

Remediation of the Former Cresco Site, Bayswater

Traffic Management Plan

March, 2006

CSBP



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Contents

	Page Number
1. Introduction	1
1.1 Objectives	1
1.2 Project Overview	2
1.3 Trucks	3
1.4 Historic Traffic Volume	4
1.5 Traffic Observation Study	4
1.6 Proposed Transport Route	4
2. Railway Parade	8
2.1 Existing Situation	8
2.2 Traffic Impacts	9
2.2.1 <i>Railway Parade</i>	9
2.2.2 <i>Railway Level Crossing (not recommended)</i>	9
2.3 Recommended Measures	10
3. Jackson Street	12
3.1 Existing Situation	12
3.2 Traffic Impacts	13
3.2.1 <i>Corner of Railway Parade and Jackson Street</i>	13
3.2.2 <i>Jackson Street</i>	13
3.2.3 <i>Corner of Jackson Street and Collier Road</i>	13
3.3 Recommended Measures	13
4. Collier Road and Tonkin Highway	17
4.1 Existing Situation	17
4.1.1 <i>Collier Road</i>	17
4.1.2 <i>Tonkin Highway</i>	17
4.2 Traffic Impacts	18
4.2.1 <i>Collier Road</i>	18
4.2.2 <i>Collier Road and Tonkin Highway Intersection</i>	18
4.3 Recommended Measures	19
5. Monitoring	21
6. Community Liaison.....	22
6.1 Community Complaints Procedure	22
7. References	23

Contents (continued)

Page Number

List of tables

Table 1.1: Summary of the Remediation Proposal.....	2
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List of figures

Figure 1.1: Current site layout	3
Figure 1.2: Example of a semi-trailer	3
Figure 1.3: Proposed truck movements within the local area	6
Figure 1.4: Proposed transport route	7
Figure 2.1: Site entry and exit points along Railway Parade.....	9
Figure 2.2: Recommended Traffic Management for Railway Parade	11
Figure 3.1: Existing Traffic Conditions on Jackson Street.....	12
Figure 3.2: Proposed centre-line re-marking.....	14
Figure 3.3: Engineering survey of truck turning circles	15
Figure 3.4: Recommended Traffic Management for Jackson Street	16
Figure 4.1: Observations along Collier Road	18
Figure 4.2: Recommended Traffic Management for Collier Road	20

List of appendices

Appendix A Example of Traffic Management Daily Diary	
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1. Introduction

This Traffic Management Plan (TMP) has been prepared on behalf of CSBP Limited for the remediation of the former Cresco fertiliser site in Bayswater.

This plan has been produced with advice from Main Roads Western Australia, City of Bayswater and Town of Bassendean and will be submitted to the Department of Environment for approval prior to the commencement of remediation works.

The remediation of the site requires demolition and excavation works. This plan has been prepared to ensure the remediation contractor addresses traffic issues throughout the duration of the remediation project. Traffic volume increases have been investigated for two different routes during the Public Environmental Review (PER) process. The conclusion from the PER is that increased volumes will not impact on the current road capacities.

This plan assumes that contaminated soils and wastes will be transported to landfill (i.e. no onsite processing of waste). This plan will provide measures to control road safety problems and accommodate specific movements.

1.1 Objectives

The objectives of this traffic management plan are to address the traffic issues related to the soil remediation activities, specifically:

- provide appropriate management measures to control traffic operation and road safety problems associated with the remediation;
- avoid or manage potential pedestrian-vehicle conflicts;
- allow remediation activities to take place efficiently, to reduce the duration of disruption and temporary changes to traffic management;
- provide information about the temporary changes to traffic conditions to the local community; and
- Identify clear communication protocols to address consultation with stakeholders as well as actions required in the event of traffic related problems during the remediation of the site.

1.2 Project Overview

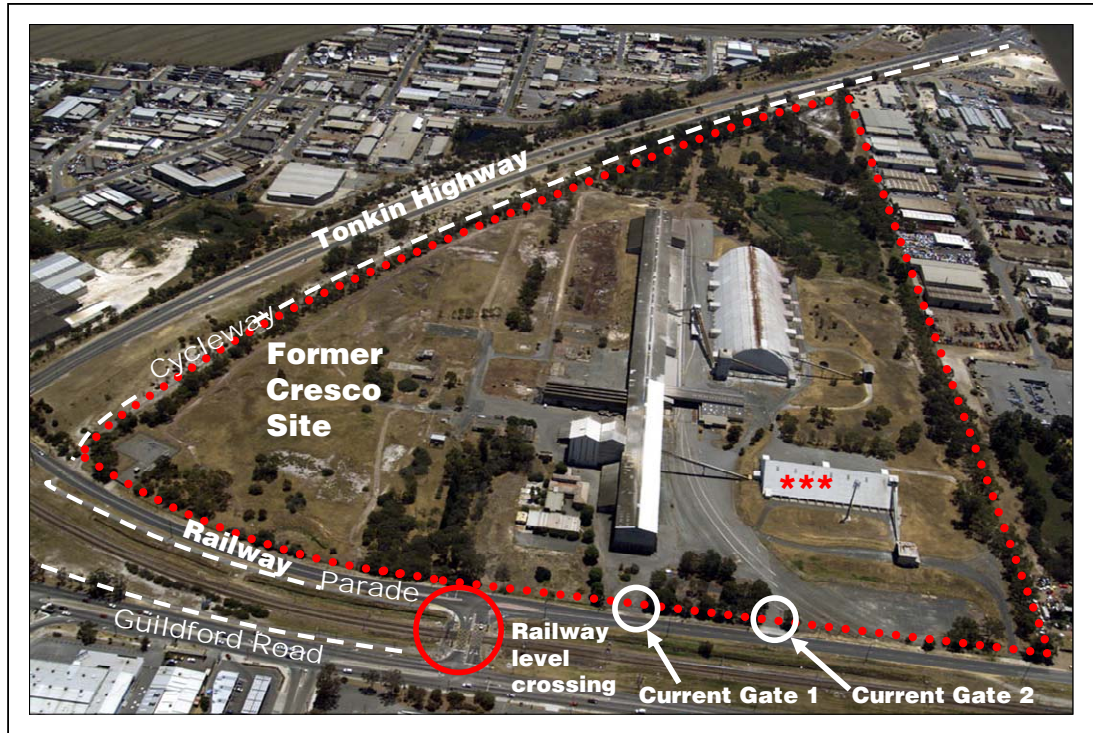
A summary of the remediation proposal is provided in *Table 1.1*. The current site layout is shown in *Figure 1.1*.

Element	Description
Volume of contaminated soil material:	Approximately 280,000 cubic metres of soil material containing heavy metals, fluoride compounds and acid generating compounds and other contaminants.
Remediation of soil contamination:	Excavation and either removal to landfill or treatment and reuse onsite.
Management of groundwater contamination:	Abstract and treat groundwater to remove contaminants. Disposal of treated groundwater via infiltration onsite or direct discharge to the Bayswater Main Drain.
Remediation time frame:	Approximately 5 years.
Area for remediation:	Approximately 37 hectares.
Infrastructure, including buildings:	Removed to suitable disposal sites.

