

Coega Development Corporation
Port of Durban Validation | Part D
- Demolition - Phase 1
Traffic Management Plan (TMP)
Framework

Revision 1-2 | 28 October 2022

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 287007

Arup (Pty) Ltd
Reg. No. 1994/004081/07 Registered Firm
Consulting Engineers South Africa



Arup (Pty) Ltd
167 Florida Road
Morningside
Durban 4001
PostNet Suite 25
Private Bag X504
Northway 4065
South Africa
www.arup.com

ARUP

Document Verification

ARUP

Job title		Port of Durban Validation Part D - Demolition - Phase 1		Job number		287007	
Document title		Traffic Management Plan (TMP) Framework		File reference			
Document ref							
Revision	Date	Filename	PDV_ARUP_D_XX_RP_YT_1001-1.docx				
Rev 1-1	02 Sep 2022	Description	Revision 1-1				
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
Rev 1-2	28 Oct 2022	Filename	PDV_ARUP_D_XX_RP_YT_1001-2.docx				
		Description	Revision 1-2				
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
		Filename					
		Description					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
		Filename					
		Description					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
Issue Document Verification with Document							<input checked="" type="checkbox"/>

Document Verification

Job title		Port of Durban Validation Part D - Demolition - Phase 1		Job number 287007	
Document title		Traffic Management Plan (TMP) Framework		File reference	
Document ref					
Revision	Date	Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
Issue Document Verification with Document					<input checked="" type="checkbox"/>

Contents

	Page	
1	Introduction	3
2	Site/Project Details	4
	2.1 Site Location	4
	2.2 Project Details	5
	2.3 Status-Quo Access Arrangement	7
3	Background Information	12
	3.1 Existing Road Network	12
	3.2 Existing Intersection Controls	14
4	Affected Road Traffic Authorities	15
5	Site Investigation / Stakeholder Engagement	16
6	Traffic Phases of Demolition	17
	6.1 Traffic Phase 1a	17
	6.2 Traffic Phase 1b	21
	6.3 Traffic Phase 1c	26
7	Point Terminal Traffic Demand Estimation	30
	7.1 Trip Generation - FPT	30
	7.2 Trip Generation – Container Terminal	31
8	Demolition Traffic Demand Estimation	31
9	External Routing of Demolition Traffic	32
	9.1 Route to/from DSW Marianhill	32
	9.2 Route to/from R102 Scrap Recycler	35
10	General TMP Notes	38

Tables

Table 1: Route MCA - Point Terminal to DSW Marianhill

Table 2: Route MCA - Point Terminal to R102 Scrap Recyclers

Figures

Figure 1: Site Location

Figure 2: Locality Plan

Figure 3: Project Boundary

Figure 4: Existing External Access Arrangement

Figure 5: FPT Access Arrangement

Figure 6: Car Facility Access Arrangement

Figure 7: Container Facility Access Arrangement

Figure 8: Q and R Berths Access Arrangement

Figure 9: Classes of Roads [*Source: eThekweni Municipality GIS Database*]

Figure 10: Numbers of Lanes [*Source: eThekweni Municipality GIS Database*]

Figure 11: Intersection Locations & Current Traffic Control

Figure 12: Road Ownership [*Source: eThekweni Municipality GIS Database*]

Figure 13: Phase 1a Demolition Boundary

Figure 14: Phase 1b Demolition Boundary

Figure 15: Option 1 Access Arrangement

Figure 16: Phase 1c Demolition Boundary

Figure 17: Point Terminal to DSW Marianhill - routes through CBD

Figure 18: Point Terminal to R102 Scrap Recyclers - routes through CBD

Appendices

Appendix A

Typical/Generic Temporary Signage Plans

Appendix B

Detailed Conceptual Layouts

1 Introduction

This Traffic Management Plan (TMP) has been prepared as part of Phase 1 of the Part D (Demolition) component of the larger Port of Durban Validation project.

Since this TMP forms part of the “planning stage” of Part D (Demolition), the purpose of this TMP is to provide a TMP Framework that will be used by the specialist traffic engineer and demolition contractor to develop the site-specific/customised TMPs at “implementation stage” (once the demolition contractor is appointed and the demolition plan and programme have been finalised).

The aim of this TMP Framework (and the ultimate site-specific/customised TMPs) is to ensure the safety of contractors and surrounding public/stakeholders by providing sufficient “early warning” to the public/stakeholders and managing the contractor-public/stakeholder vehicle interaction as well as the vehicle-NMT interaction.

2 Site/Project Details

2.1 Site Location

The Phase 1 demolition site is located within the Durban Point Terminal facility on Quayside Road (off Margaret Mncadi Avenue), Southern Durban CBD.

The site location and locality plan are shown in **Figures 1** and **2** respectively.

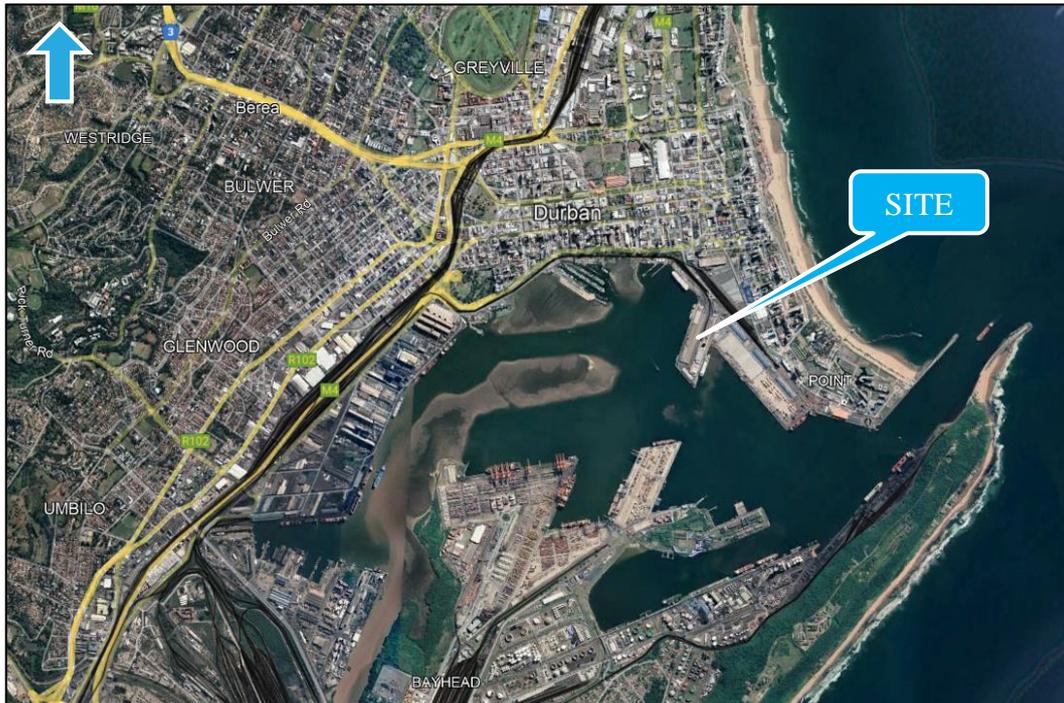


Figure 1: Site Location



Figure 2: Locality Plan

2.2 Project Details

For the purposes of the TMP Framework, Phase 1 of the Part D (Demolition) component of the larger Port Masterplan Project broadly entails the demolition of all structures (except a few critical ones) within the boundary depicted in **Figure 3**.

