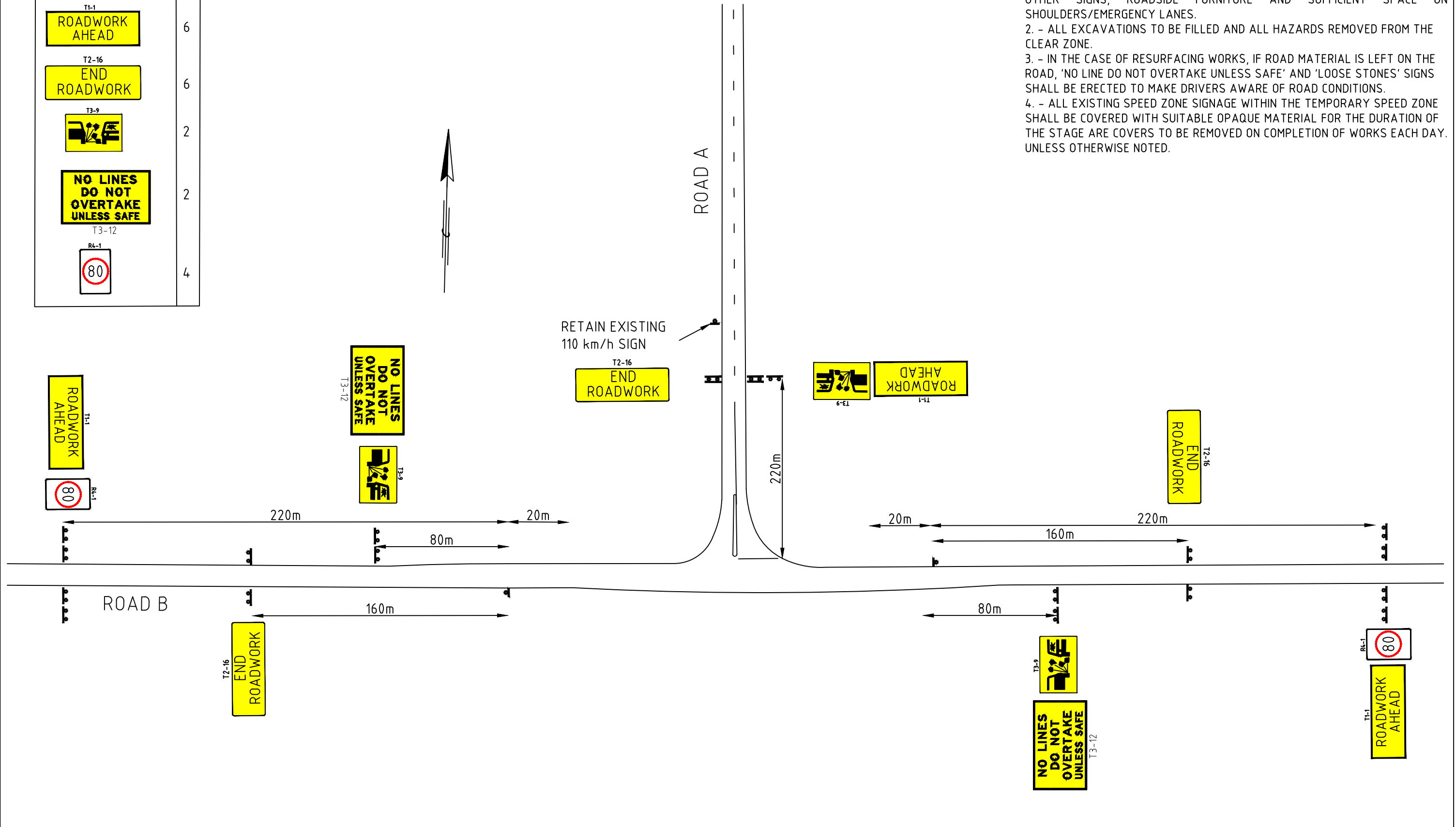
Dwg No.	TCD-007
Rev.	A


SIGN LEGEND

SIGN	NO
T1-1 ROADWORK AHEAD	6
T2-16 END ROADWORK	6
T3-9 	2
NO LINES DO NOT OVERTAKE UNLESS SAFE	2
T3-12 R4-1 	4

NOTES

1. - ALL SIGN LOCATIONS ARE TO BE CHECKED PRIOR TO SETOUT AND POSITIONS ADJUSTED TO ALLOW FOR SPECIFIC SITE CONSTRAINTS SUCH AS VEGETATION, OTHER SIGNS, ROADSIDE FURNITURE AND SUFFICIENT SPACE ON SHOULDERS/EMERGENCY LANES.
2. - ALL EXCAVATIONS TO BE FILLED AND ALL HAZARDS REMOVED FROM THE CLEAR ZONE.
3. - IN THE CASE OF RESURFACING WORKS, IF ROAD MATERIAL IS LEFT ON THE ROAD, 'NO LINE DO NOT OVERTAKE UNLESS SAFE' AND 'LOOSE STONES' SIGNS SHALL BE ERECTED TO MAKE DRIVERS AWARE OF ROAD CONDITIONS.
4. - ALL EXISTING SPEED ZONE SIGNAGE WITHIN THE TEMPORARY SPEED ZONE SHALL BE COVERED WITH SUITABLE OPAQUE MATERIAL FOR THE DURATION OF THE STAGE ARE COVERS TO BE REMOVED ON COMPLETION OF WORKS EACH DAY. UNLESS OTHERWISE NOTED.



<table border="1"> <tr> <td>No.</td> <td>DATE</td> <td>DESCRIPTION</td> <td>APPR.</td> </tr> <tr> <td>A</td> <td>15.07.14</td> <td>MRWA AMENDMENTS FOR CLIENT REVIEW</td> <td>RG</td> </tr> <tr> <td>-</td> <td>24.06.14</td> <td></td> <td></td> </tr> <tr> <td colspan="4">AMENDMENTS</td> </tr> </table>			No.	DATE	DESCRIPTION	APPR.	A	15.07.14	MRWA AMENDMENTS FOR CLIENT REVIEW	RG	-	24.06.14			AMENDMENTS				 <p>MAIN ROADS WA</p>	Scale NTS	Title AFTERCARE WHEN NEW SEAL LAYED POSTED SPEED: 110KM/H AFTER CARE TRAFFIC MANAGEMENT LAYOUT	Dwg No. TCD-008
No.	DATE	DESCRIPTION	APPR.																			
A	15.07.14	MRWA AMENDMENTS FOR CLIENT REVIEW	RG																			
-	24.06.14																					
AMENDMENTS																						
			Date 15.07.14	Rev. A																		