The four stages of remediation that this management plan addresses are:

- bulk soil excavation and haulage to landfill;
- demolition of existing buildings and other infrastructure and transport to landfill; and
- Post-remediation shaping.

The type, number and combination of vehicles used will change as the remediation activities change. For example, more trucks will be required during the demolition and soils excavation stages. The filling and reshaping stage may require less trucks and different vehicle mix. The traffic management plan focuses on the management of motorists' response to vehicle movements (e.g. frequent stopping, turning, large turning circle, and greater stopping distances) to maintain the road safety along the proposed transport route. Details of the transport route and key intersections are provided in *Section 1.6*.

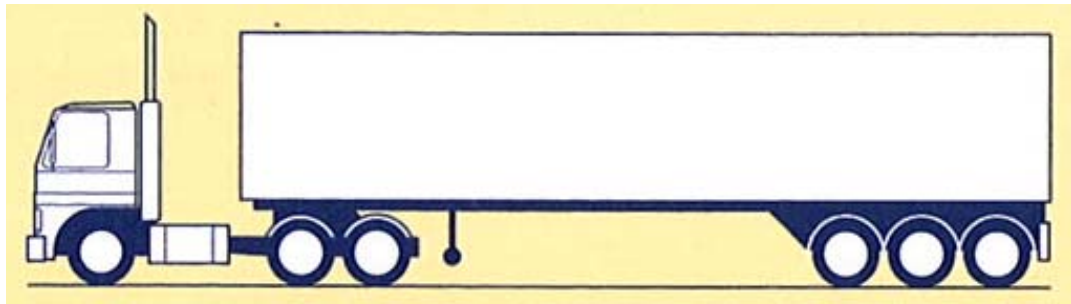


Note: ***building has been removed since photo was taken

Figure 1.1: Current site layout

1.3 Trucks

Tri axle semi-trailers (19 metres), illustrated in *Figure 1.2*, will be used during soil excavation and haulage to landfill and may also be used during the final stages of site remediation.



Source: Sharing the road with trucks: a guide to assist all road users to arrive safely, MRWA December 2002.

Figure 1.2: Example of a semi-trailer

The option of using longer trucks (27.5 metre road trains) was investigated. The economics of using long vehicles and the additional logistical impacts (e.g. turning circles affecting movement at intersections and traffic flow at waste facilities) discounted this option.

Advice from Main Roads Western Australia is that semi-trailers are permitted along the proposed transport route. However, the transport operator is required to obtain a permit if the mass of each vehicle exceeds 42.5 tonnes. The permit identifies the vehicle and specifies the routes on which it may operate. The transport operator must comply with the

requirements of the permit. This means that permit vehicles are not allowed to deviate from major roads and are not free to use streets in residential and commercial areas.

A Front End Loaders fitted with a load cell will be used to load trucks with the excavated soil. This will ensure the truck weight limits are not exceeded and eliminates the need for a purpose built weighbridge.

The trucks will be transporting contaminated soil and hazardous waste to the Red Hill Waste Management Facility. Therefore, the transport operators will be required to hold a Controlled Waste Licence.

The hours of operation will be 7.00am to 6.00pm, Monday to Friday. Placing additional vehicles onto local roads during the morning and afternoon peak hours may impact other traffic using the transport route described in *Section 1.3*. There will be no operation after 6.00pm, and therefore no anticipated traffic management required in the evenings.

1.4 Historic Traffic Volume

In the last 5 years of operation prior to the former Cresco site closure (1984–1988), fertiliser despatches from the site averaged about 180,000 tonnes per year. Seventy-five percent of the despatches occurred in a four month period and used the same road network as exists today. Working hours were 7.00am to 4.00pm, five days per week. On a daily basis, this is approximately 1,600 tonnes per day (based on 84 days workdays over four months).

This is about three times the daily volume of material that will be transported for the remediation works (20 trucks carrying approximately 26 tonnes each).

1.5 Traffic Observation Study

A traffic observation study was conducted on Monday 27 September 2004 between 1.00pm and 3.00pm. The purpose of the study was to identify any traffic and safety issues that may arise from trucks using the local roads, and recommend solutions. A consultant walked the proposed transport route within the local area and documented observations (refer to *Figure 1.4*). Although a traffic count was not conducted, general observations about traffic volume and flow were noted.

1.6 Proposed Transport Route

The proposed transport route for the soil remediation phase is described below:

- use site entry point by turning right from Railway Parade;
- use separate entry and exit gates (i.e. one-way in, one-way out);
- use exit point by turning left onto Railway Parade, heading east along Railway Parade;
- turn left at the corner of Railway Parade and Jackson Street, heading north;
- turn left onto Collier Road at the corner of Jackson Street and Collier Road (end of Jackson Street), heading west;
- at the intersection of Collier Road and the Tonkin Highway, either:

- < turn right onto Tonkin Highway, heading north;
- < take the Reid Highway exit off Tonkin Highway, heading east along the Reid Highway;
- < exit the Reid Highway onto Middle Swan Road, heading east;
- < take the Toodyay exit and head north-east towards Red Hill;