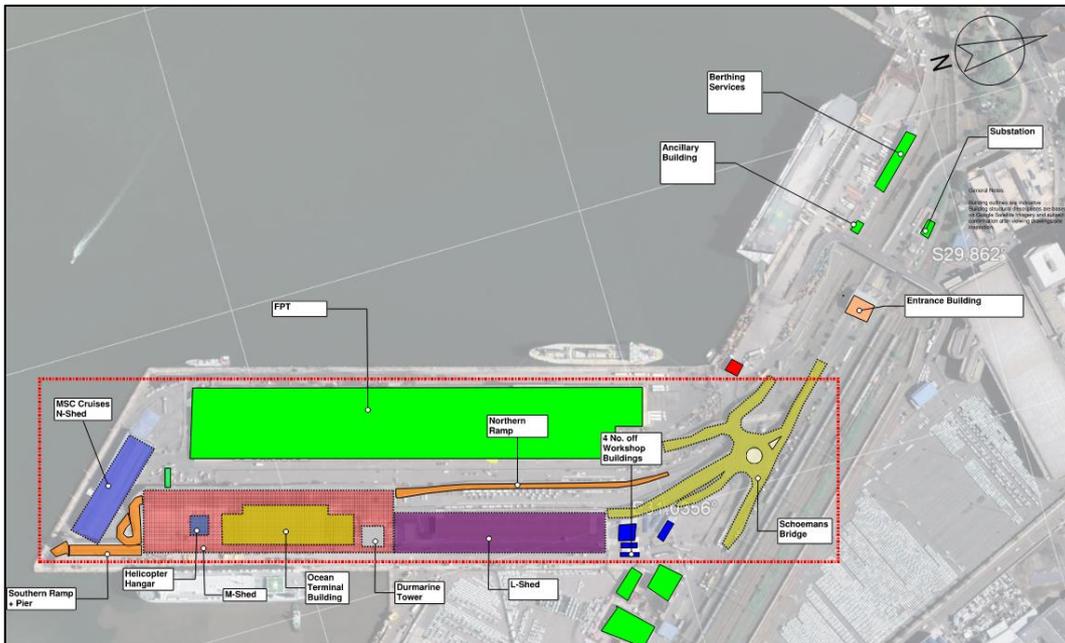


Figure 3: Project Boundary

According to the conceptual demolition plan/programme and from a traffic perspective, the demolition is expected to be undertaken in 3 broad sub-phases. For the purposes of the TMP Framework, these phases have been designated Traffic

Phases 1a, 1b and 1c. Furthermore, according to the conceptual demolition plan/programme, the demolition is expected to be completed within a total of about 9 months.

2.3 Status-Quo Access Arrangement

2.3.1 External Access

The current external access arrangement of the Durban Point Terminal comprises two access points (as illustrated in **Figure 4**):

- The primary access is a single full-directional access on Margaret Mncadi Avenue coinciding with the signalised Stalwart Simelane St intersection.
- A secondary full-directional access on Mahatma Gandhi Rd coinciding with the signalised Southampton St intersection – currently used primarily for office/light traffic and isolated heavy/abnormal load access to the Port (for which specific ad-hoc applications to the City are required).



Figure 4: Existing External Access Arrangement

2.3.2 Internal Access

The current high-level primary internal access arrangements of the various stakeholders within the Durban Point Terminal are as follows (and illustrated in **Figures 5, 6, 7 and 8**):

- **Fresh Produce Terminal (FPT)** – access (IN + OUT) via Schoemans Bridge, with primarily one-way circulation around the FPT building (towards a staging area adjacent to N-Shed and onwards to the various FPT loading areas) and some trucks entering the FPT building from the north and exiting at the south with a U-turn movement towards Schoemans Bridge.

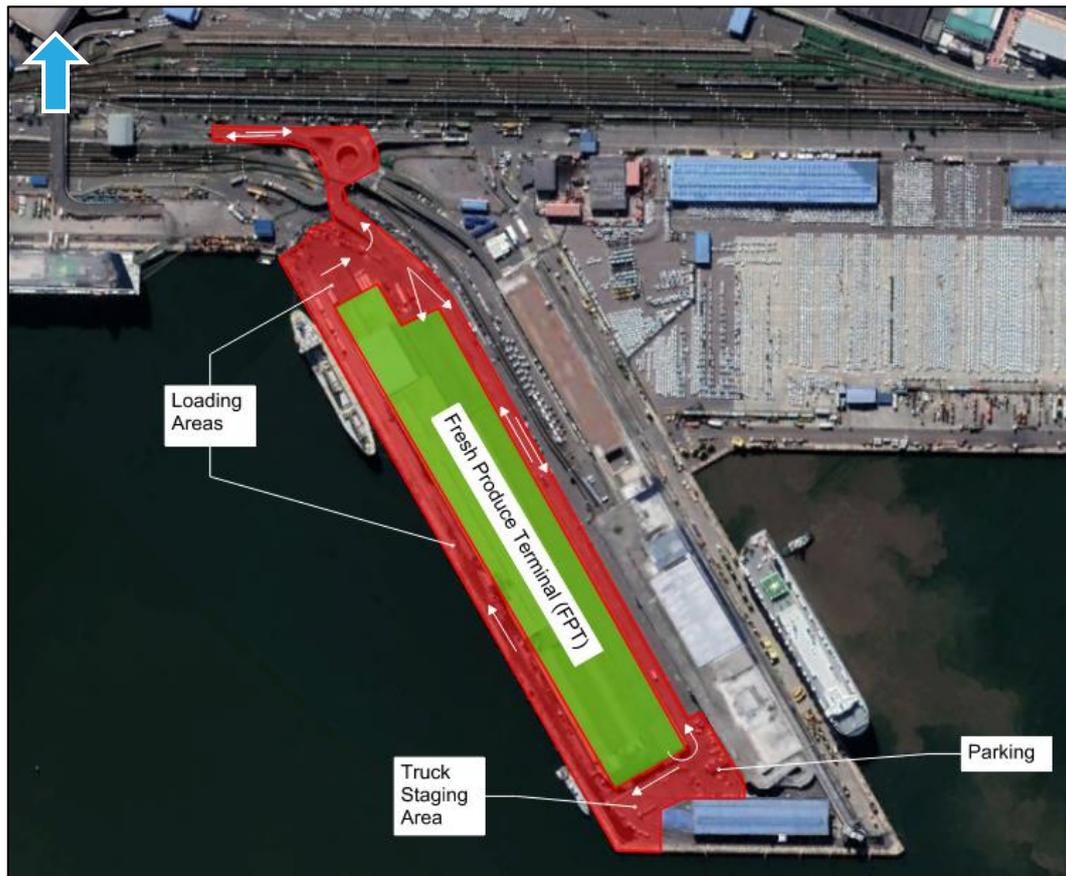


Figure 5: FPT Access Arrangement

- **Car Facility/Terminal** – access (IN+OUT) via Schoemans Bridge through internal accesses west of G-Shed to/from a truck/car loading/staging area within the Car Facility/Terminal.



Figure 6: Car Facility Access Arrangement

- **Container Facility/Terminal** – access (IN+OUT) via Schoemans Bridge through an internal access (IN) adjacent to- (and east of-) D-Shed to a one-way truck loading area(s) within the Container Facility/Terminal and an internal access (OUT) adjacent to- (and west of-) D-Shed towards Schoemans Bridge.

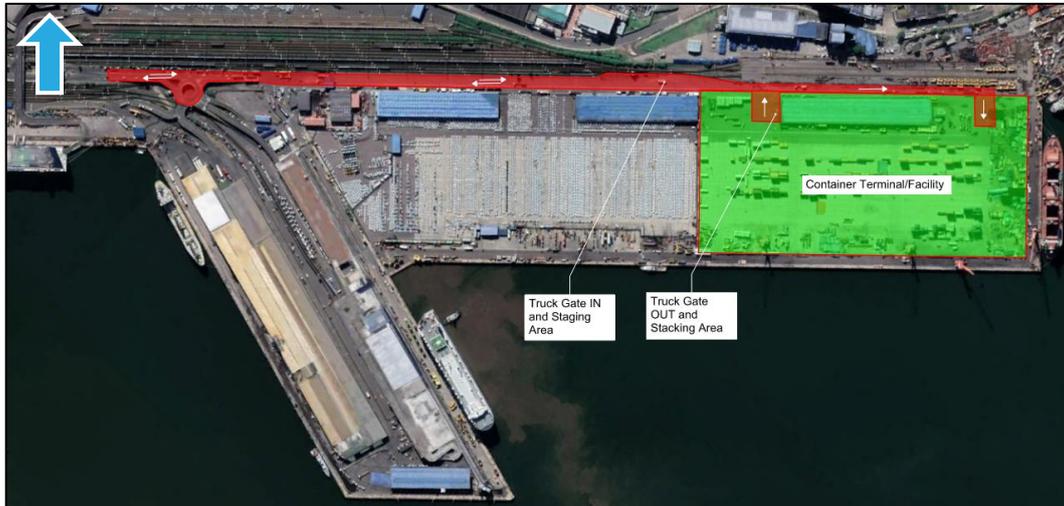


Figure 7: Container Facility Access Arrangement

- **Q and R Berths** – access (IN+OUT) via Schoemans Bridge as well as a car bridge over the rail lines and Quayside Rd for access to the Cato Creek Car Terminal Facility.



Figure 8: Q and R Berths Access Arrangement

3 Background Information

3.1 Existing Road Network

Information regarding the classifications and numbers of lanes of the roads of significance within the study area are illustrated in **Figures 9** and **10**.

It should be noted that the data on the numbers of lanes contained in **Figure 10** (as obtained from the eThekweni GIS database) does not reflect localised road widening.



Figure 9: Classes of Roads [Source: eThekweni Municipality GIS Database]



Figure 10: Numbers of Lanes [Source: eThekweni Municipality GIS Database]

3.2 Existing Intersection Controls

The locations and current controls of the various intersections of significance in the vicinity of the Durban Point Terminal Facility are shown in **Figure 11**.



Figure 11: Intersection Locations & Current Traffic Control

4 Affected Road Traffic Authorities

As per **Figure 12**, all significant external roads within the vicinity of the Durban Point Terminal Facility fall under the control of eThekweni Municipality. It is assumed that the internal roads fall under the control of Transnet.



Figure 12: Road Ownership [Source: eThekweni Municipality GIS Database]

5 Site Investigation / Stakeholder Engagement

This TMP Framework has been development based on various site visits in conjunction with consultation with the various internal and external stakeholders of the Durban Point Terminal Facility including the following:

- Transnet National Ports Authority (TNPA)
- Transnet Port Terminals (TPT)
- Transnet Freight Rail (TFR)
- Fresh Produce Terminal (FPT)
- Ethekewini Transport Authority (ETA)
- Ethekewini Traffic Operations

It must be noted that all site visits and stakeholder engagement to date has been structured towards achieving a practical TMP Framework. Therefore, the outcomes of the stakeholder engagement processes assisted in gaining an understanding of relevant aspects of the Durban Point Terminal to inform the TMP Framework. Some of these aspects include the current high-level precinct external and internal access arrangements, internal traffic circulation, the approximate typical traffic flows generated by each stakeholder, possible/practical temporary access arrangement options (both externally and internally), any further information or studies that may be required, etc.

As mentioned previously, the idea is that this TMP Framework, which is based on stakeholder inputs as well as inputs from other engineering disciplines, a specialist demolition contractor and industry best practices, will be used by the specialist traffic engineer and demolition contractor to develop the site-specific/customised TMPs at “implementation stage” (once the demolition contractor is appointed and the demolition plan and programme have been finalised) with more detailed engagements with the various stakeholders.

6 Traffic Phases of Demolition

According to the conceptual demolition plan/programme and from a traffic perspective, the demolition is expected to be undertaken in 3 broad sub-phases. For the purposes of the TMP Framework, these phases have been designated Traffic Phases 1a, 1b and 1c. Furthermore, according to the conceptual demolition plan/programme, the demolition is expected to be completed within a total of about 9 months.

6.1 Traffic Phase 1a

From a traffic perspective, Phase 1a of demolition entails demolition of N-Shed, M-Shed (including the Ocean Terminal Building and Durmarine Tower), L-Shed and the smaller “workshop” buildings adjacent to- and north of- L-Shed. According to the conceptual demolition plan/programme, this phase of demolition is expected to be completed in about 20 weeks.

The proposed demolition boundary and hoarding alignments are shown in **Figure 13** (with more detailed layouts provided in **Appendix B**).



Figure 13: Phase 1a Demolition Boundary

Note: the specialist demolition contractor has advised that the hoarding will be erected 5m – 10m away from the structures to be demolished in order to maintain the required working space.

6.1.1 Temporary External Access Arrangement

The Phase 1a demolition works are not expected to impede traffic flow on Schoemans Bridge, therefore, the current external Durban Point Terminal access arrangement and access control plan may continue to be used during Phase 1a of the demolition.

6.1.2 Temporary Internal Access Arrangement

As mentioned previously, the Phase 1a demolition works are not expected to impede traffic flow on Schoemans Bridge, therefore, the current internal Durban Point Terminal access arrangements may continue to be used during Phase 1a of the demolition.

6.1.3 Routing of Demolition Traffic Within Durban Point Terminal

As shown previously in **Figure 13**, the proposed routing of demolition traffic within the Durban Point Terminal includes IN + OUT of the Terminal via the current primary Margaret Mncadi Ave / Quayside Rd access, bi-directional flow along the existing at-grade road adjacent to- and north of- Schoemans Bridge and bi-directional flow along the eastern edge of L-Shed and M-Shed.

It is proposed that the contractor engages with the various Terminal stakeholders to ensure that the required access permits are issued and the required thoroughfares within the Terminal remain clear for movement of demolition traffic.

6.1.4 Affected Aspects of Durban Point Terminal Operations

It is expected that, from a traffic perspective, the following primary aspects of the Durban Point Terminal operations may be affected by the demolition works:

- All Terminal operations/activities may be affected (to an extent) by the movement of demolition traffic within the Terminal.
- All Terminal operations/critical infrastructure within the phase-specific demolition site are to be relocated and all structures are to be vacant.
- The afore-described thoroughfares that are to remain clear for movement of demolition traffic may not be used for Terminal operations (such as staging or movement of trucks, storage of cargo, etc.) for the duration of this phase of demolition.
- M-Berth and N-Berth may not be used during this phase of demolition due to movement of demolition traffic, encroachment of site hoarding on berths as well as proximity to the demolition site(s).

6.1.5 Stakeholders to be Engaged

The primary stakeholders to be engaged, from a traffic perspective, prior to- and during- this phase of demolition include the following:

- Transnet National Ports Authority (TNPA)
- Transnet Port Terminals (TPT)
- Fresh Produce Terminal (FPT) – the current FPT truck staging area and parking may be affected by the works.
- Ethekwini Transport Authority (ETA) – some building rubble will be removed from site to external scrap recyclers or dumpsites which may affect external traffic.
- Ethekwini Traffic Operations – erection of temporary road signage on external roads may be required.