OR

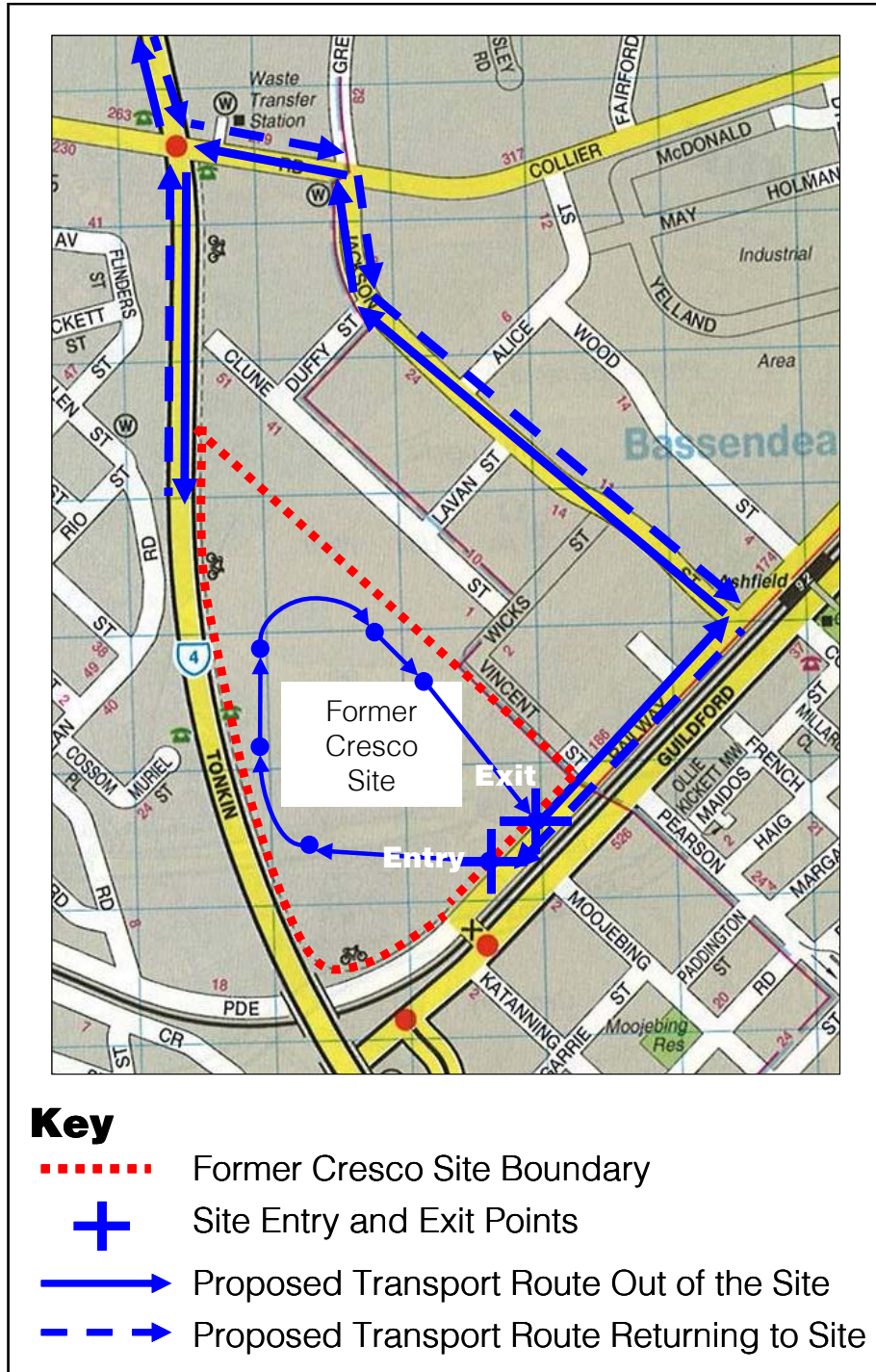
- < turn left onto Tonkin Highway, heading south,
- < take the Roe Highway exit off Tonkin Highway, heading north along Roe Highway,
- < Turn right onto Toodyay Road and head north-east towards Red Hill.

The preferred transport route is the one using the Reid Highway and has a travel distance of approximately 27 kilometres. The travel distance using the Roe Highway is approximately 38 kilometres.

The same transport route will also be used to return to the site (but in the reverse order).

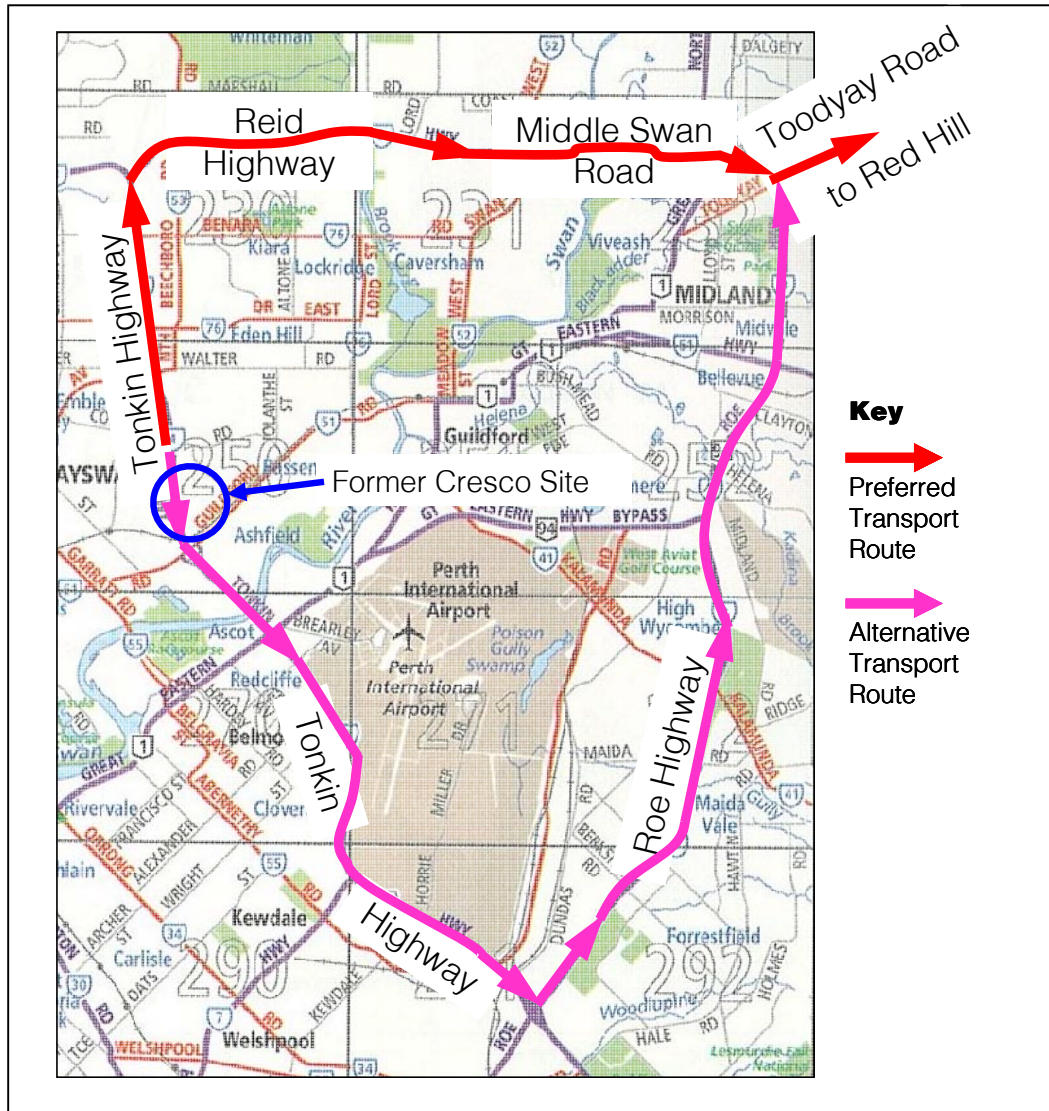
If necessary, the railway level crossing can be used to enter the site because the existing traffic controls (i.e. boom gates, traffic lights, stop signs) are adequate. However, this is NOT the preferred option for trucks to access the site.

These movements are shown in *Figure 1.3* and *Figure 1.4*.



Source: base map — UBD 2005 Perth Street Directory

Figure 1.3: Proposed truck movements within the local area



Source: base map — UBD 2005 Perth Street Directory

Figure 1.4: Proposed transport route

The following sections of the Traffic Management Plan describe the traffic impacts and recommended management measures for the proposed transport route.

2. Railway Parade

There will be immediate traffic impacts for Railway Parade throughout all of the remediation stages. However, the increase in semi-trailers during bulk soil excavation and haulage to landfill will have the most impact.