6.1.6 Further Studies to be Undertaken Prior to Phase 1a Demolition

Based on the conceptual demolition plan/programme as well as the stakeholder engagements to date, the following primary work/studies may need to be completed, from a traffic perspective, prior to commencement of this phase of demolition:

- A TIA-type study may be required by ETA to assess the impact of demolition traffic on the external road network.
- A methodology/design for reinstatement or making-good of surfaces for immediate use after a phase or sub-phase of demolition is complete (eg. reinstatement of FPT truck staging area, extension of Car Facility, etc.).
- Custom external and internal TMPs and temporary signage plans to be prepared based on the final demolition plan. Ethekwini Traffic Operations to be consulted regarding the external TMP.

6.2 Traffic Phase 1b

From a traffic perspective, Phase 1b of demolition entails demolition of the Schoemans Bridge. According to the conceptual demolition plan/programme, this phase of demolition is expected to be completed in about 8 weeks.

The proposed demolition boundary and hoarding alignments are shown in **Figure 14** (with more detailed layouts provided in **Appendix B**).

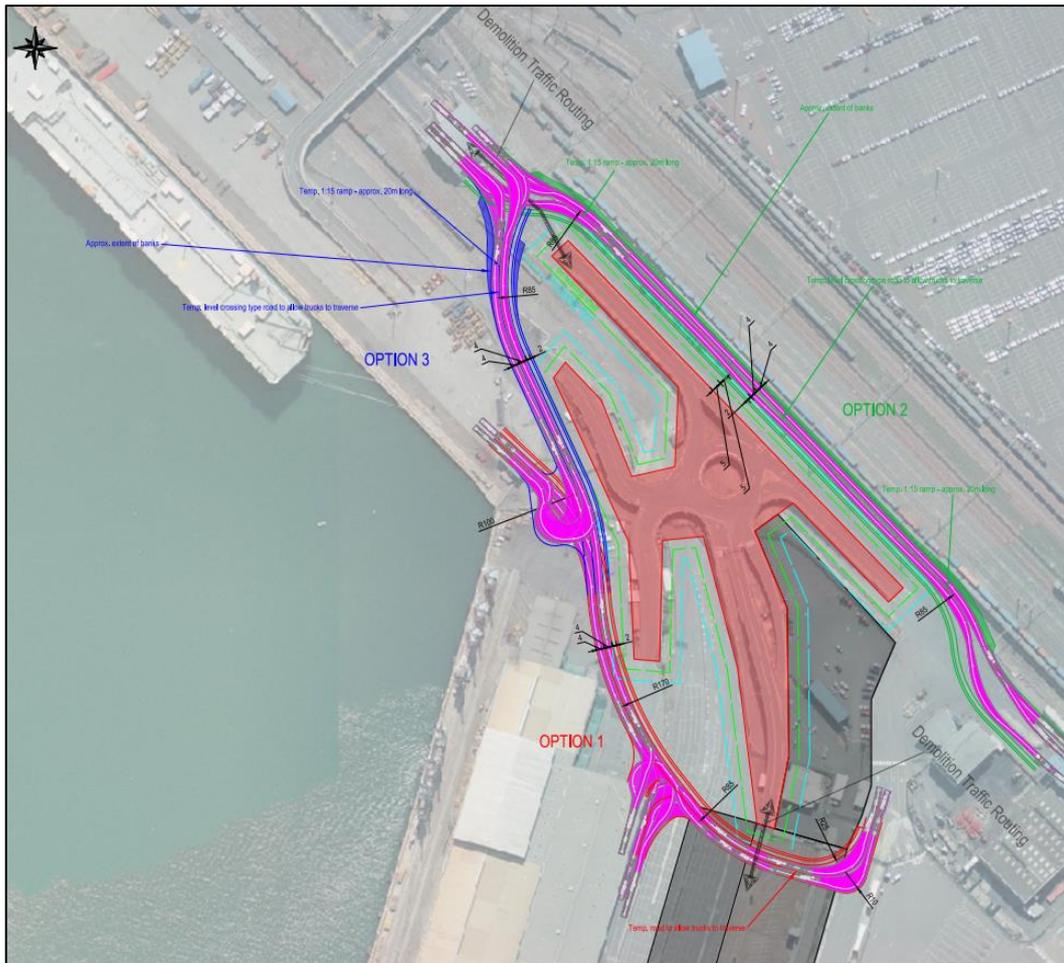


Figure 14: Phase 1b Demolition Boundary

Note: the specialist demolition contractor has advised that the hoarding will be erected 5m – 10m away from the structures to be demolished in order to maintain the required working space.

6.2.1 Temporary External Access Arrangement

Traffic flow over/under Schoemans Bridge will not be possible during the Phase 1b demolition phase, which implies that the current Durban Point Terminal internal access arrangement will be affected. There are 3 internal access arrangement options being considered for this phase of demolition, one of which (designated Option 1 for the purposes of this TMP Framework) requires the temporary

relocation of the Terminal primary external access to both Queens Warehouse (Shepstone St) and C-Gate (Mahatma Gandhi Rd).

The proposed Option 1 temporary external access arrangement for the Durban Point Terminal is shown in **Figure 15**.



Figure 15: Option 1 Access Arrangement

6.2.2 Temporary Internal Access Arrangement

As mentioned previously, traffic flow over/under Schoemans Bridge will not be possible during the Phase 1b demolition phase, which implies that the current Durban Point Terminal internal access arrangement will be affected.

Three internal access arrangement options are being considered for this phase of the demolition in consultation with the various internal stakeholders (see previous **Figures 14 and 15**):

- **Option 1** – temporary relocation of the Terminal primary external access (and associated access control plans/infrastructure) to both Queens Warehouse (Shepstone St) and C-Gate (Mahatma Gandhi Rd) in conjunction with construction of a temporary internal bypass road around the southern extent of the demolition site to serve FPT and Q + R Berths.

- **Option 2** – primary Terminal access (on Margaret Mncadi Ave / Quayside Rd) to be maintained in conjunction with construction of a temporary internal bypass road around the northern extent of the demolition site (over the currently live rail lines) to serve the eastern Terminal activities. The temporary internal bypass road around the southern extent of the demolition site (as per Option 1) will be required to serve FPT and Q + R Berths.

Note: the idea is that the northern bypass road will be temporary in nature and the affected rail lines will be reinstated once this phase of demolition is complete.

- **Option 3** – primary Terminal access (on Margaret Mncadi Ave / Quayside Rd) to be maintained in conjunction with construction of a temporary internal road across the currently defunct rail lines (south of the main Terminal gatehouse), through the Q-Berth quayside area (to serve the Q + R Berths and FPT) and around the southern extent of the demolition site (as per Option 1) to serve the eastern Terminal activities.

Note: a combination of Options 2 and 3 may be considered such that the northern bypass route serves the Terminal IN movement and the southern bypass route serves the OUT movement. Such an arrangement may be required if, for example, it is necessary to reduce the impact of the Option 2 temporary internal road on the live rail lines to the north of Schoemans Bridge, etc.

6.2.3 Routing of Demolition Traffic Within Durban Point Terminal

As shown previously in **Figure 14**, the proposed routing of demolition traffic within the Durban Point Terminal includes IN + OUT of the Terminal via the current Margaret Mncadi Ave / Quayside Rd access with direct access into the Phase 1b demolition site.

It is proposed that the contractor engages with the various Terminal stakeholders to ensure that the required access permits are issued and the required thoroughfares within the Terminal remain clear for movement of demolition traffic.

Furthermore, there may be movement of demolition vehicles between the Phase 1b demolition site and the Phase 1a demolition site as it is proposed that the demolition site offices, stockpiles and material crushing plant be established within the Phase 1a site.

Note: the movement of demolition vehicles between the Phase 1b demolition site and the Phase 1a demolition site may affect passing Terminal traffic on the aforementioned Access Arrangement Options 1, 2 and 3 temporary internal southern bypass road. This crossing of the temporary internal southern bypass road by demolition traffic is to be carefully managed by the demolition contractor by means of adequate temporary signage as well as the presence of flagmen (which will be detailed within the phase-specific TMPs to be prepared at “implementation stage” of the project).

6.2.4 Affected Aspects of Durban Point Terminal Operations

It is expected that, from a traffic perspective, the following primary aspects of the Durban Point Terminal operations may be affected by the demolition works:

- All Terminal operations/activities may be affected (to an extent) by the movement of demolition traffic within the Terminal.
- All Terminal operations/activities may be affected by the implementation of temporary access arrangements.
- All Terminal operations/critical infrastructure within the phase-specific demolition site are to be relocated.
- N-Berth may not be used during this phase of demolition due to movement of demolition traffic, encroachment of site hoarding on berth as well as proximity to the demolition site(s).
- Discussions with TFR revealed the following:
 - Regarding Option 1 access arrangement – traffic management at the proposed temporary Queens Warehouse level-crossing will be difficult due to anticipated high volumes of conflicting traffic. *TFR has advised against this option and stated that this option should only be considered as a last resort.*
 - Regarding Option 2 access arrangement – the temporary closure of 2 or 3 live rail lines to accommodate the temporary driveway is possible, however, it will have a major impact on TFR operations since all lines are currently fully utilised. Other constraints with this option include available clearance heights and complexity regarding protection and reinstatement of rail lines. *TFR has advised that if another access option is available, the alternative should be considered.*

Note: TFR to assess/quantify the impact of rail line closures on operations as well as to explore the option of permanent closure of the affected rail lines considering the Port Masterplan.
 - Regarding Option 3 access arrangement – TFR has advised that the affected rail lines are not currently utilised so accommodation of the proposed temporary driveway will have little/no impact on TFR operations. *TFR are most in favour of this access arrangement option.*

Note: The impact on Q and R Berths are to be discussed with TNPA/TPT.

6.2.5 Stakeholders to be Engaged

The primary stakeholders to be engaged, from a traffic perspective, prior to- and during- this phase of demolition include the following:

- Transnet National Ports Authority (TNPA)
- Transnet Port Terminals (TPT)
- Transnet Freight Rail (TFR)
- Fresh Produce Terminal (FPT)
- Ethekwini Transport Authority (ETA) – some building rubble will be removed from site to external scrap recyclers or dumpsites which may affect external traffic. Furthermore, if Option 1 Access Arrangement is to be implemented, our engagement with ETA has revealed that a comprehensive TIA will be required to assess the impact of the temporary relocation of the Terminal primary external access to both Queens Warehouse (Shepstone St) and C-Gate (Mahatma Gandhi Rd).
- Ethekwini Traffic Operations – erection of temporary road signage on external roads may be required.

6.2.6 Further Studies to be Undertaken Prior to Phase 1b Demolition

Based on the conceptual demolition plan/programme as well as the stakeholder engagements to date, the following primary work/studies may need to be completed, from a traffic perspective, prior to commencement of this phase of demolition:

- A TIA-type study may be required by ETA to assess the impact of demolition traffic on the external road network.
- If Option 1 Access Arrangement is to be implemented, a comprehensive TIA will be required to assess the impact of the temporary relocation of the Terminal primary external access to both Queens Warehouse (Shepstone St) and C-Gate (Mahatma Gandhi Rd).
- If Option 3 Access Arrangement is to be implemented, a temporary access control plan is to be developed in consultation with the various internal stakeholders relating to the encroachment of passing Terminal traffic on Q-Berth.
- A methodology/design for reinstatement or making-good of surfaces for immediate use after a phase or sub-phase of demolition is complete (eg. reinstatement of live rail lines, construction of a new at-grade permanent road(s) from primary Terminal gatehouse into the Terminal facility to serve the Terminal internal access requirements once Schoemans Bridge is demolished, etc.).
- Custom external and internal TMPs and temporary signage plans to be prepared based on the final demolition plan. Ethekwini Traffic Operations to be consulted regarding the external TMP.

6.3 Traffic Phase 1c

From a traffic perspective, Phase 1c of demolition entails demolition of the FPT building. According to the conceptual demolition plan/programme, this phase of demolition is expected to be completed in about 8 weeks.

The proposed demolition boundary and hoarding alignments are shown in **Figure 16** (with more detailed layouts provided in **Appendix B**).



Figure 16: Phase 1c Demolition Boundary

Note: the specialist demolition contractor has advised that the hoarding will be erected 5m – 10m away from the structures to be demolished in order to maintain the required working space.

6.3.1 Temporary External Access Arrangement

The Phase 1c demolition works are not expected to impede traffic flow on the newly constructed at-grade access road (implemented at the end of Phase 1b) from the Terminal primary gatehouse into the Terminal facility, therefore, the current external Durban Point Terminal access arrangement and access control plan may continue to be used during Phase 1c of the demolition.

6.3.2 Temporary Internal Access Arrangement

As mentioned previously, the Phase 1c demolition works are not expected to impede traffic flow on the newly constructed at-grade access road (implemented at the end of Phase 1b) from the Terminal primary gatehouse into the Terminal facility, therefore, the current internal Durban Point Terminal access arrangements may continue to be used during Phase 1c of the demolition.

6.3.3 Routing of Demolition Traffic Within Durban Point Terminal

As shown previously in **Figure 16**, the proposed routing of demolition traffic within the Durban Point Terminal includes IN + OUT of the Terminal via the current primary Margaret Mncadi Ave / Quayside Rd access and bi-directional flow along the newly constructed at-grade access road (which will be shared with passing Terminal traffic) via which, access to the demolition site(s) will be gained.

It is proposed that the contractor engages with the various Terminal stakeholders to ensure that the required access permits are issued and the required thoroughfares within the Terminal remain clear for movement of demolition traffic.

6.3.4 Affected Aspects of Durban Point Terminal Operations

It is expected that, from a traffic perspective, the following primary aspects of the Durban Point Terminal operations may be affected by the demolition works:

- All Terminal operations/activities may be affected (to an extent) by the movement of demolition traffic within the Terminal.
- All Terminal operations/critical infrastructure within the phase-specific demolition site are to be relocated and all structures are to be vacant.
- N-, O- and P-Berths may not be used during this phase of demolition due to movement of demolition traffic, encroachment of site hoarding on berths as well as proximity to the demolition site(s).

6.3.5 Stakeholders to be Engaged

The primary stakeholders to be engaged, from a traffic perspective, prior to- and during- this phase of demolition include the following:

- Transnet National Ports Authority (TNPA)

- Transnet Port Terminals (TPT)
- Fresh Produce Terminal (FPT)
- Ethekewini Transport Authority (ETA) – some building rubble will be removed from site to external scrap recyclers or dumpsites which may affect external traffic.
- Ethekewini Traffic Operations – erection of temporary road signage on external roads may be required.