2.1 Existing Situation

Main Roads Western Australia maintains a 50 km/hr speed restriction on Railway Parade. However, a 60 km/hr sign was noted on Railway Parade beyond the intersection of Railway Parade and Jackson Street. It is a two-lane sealed road, one lane for each direction.

Railway Parade is used to access the industrial area.

The traffic observation study for Railway Parade was completed between 1.15pm and 1.50pm on Monday 27 September 2004. One vehicle was observed to pass the former Cresco site approximately every three to five seconds. This equates to between 720 and 1,200 vehicles per hour. The type of traffic using Railway Parade includes: motorcycles, cars, four-wheel drive vehicles, light-commercial vehicles and heavy rigid vehicles. Most of the vehicles were observed to be travelling to and from the railway level crossing.

No bus stops were observed between the former Cresco site and the intersection of Jackson Street.

A bicycle path that starts from the corner of Tonkin Highway and Collier Road and finishes on Railway Parade at the south-west corner of the former Cresco site.

The footpath along the boundary of the former Cresco site is overgrown with grass and weeds.

There are five light-industrial businesses between the former Cresco site and Jackson Street. These businesses have access points and driveways on the northern side of the road because the southern side of the road is bounded by the railway reserve.

The level crossing is activated every five to six minutes during the morning and afternoon peak hours and approximately every 15 minutes during the day. The boom gates and flashing lights are activated approximately 20 seconds before the train arrives at the level crossing. Traffic travelling from Railway Parade to Guildford Road (and vice versa) is banked up along these roads while waiting to cross the railway line.

Current Gate 1 is the existing entry point closest to the railway level crossing. Current Gate 2 is the existing entry point that is furthest from the railway level crossing, approximately 100 metres east of Gate 1. These gates are shown in *Figure 2.1*.



Note: ***building has been removed since photo was taken

Figure 2.1: Site entry and exit points along Railway Parade

2.2 Traffic Impacts

2.2.1 Railway Parade

The potential for increase in traffic build up at the railway level crossing may pose a risk to the safety of cyclists whom may use the crossing to access the cycle path that continues along Guildford Road.

Additional heavy vehicle traffic using Railway Parade may require neighbouring business to use extra care when accessing their sites.

2.2.2 Railway Level Crossing (not recommended)

The railway level crossing is only considered as an alternative for the return route to the former Cresco site.

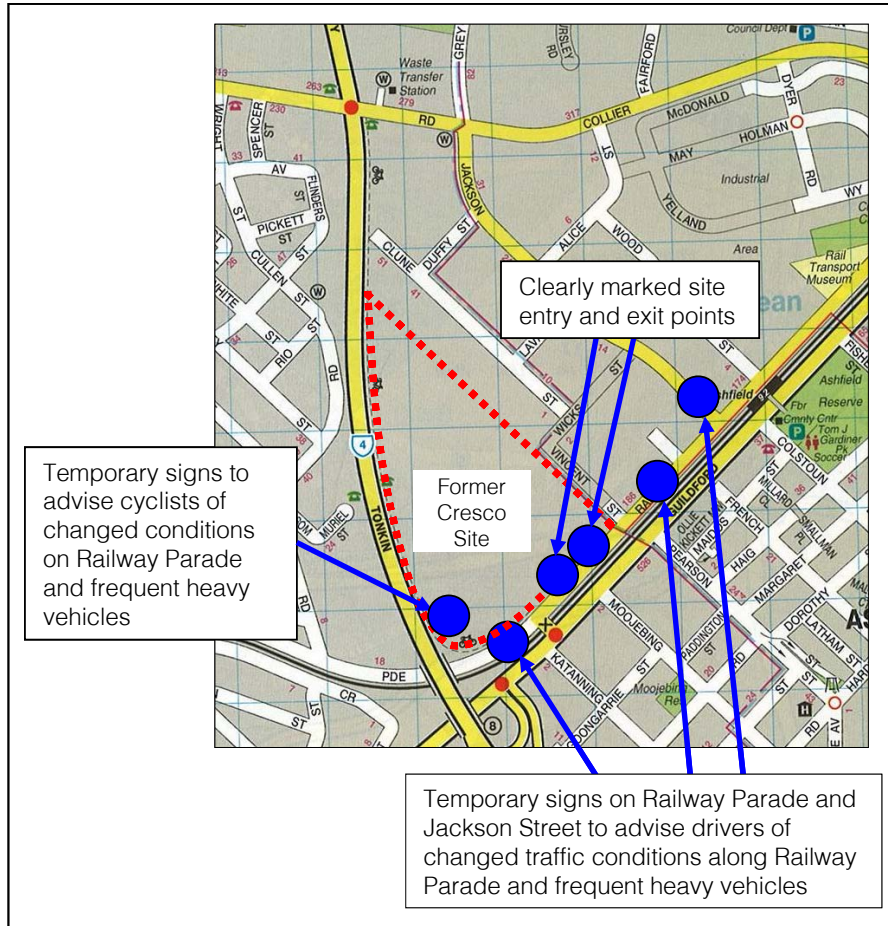
Many vehicles use the railway level crossing to access Guildford Road and Railway Parade. Trucks will be advised not to use the railway level crossing, unless necessary. There are no foreseeable or anticipated impacts on traffic at this crossing. There is however always a greater risk when loaded trucks cross a busy railway line. This route is therefore not recommended. A detailed traffic management plan providing details of the work zone signs is required if this crossing is used.

2.3 Recommended Measures

The following traffic management measures are recommended for Railway Parade:

- use Gate 1 as the Entry to the site (i.e. trucks will turn right from Railway Parade into the former Cresco site) and ensure adequate signage for all road users to identify the gate;
- use Gate 2 (see Figure 2.1) as the exit and ensure adequate signage for all road users to identify the gate. Using two gates would allow for a one-way in and one-way out flow of trucks around the site;
- conduct site induction for truck drivers, advising of the one-way in and one-way out policy and requirement for trucks to adjust speeds to match the road conditions when entering Railway Parade;
- manage visibility issues by heavy pruning of the trees and mowing the grass along the along the site boundary;
- install temporary signage on Jackson Street and Railway Parade to advise road users to reduce speed and drive with caution when approaching the site due to increase in truck traffic and changed conditions;
- install temporary signs at the cycleway exit to advise riders of frequent semi-trailer traffic using Railway Parade; and
- communicate the increase in semi-trailers and the changed traffic conditions along Railway Parade to neighbouring business during remediation activities (refer to Section 6.2).

Traffic management is illustrated in *Figure 2.2*.



Source: base map — UBD 2005 Perth Street Directory

Figure 2.2: Recommended Traffic Management for Railway Parade

3. Jackson Street

There will be immediate traffic impacts for Railway Parade throughout all of the remediation stages. However, the increase in semi-trailers during bulk soil excavation and haulage to landfill will have the most impact.

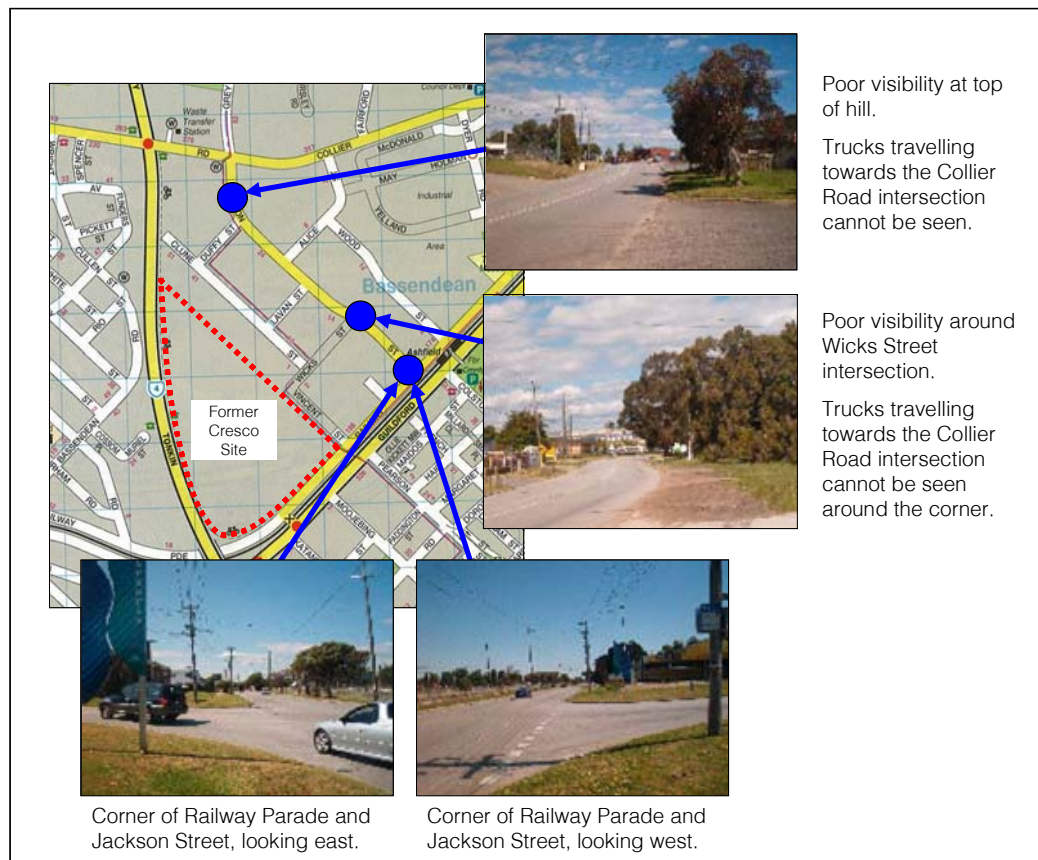
3.1 Existing Situation

Main Roads Western Australia maintains a 50 km/hr speed zone on Jackson Street.

The traffic observation study was completed between 1.50pm and 2.25pm on Monday 27 September 2004. One vehicle was observed turning right onto Railway Parade from Jackson Street every 20 seconds. One vehicle was observed turning left onto Jackson Street from Railway Parade every 30 seconds. This equates to approximately 300 vehicles per hour using this corner.

A mixture of light-industrial vehicles, heavy rigid trucks and cars were observed along Jackson Street.

Many light industrial businesses have driveways facing Jackson Street. Visibility from the driveways of business along Jackson Street is poor in two main points. These are illustrated in *Figure 3.1*.



Source: base map — UBD 2005 Perth Street Directory

Figure 3.1: Existing Traffic Conditions on Jackson Street

3.2 Traffic Impacts

3.2.1 Corner of Railway Parade and Jackson Street

During bulk soil excavation and haulage to Red Hill, there will be an increase in the number of heavy vehicles turning into Jackson Street from Railway Parade and vice versa.

Although the turning circles of the long trucks can be accommodated at this corner, they may veer into the right lane (i.e. in the path of vehicles on Jackson Street heading towards the intersection) to complete the turn.

3.2.2 Jackson Street

Jackson Street is currently used by heavy vehicles that service the industrial businesses on this street. Regular users of Jackson Street may be required to reduce speed and increase caution while entering and exiting their driveways.

3.2.3 Corner of Jackson Street and Collier Road

Currently, a scrap metal yard occupies the property on the corner of Jackson Street and Collier Road. This business uses a driveway that faces Jackson Street. There is poor visibility to the right from this driveway. The increase in semi-trailers may increase the risks to driver safety when using this driveway.

A left hand turn lane is present at the intersection of Jackson Street and Collier Road. The visibility in the left hand lane approaching the corner of Jackson Street and Collier Road is currently very poor, due to several overgrown trees and plants.

3.3 Recommended Measures

The recommended measures at the corner of Jackson Street and Railway Parade are:

- temporary re-marking of the centre lines of Railway Parade and Jackson Street to accommodate truck turning circles. A schematic to illustrate the proposed layout of the intersection is provided in Figure 3.2 and a detailed engineering survey illustrating the truck turning circles is provided as Figure 3.3.
- provide induction of the Jackson Street road conditions to remediation truck drivers, in particular advising them to adjust speeds and use care on approach the intersection;
- install temporary signs on all approaches to the corner advising drivers of the changed traffic conditions ahead, and frequent vehicle stopping/turning; and
- Communicate to businesses about the changed traffic conditions at the corner of Jackson Street and Railway Parade (refer Section 6.2).

The recommended measures along Jackson Street are:

- install temporary signs in areas of poor visibility points, advising motorists to reduce speed and use caution when entering or exiting Jackson Street;
- heavy pruning (and possible removal) of trees and vegetation at the intersection of Jackson Street and Collier Road, with particular attention to providing clear vision approaching the left turn lane;
- provide induction of Jackson Street to remediation truck drivers, pointing out the areas where caution is required, and where vehicles experience poor visibility (e.g. around corners and bends); and
- Communicate to businesses along Jackson Street about the increase in truck traffic.

These traffic management techniques are illustrated in *Figure 3.4*.