6.3.6 Further Studies to be Undertaken Prior to Phase 1a Demolition

Based on the conceptual demolition plan/programme as well as the stakeholder engagements to date, the following primary work/studies may need to be completed, from a traffic perspective, prior to commencement of this phase of demolition:

- A TIA-type study may be required by ETA to assess the impact of demolition traffic on the external road network.
- A methodology/design for reinstatement or making-good of surfaces for immediate use after a phase or sub-phase of demolition is complete (eg. extension of Car Facility, etc.).
- Custom external and internal TMPs and temporary signage plans to be prepared based on the final demolition plan. Ethekewini Traffic Operations to be consulted regarding the external TMP.

7 Point Terminal Traffic Demand Estimation

In order to assess the practicality of the afore-described temporary external access arrangement proposals as well as to determine the required cross-sectional geometry of the various afore-described permanent and/or temporary internal access arrangement options, the current traffic demands (ideally, annual demand data) of the various Durban Point Terminal activities are required.

The primary Terminal activities for which traffic demand data (ideally in the form of annual IN and OUT counts) is required include the following:

- FPT
- Car Terminal/Facility
- Container Terminal/Facility
- The various isolated berths (eg. Q + R Berths, M-Berth, etc.)

Based on our discussions with the various stakeholders, it is evident that not all traffic demand datasets are immediately available. It is understood that, from the stakeholder engagement process undertaken to date, traffic counts will soon be undertaken for the Durban Point Terminal and that all required information will be available thereafter.

However, as part of this TMP Framework, some traffic demand data for the FPT and the Container Facility have been obtained and will be elaborated upon just to provide an idea of the order of magnitude of traffic demands.

7.1 Trip Generation - FPT

Based on discussions with FPT representatives, it was determined that FPT (which employs a 24-hour operation) generates a maximum of approximately 300 truck trips per day per direction. This traffic flow is assumed to be the 95th to 100th percentile demand and the more realistic design flows (average to 90th percentile) may only be determined once annual demand data is made available for consideration.

Furthermore, it was determined that the FPT currently employs a “booking system” with external truck staging occurring at the Old Durban International Airport site. This system allows FPT to manage the number of vehicles that arrive at the Point Terminal at any given time to ensure that the available FPT queueing/stacking space may adequately accommodate the demand without impacting on the passing internal and external traffic movements.

Discussions with FPT representatives revealed that the “booking system” may be configured such that a demolition-related reduction of available FPT queueing/stacking space may be considered and vehicle arrivals reduced to compensate.

7.2 Trip Generation – Container Terminal

Annual traffic demand data (2021/2022) for the “Gate Out” control point was used to determine the various relevant Container Terminal demands to be used for design. Based on the data, it was determined that the Container Facility (which employs a 24-hour operation) generates a maximum (100th percentile demand) of approximately 91 truck trips per hour per direction. However, more relevant from a design perspective is the average (14 trucks per hour per direction) to the 90th percentile (31 trucks per hour per direction) traffic demands.

Furthermore, it was revealed that the Container Facility currently employs a “booking system/portal” that allows the Container Facility to manage the number of vehicles that arrive at the Point Terminal at any given time by allocating/opening “slots” to a limited number of trucks to ensure that the available Container Terminal queueing/stacking space may adequately accommodate the demand without impacting on the passing internal and external traffic movements. However, it is evident from our discussions with the various stakeholders and site observations that container truck queues do still back-up and affect passing internal and external traffic. Also, container trucks have been observed to stage within the Point Terminal and externally along Margaret Mncadi Ave.

Discussions with the relevant stakeholders revealed that the “booking system/portal” may be configured such that a demolition-related reduction of available Container Terminal queueing/stacking space may be considered and vehicle arrivals reduced to compensate.

8 Demolition Traffic Demand Estimation

In order to assess the impact of demolition traffic on the internal and external road network, the estimated/anticipated demolition traffic demands are required.

Based on discussions with a specialist demolition contractor, it has been estimated that 6 trucks (16cu.m tippers) per hour per direction will leave/enter the demolition site throughout the demolition programme. At this conceptual stage, it is assumed that these trucks will travel between the demolition site(s) and the DSW Marianhill dumpsite as well as the nearby scrap recyclers on the R102 Umgeni Rd.

9 External Routing of Demolition Traffic

As mentioned previously, at this conceptual stage, it is assumed that demolition trucks will travel between the demolition site(s) and the DSW Marianhill dumpsite as well as the nearby Scrap Recyclers on the R102 Umgeni Rd. A high-level assessment of two external routing options per destination was undertaken to determine which routing option will have less of an impact on the public (from a traffic perspective).

Note: the routes do coincide at some point between the origins and destinations, therefore, the primary focus of this assessment is the routing within the Durban CBD as this section of the routes will have the most significant impact on the public.

The following broad criteria were considered in the assessment:

- Route length.
- Road surface type and condition.
- Road geometry.
- Typical traffic congestion (including friction from active road edges).
- Pedestrian activity.

9.1 Route to/from DSW Marianhill

Brief descriptions of the route alternatives are as follows (to be read in conjunction with **Figure 17**):

- Route 1 (red):
 - To DSW Marianhill – north along Stalwart Simelane St, west along Bram Fischer Rd and onwards to the N3.
 - From DSW Marianhill – east along the N3 and KE Masinga Rd, south along Sylvester Ntuli Rd and west along Bay Terrace.
- Route 2 (blue):
 - To DSW Marianhill – west along Margaret Mncadi Ave, south along the M4, west along the M7 and west along the N3.
 - From DSW Marianhill – east along the N3 and M7, north along the M4 and east along Margaret Mncadi Ave.

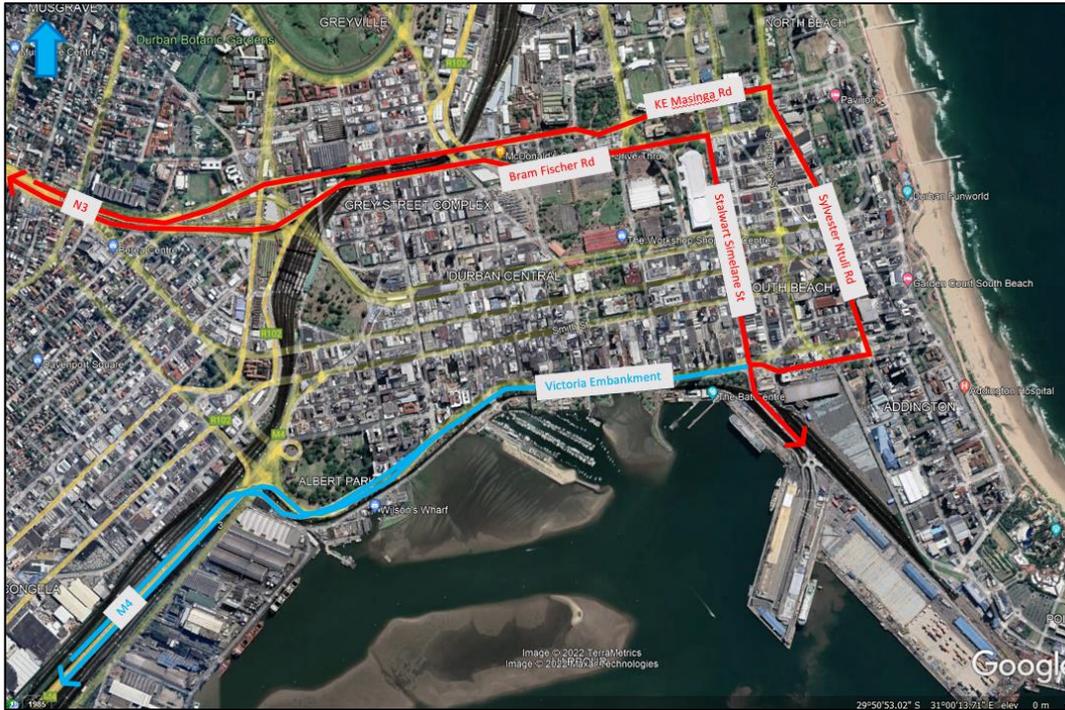


Figure 17: Point Terminal to DSW Marianhill - routes through CBD

9.1.1 Traffic Assessment of Routes

The traffic assessment and comparison of the routes have been provided in the form of a tabulated multi-criteria assessment (MCA) with a comparative/relative “impact on public” score (from a traffic perspective) allocated to each route per criteria based on site observations and local knowledge.