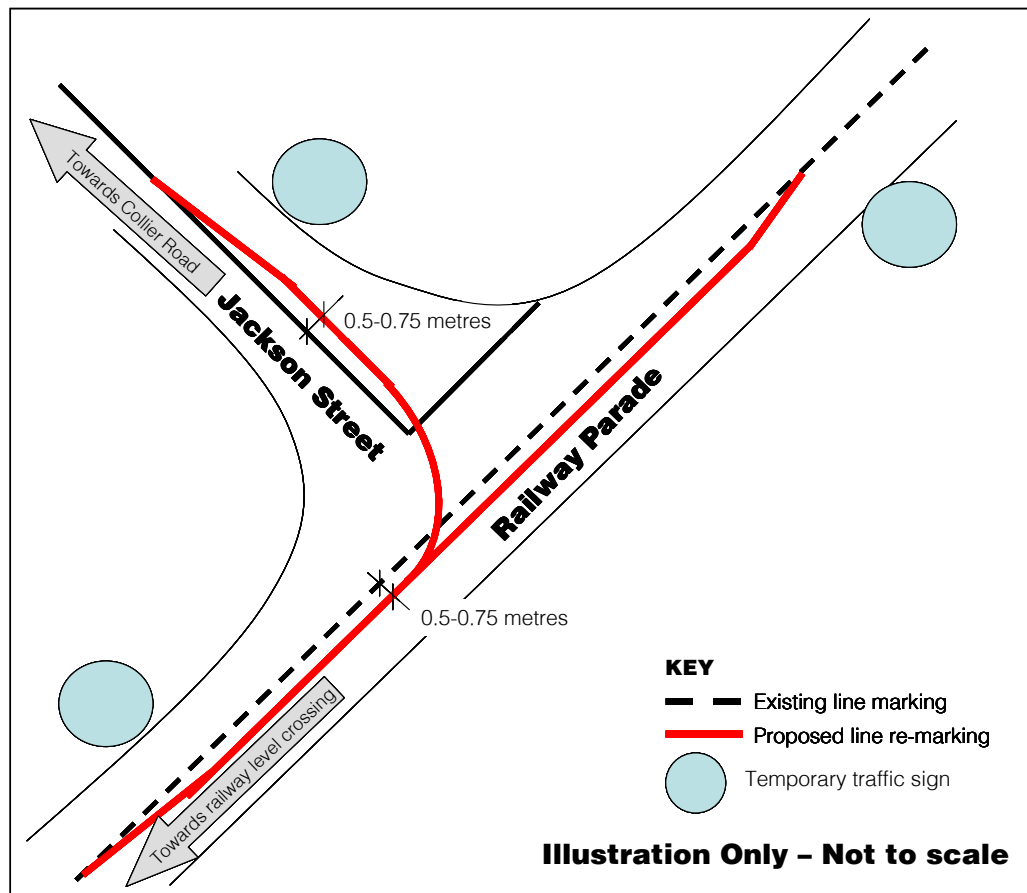


Figure 3.2: Proposed centre-line re-marking

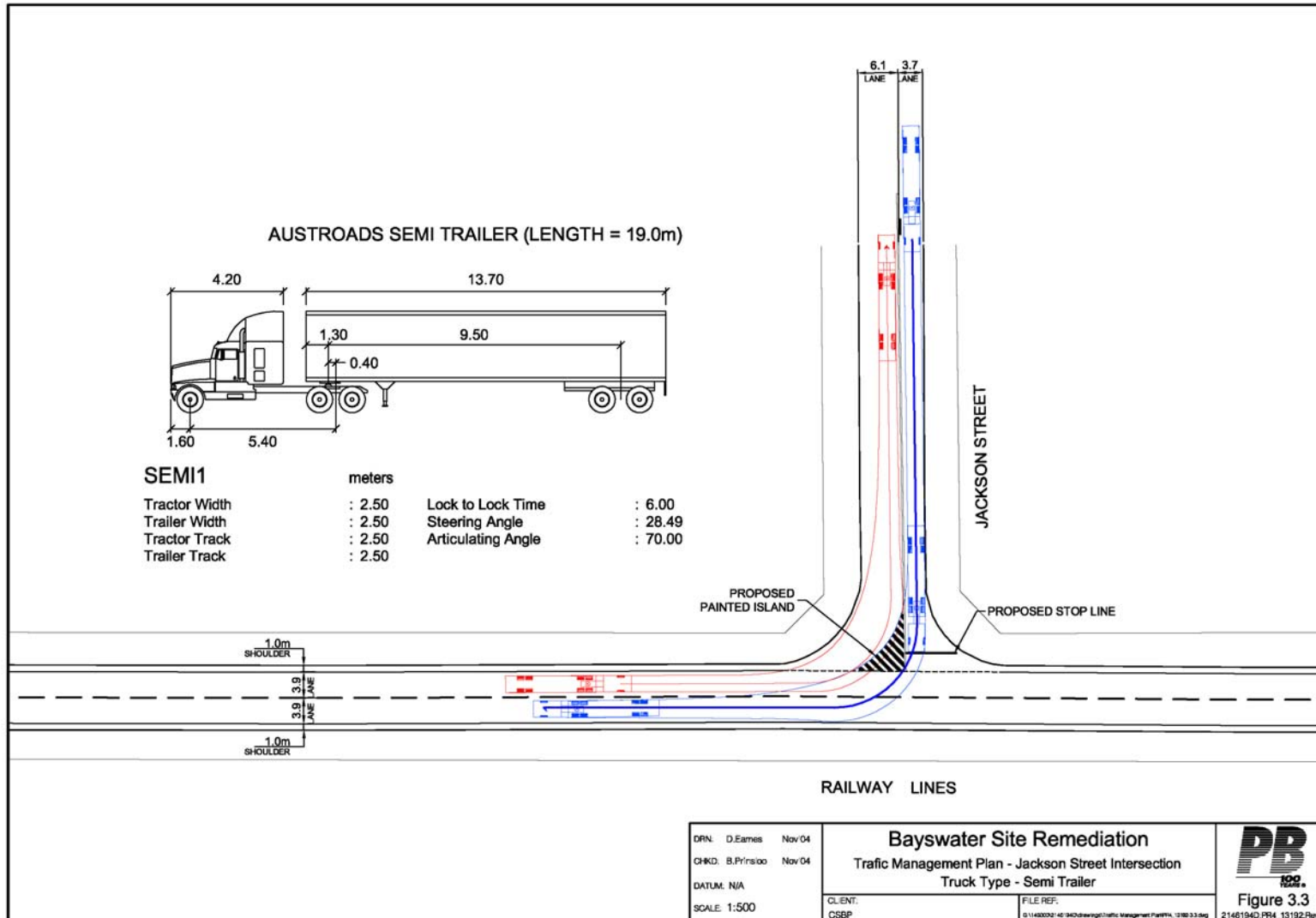
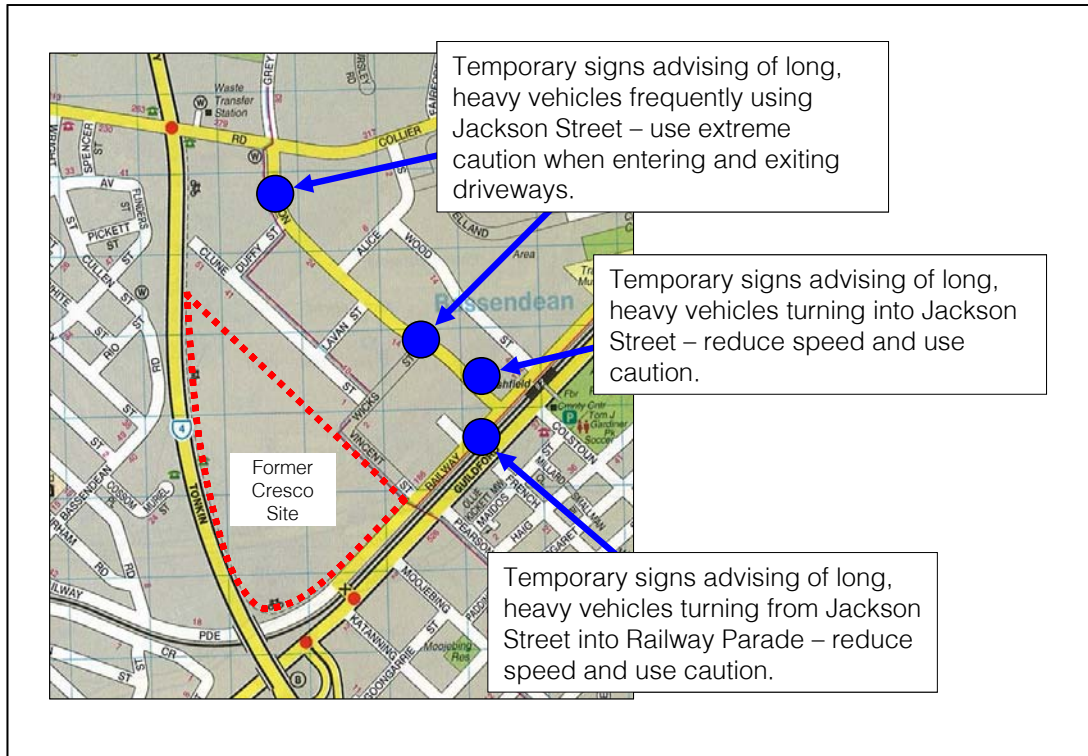


Figure 3.3: Engineering survey of truck turning circles



Source: base map — UBD 2005 Perth Street Directory

Figure 3.4: Recommended Traffic Management for Jackson Street

4. Collier Road and Tonkin Highway

4.1 Existing Situation

4.1.1 Collier Road

The traffic observation study for Collier Road and the Tonkin Highway was completed between 2.45pm and 3.00pm on Monday 27 September 2004.

The intersection of Jackson Street and Collier Road is very busy and used by a mixture of vehicles, but predominantly heavy vehicles. Main Roads advised that Collier Road has a speed zone of 60 km/hr; however vehicles travel at greater speeds were observed as they approached the Tonkin Highway intersection.

Vehicles were observed to change lanes on Collier Road (heading west), immediately before the Jackson Street/Collier Road intersection on approach to the Tonkin Highway intersection. This may pose a safety risk during the remediation works, as the fully loaded semi-trailers will require additional time to turn left onto Collier Road from a full stop on Jackson Street.

Many long, heavy vehicles were observed turning right from Collier Street into Jackson Street, suggesting that this is the main route used by these vehicles to service the businesses located along Jackson Street. During the traffic observation survey, a tip truck with dog trailer combination was observed completing this turn.

TransPerth bus stop number 15827 is located approximately 15 metres from the corner of Jackson Street and Collier Road. This bus stop services bus route 333, from Morley to Midland. Buses stop along Collier Road once every hour throughout the day.

There is no footpath or cycleway along Collier Road on the southern side.

The cycleway that runs parallel to the Tonkin Highway begins on the corner of Collier Road and Tonkin Highway.

4.1.2 Tonkin Highway

The speed limit on the Tonkin Highway is 80 km/hr at the intersection with Collier Road but becomes 100 km/hr away from the intersection.

Traffic movement at the intersection is controlled by lights, with green arrows for right hand turns. Vehicles turning left use the left turn lanes, but care is required.

This highway was designed for frequent heavy vehicle usage and fast traffic flow. Therefore, the additional trucks will not impact the use of the highway.



Source: base map — UBD 2005 Perth Street Directory

Figure 4.1: Observations along Collier Road

4.2 Traffic Impacts

4.2.1 Collier Road

Motorists using Collier Road to access the Tonkin Highway may notice an increase in traffic between Jackson Street and the Tonkin Highway intersection.

The increase in vehicles turning left into Collier Road from Jackson Street may create brief bottlenecks when buses stop to set-down and pick-up passengers.

4.2.2 Collier Road and Tonkin Highway Intersection

Tonkin Highway (North)

This is the preferred transport route for the remediation project. Trucks turn right onto the Tonkin Highway (heading north), turn right onto the Reid Highway (heading east), exit onto Middle Swan Road in Middle Swan and then exit onto Toodyay Road heading north-east towards Red Hill.

A green arrow to turn right at the intersection of Collier Road and Tonkin Highway provides traffic control. With the remediation project, an increase in semi-trailers may slow down traffic turning right at this intersection. This may cause frustration among other drivers.

Main Roads Western Australia has advised that Middle Swan Road is the major access route for heavy vehicles to and from the area and has confirmed that the proposed number of remediation trucks may also use this road. An upgrade to Bridge 920 on Middle Swan Road will take place between January and March 2005; however it is not expected to affect the remediation program timetable.

Tonkin Highway (South)

This is the left turn for trucks heading south, exiting onto the Roe Highway heading north (i.e. around the airport) and then turning right onto Toodyay Road heading north-east towards Red Hill.

Motorists use the left lane to turn left onto the Tonkin Highway. With the remediation project, an increase in semi-trailers may reduce the number of vehicles that can use this lane at any point in time. This may cause frustration among other drivers.

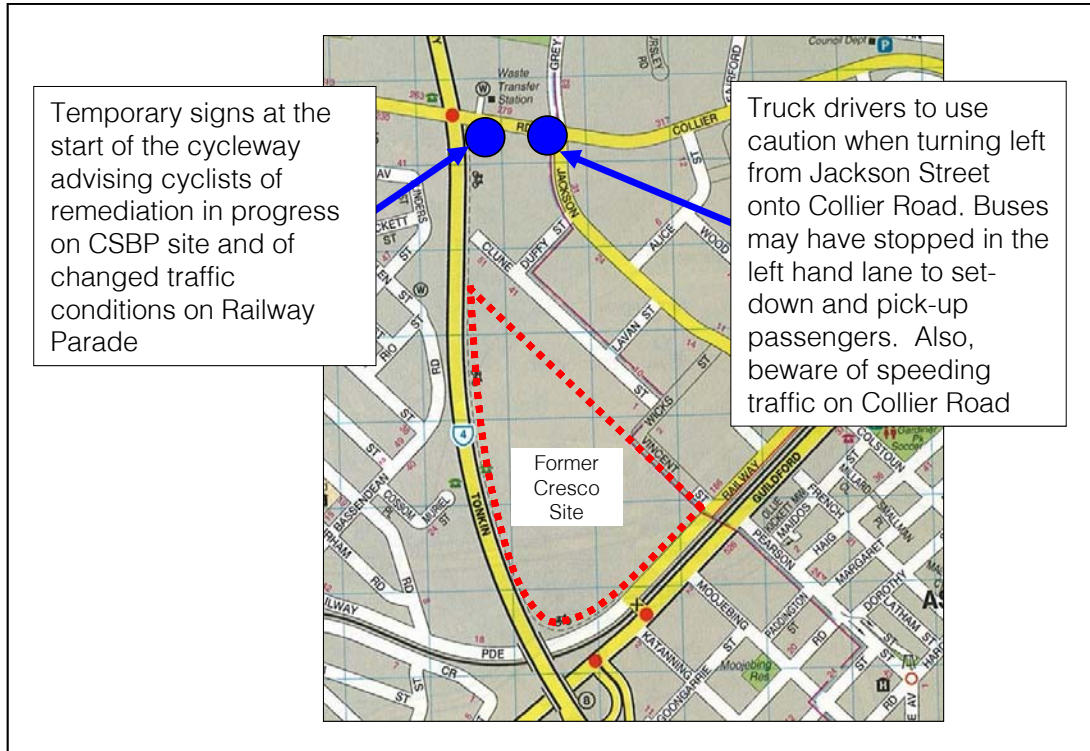
4.3 Recommended Measures

The recommended management measures between Collier Road and the intersection with the Tonkin Highway are described below and illustrated in *Figure 4.2*:

- install temporary signs on Collier Road for vehicles heading west (i.e. towards the Tonkin Highway intersection) advising of trucks frequently entering and exiting from Jackson Street (about 100 metres from Jackson Street);
- conduct truck driver induction, reminding them of safe driving and turning and being prepared for dangerous driving behaviour exhibited by motorists due to frustration; and
- Install temporary signs at the entry to the cycleway, advising cyclist of the changed traffic conditions on Railway Parade.

The intersection of Collier Road and Tonkin Highway is designed for heavy traffic conditions. Therefore, no additional traffic controls are required.

The traffic impacts of the upgrade to Bridge 920 on Middle Swan Road are being managed by Main Roads Western Australia. Speed restrictions and narrower lanes during the upgrade will require all road users to execute additional care. After the upgrade, there are no anticipated impacts that would prevent remediation truck drivers using the Reid Highway transport route to access Red Hill.



Source: base map — UBD 2005 Perth Street Directory

Figure 4.2: Recommended Traffic Management for Collier Road

5. Monitoring

Regular monitoring of the traffic management measures and review of incident records is required to ensure the traffic management plan is kept up to date, and reflects the changes of the remediation project.

A sample traffic management audit template is provided in *Appendix A*. The sample should be used as a guide for regular conducting traffic management audits.

Consistent with CSBP product transport procedures carried out for the Kwinana facility, transport contractors will be required to notify CSBP of any spillage or road incidents. Response to such events will follow existing incident reporting procedures.

6. Community Liaison

Existing community liaison procedures will be maintained with the local community being informed of times and durations of remediation activities through regular remediation bulletins. Contact details will be provided should residents have an enquiry or need to make a complaint.

6.1 Community Complaints Procedure

A community liaison and complaint response procedure will be implemented for the project, inline with CSBP's existing procedure undertaken for their Kwinana operations (DP-11050-01).

The complaint response procedure will include the following key elements:

- identify a site contact (e.g. project manager, site foreman or superintendent) to whom the community can make a written or verbal complaint;
- logging of complaint into electronic Incident Management System;
- document all complaints as they are raised with the following details:
 - < date of complaint
 - < time of complaint
 - < name and contact details of person raising the issue
 - < details of the complaint (note time and location that the event occurred)
 - < name of person responsible for action
- assign the complaint to appropriate staff for resolution;
- investigate complaint and document actions/outcomes on the complaint record:
 - < details of actions to resolve the complaint/issue
 - < date issue resolved
- advise the person who originally made the complaint of the resolution; and
- Close the record.

In response to a complaint, corrective measures (including modification of construction methods and operational techniques to avoid recurrence or minimise ongoing adverse impacts) and follow up monitoring / additional investigations to verify the adequacy of the recommendations will be provided. Following implementation, the complainant will be notified.

7. References

Main Roads Western Australia 2002 *Guide to the Preparation of Traffic Management Plans*, issue date 10/02, Main Roads Western Australia.

Main Roads Western Australia 2002 *Sharing the road with trucks: A guide to assist all road users to arrive safely*, December 2002.

Main Roads Western Australia 2004 *Heavy Vehicles*

[online: <http://www.mainroads.wa.gov.au/NR/mrwa/run/start.asp?G={805BF437-D96A-43D5-BA96-A2B29F7F7269}>], Government of Western Australia, accessed Thursday 23 September 2004.

SkyView WA 2004 [online

http://www.landonline.com.au/skyviewwa/content/asp/skyviewwa_index.asp?product_group_id=78], accessed Monday 11 October 2004

UBD 2004 2005 Perth Street Directory, Osborne Park.

Appendix A

Example of Traffic Management
Daily Diary

Traffic Management Daily Diary

Record details of all changes to the approved traffic management plan, and who directed/made the changes.

Project Details:

Traffic Management Plan Document No.:

Traffic Control Plan Drawing No.:

Revision No.:

Date:	Time:	Location:	By:	Signed:
Details/Comments:				

Date:	Time:	Location:	By:	Signed:
Details/Comments:				

Date:	Time:	Location:	By:	Signed:
Details/Comments:				

Traffic Management Daily Diary

Record details of all changes to the approved traffic management plan, and who directed/made the changes

Traffic Management Daily Inspection Checklist

Traffic Management Plan Document No.:		Traffic Control Plan Drawing No.:		Location:		Date:		Inspected by:		Use reverse side of this checklist to document additional detail		
ITEM		Tick Appropriate Box		ITEM		Tick Appropriate Box						
Before work starts		Time of Inspection:		During work hours		Time of Inspection:						
1	Signs and devices appropriate for the day's activities and conditions.	<input type="checkbox"/>	Satisfactory	Signs and devices operating satisfactorily and seen by motorists.	<input type="checkbox"/>	Satisfactory	<input type="checkbox"/>	Modifications/Repairs Required	<input type="checkbox"/>	Satisfactory	<input type="checkbox"/>	Modifications/Repairs Required
2	Signs and devices positioned and mounted correctly.	<input type="checkbox"/>	Satisfactory	Signs and devices positioned and mounted correctly.	<input type="checkbox"/>	Satisfactory	<input type="checkbox"/>	Modifications/Repairs Required	<input type="checkbox"/>	Satisfactory	<input type="checkbox"/>	Modifications/Repairs Required
3	Signs and devices clean and clearly visible.	<input type="checkbox"/>	Satisfactory	Signs and devices clean and clearly visible.	<input type="checkbox"/>	Satisfactory	<input type="checkbox"/>	Modifications/Repairs Required	<input type="checkbox"/>	Satisfactory	<input type="checkbox"/>	Modifications/Repairs Required
4	Modifications and/or repairs completed.	<input type="checkbox"/>	Yes (give details)	Modifications and/or repairs completed.	<input type="checkbox"/>	Yes (give details)	<input type="checkbox"/>	No (give reason)	<input type="checkbox"/>	No/Not Applicable (give reasons)	<input type="checkbox"/>	No/Not Applicable (give reasons)
		<input type="checkbox"/>	Not Applicable									