Note: the scores range from 1 to 3 with 1 implying a “lower impact on public” and 3 implying a “higher impact on public”

Table 1: Route MCA - Point Terminal to DSW Marianhill

Criteria	Route 1 score	Route 2 score
Route Length	1	2
Road Surface Type and Condition	1	2
Road Geometry	1	1
Typical Traffic Congestion	3	2
Pedestrian Activity	3	1
TOTALS	9	8

As is apparent in the table, Route 2 (via the M7) is favoured/recommended from a traffic perspective as it poses a slightly lower impact on the public.

9.2 Route to/from R102 Scrap Recycler

Brief descriptions of the route alternatives are as follows (to be read in conjunction with **Figure 18**):

- Route 1 (red):
 - To Scrap Recycler – north along Stalwart Simelane St/M4, west along Argyle Rd and north along R102.
 - From Scrap Recycler – south along R102, east along Argyle Rd, south along M4, east along KE Masinga Rd, south along Sylvester Ntuli Rd and west along Bay Terrace.
- Route 2 (blue):
 - To Scrap Recycler – north along Stalwart Simelane St/M4, west along Somtseu Rd, north along M12, west along Smiso Nkwanyana Rd and north along R102.
 - From Scrap Recycler – south along R102, east along Smiso Nkwanyana Rd, south along M12, east along Somtseu Rd, south along M4, east along KE Masinga Rd, south along Sylvester Ntuli Rd and west along Bay Terrace.



Figure 18: Point Terminal to R102 Scrap Recyclers - routes through CBD

9.2.1 Traffic Assessment of Routes

The traffic assessment and comparison of the routes have been provided in the form of a tabulated multi-criteria assessment (MCA) with a comparative/relative “impact on public” score (from a traffic perspective) allocated to each route per criteria based on site observations and local knowledge.

Note: the scores range from 1 to 3 with 1 implying a “lower impact on public” and 3 implying a “higher impact on public”

Table 2: Route MCA - Point Terminal to R102 Scrap Recyclers

Criteria	Route 1 score	Route 2 score
Route Length	1	2
Road Surface Type and Condition	1	1
Road Geometry	1	1
Typical Traffic Congestion	3	2
Pedestrian Activity	3	2
TOTALS	9	8

As is apparent in the table, Route 2 (via M12) is favoured/recommended from a traffic perspective as it poses a slightly lower impact on the public.

10 General TMP Notes

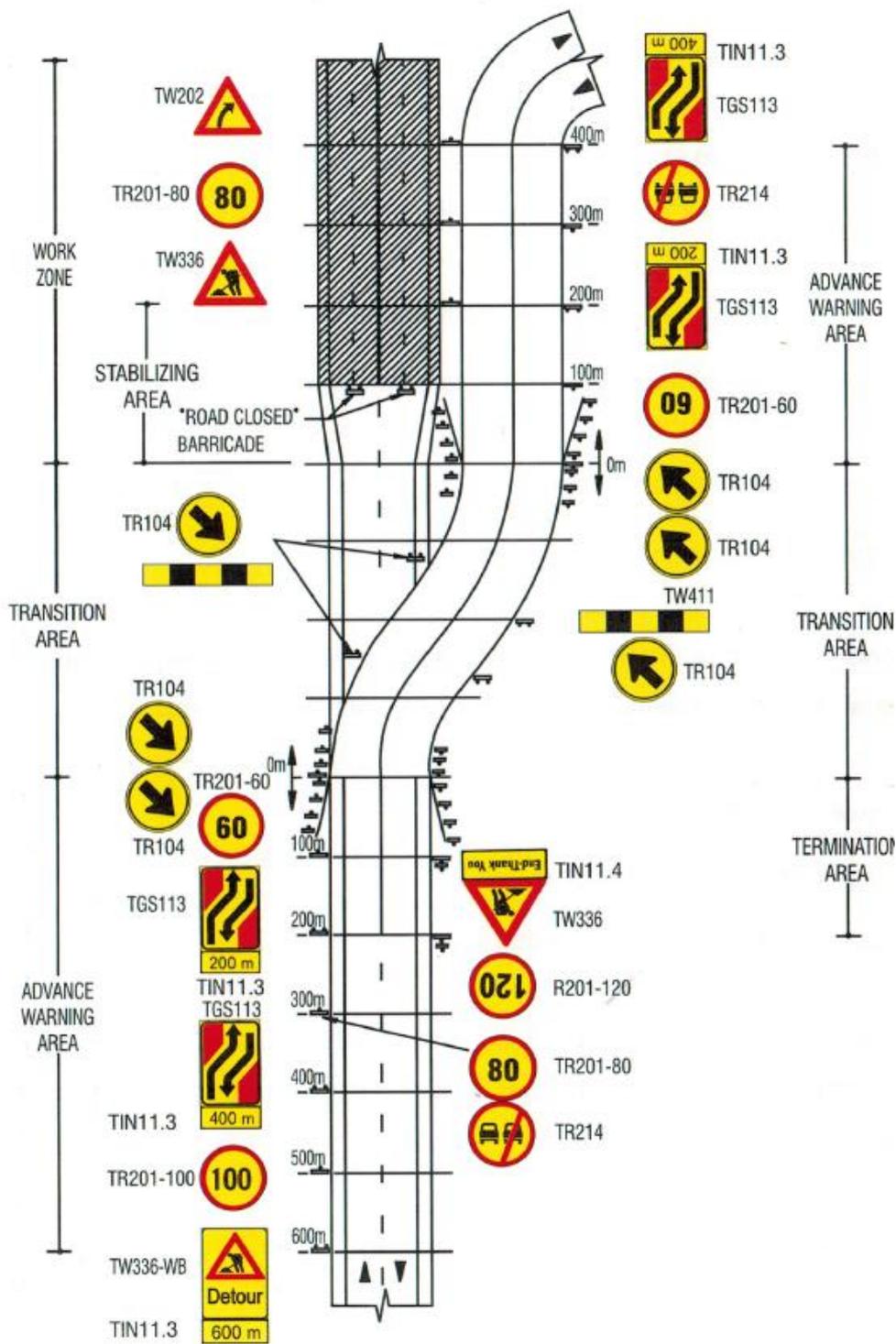
The following general notes are applicable to all phases of demolition:

- It is recommended that the demolition programme is developed in conjunction with the various internal stakeholders in order to align demolition works with Port inter- and/or off-peak periods. This is intended to prevent exacerbation of an already potentially congested Port precinct during Port peak periods.
- It is proposed that the contractor engages with the various Terminal stakeholders to ensure that the required access permits are issued and the required thoroughfares within the Terminal remain clear for movement of demolition traffic.
- Suitable temporary signage to be erected within the Port and at Port access point(s) where demolition traffic is expected as well as where deviation routes are implemented – a phase-specific TMP will have to be prepared, approved and established prior to implementation of each phase. Typical/generic temporary signage plans that may be considered (and contextualised based on speeds, actual site conditions/constraints, etc.) in the development of the TMPs have been provided in **Appendix A**.
- Safe pedestrian access to- and within- the port is to be maintained/provided – this will form part of the aforementioned phase-specific TMPs.
- Contractor to ensure that flagmen are present when movement of demolition traffic occurs within the Port (outside of the “workzones”) and at Port access points.
- It is recommended that all internal Port operations/activities implement new- or configure existing- “booking systems” to manage/limit truck arrivals at the Port with the intention of reducing congestion at the Port during demolition periods.
- Any new permanent and temporary internal roads (including pedestrian infrastructure and signage) to be suitably designed in consultation with the various internal stakeholders and built accordingly.
- In Phase 1b, if required (especially in the event that Option 1 external access arrangement and/or Option 3 internal access arrangement through Q-Berth is to be implemented), temporary Port access control plans to be developed and implemented in consultation with the various internal stakeholders.
- External stakeholders (ETA and Traffic Operations) to be engaged regarding the impact of demolition traffic and/or temporary relocation of Terminal primary external access on the external road network – required studies or layouts to be prepared and approved prior to implementation.
- It is recommended that demolition traffic on the external road network be restricted to CBD off- and inter-peak periods only – for the purposes of this TMP Framework, these periods are:

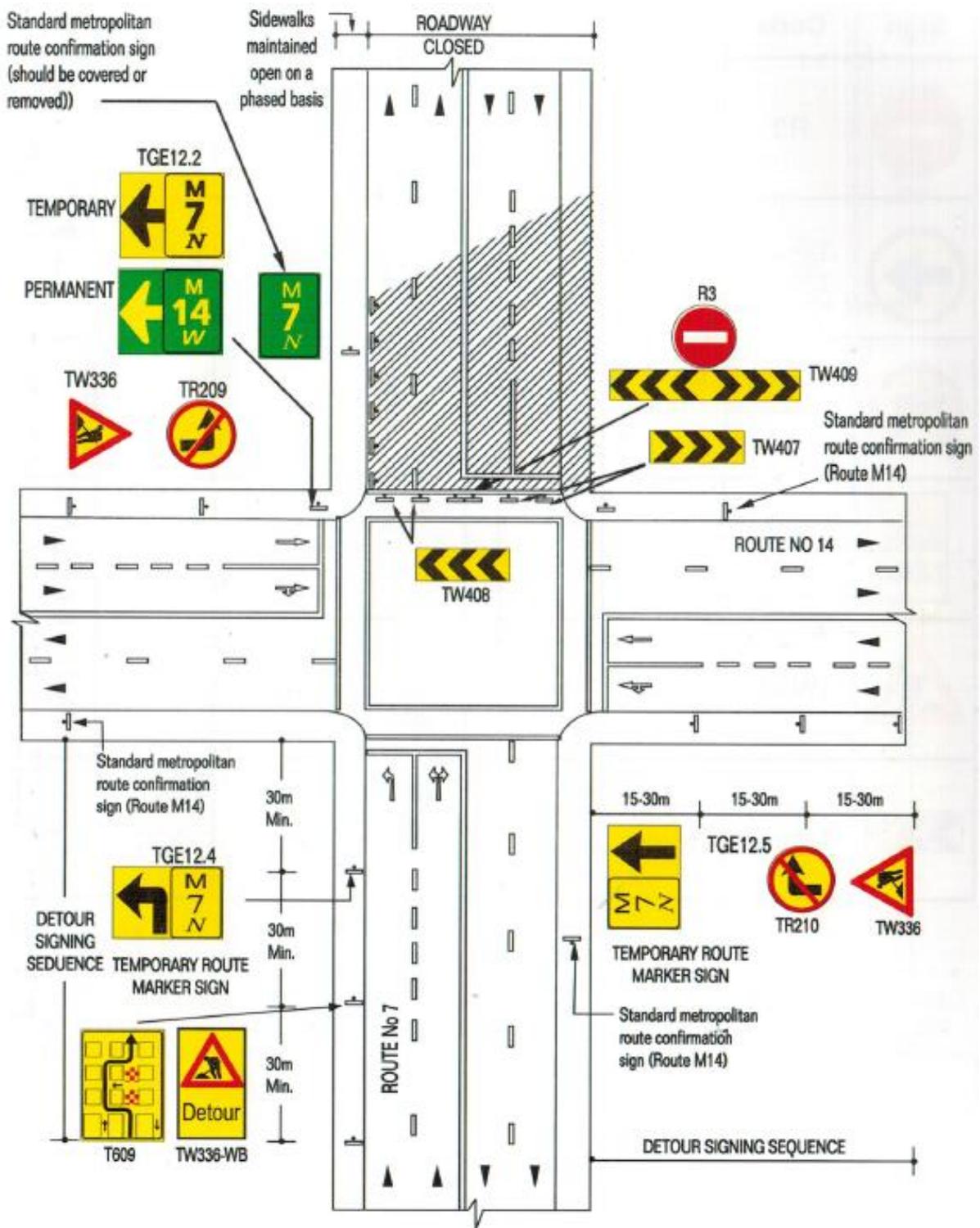
- Weekdays – 09:00 to 15:00 and 18:00 to 06:00.
- Saturday – 14:00 to 00:00.
- Sunday – entire day.
- No demolition truck holding/staging/queueing may occur outside of the demarcated “workzones” within the Port nor on the external road network.
- Demolition hoarding layouts to be designed in consultation with the various internal stakeholders to ensure that hording does not encroach into roads/areas required by Port operations/activities (except for where such an encroachment is agreed upon) nor pedestrian routes (unless an alternative is provided).
- The contractor will be responsible for the management and safe circulation of vehicles within the “workzones”.
- All temporary/permanent road signage quantities, dimensions and materials are to be based on the ETA Roadworks Signing guideline and the SARTSM.
- Contractor to ensure that signs are visible to intended traffic streams. Furthermore, contractor to ensure that signs do not encroach into traffic lanes outside of the “workzone”.
- Signs are to be erected such that they do not impede pedestrian movement outside of the “workzone”. This may be achieved by either maintaining a min. 2.1m clear height or placing signs outside of pedestrian facilities.
- Contractor to employ a roving team that will continuously check that all signs/barriers/hoarding are positioned as intended. The team will undertake any required maintenance of signs/barriers/hoarding immediately – this includes cleaning as well as repair/replacement when required. The roving team will further monitor and remove rubble that may fall from trucks, on both internal and external roads within the vicinity of the Point Terminal.
- All barriers/signs/hoarding to be fixed/secured so that they withstand any negative forces (such as weather and vandalism) until the next maintenance session.
- Stormwater infrastructure within the “workzone” to be covered and protected to prevent contamination/blockage of SW network with demolition rubble and from damage.
- The TMPs are to be dynamic and may require regular adjustment to suit changing conditions in the area.
- Abnormal loads to be handled separately via the relevant internal (if applicable) and external permit application processes. The permit application processes are to be undertaken by a specialist contractor.

Appendix A

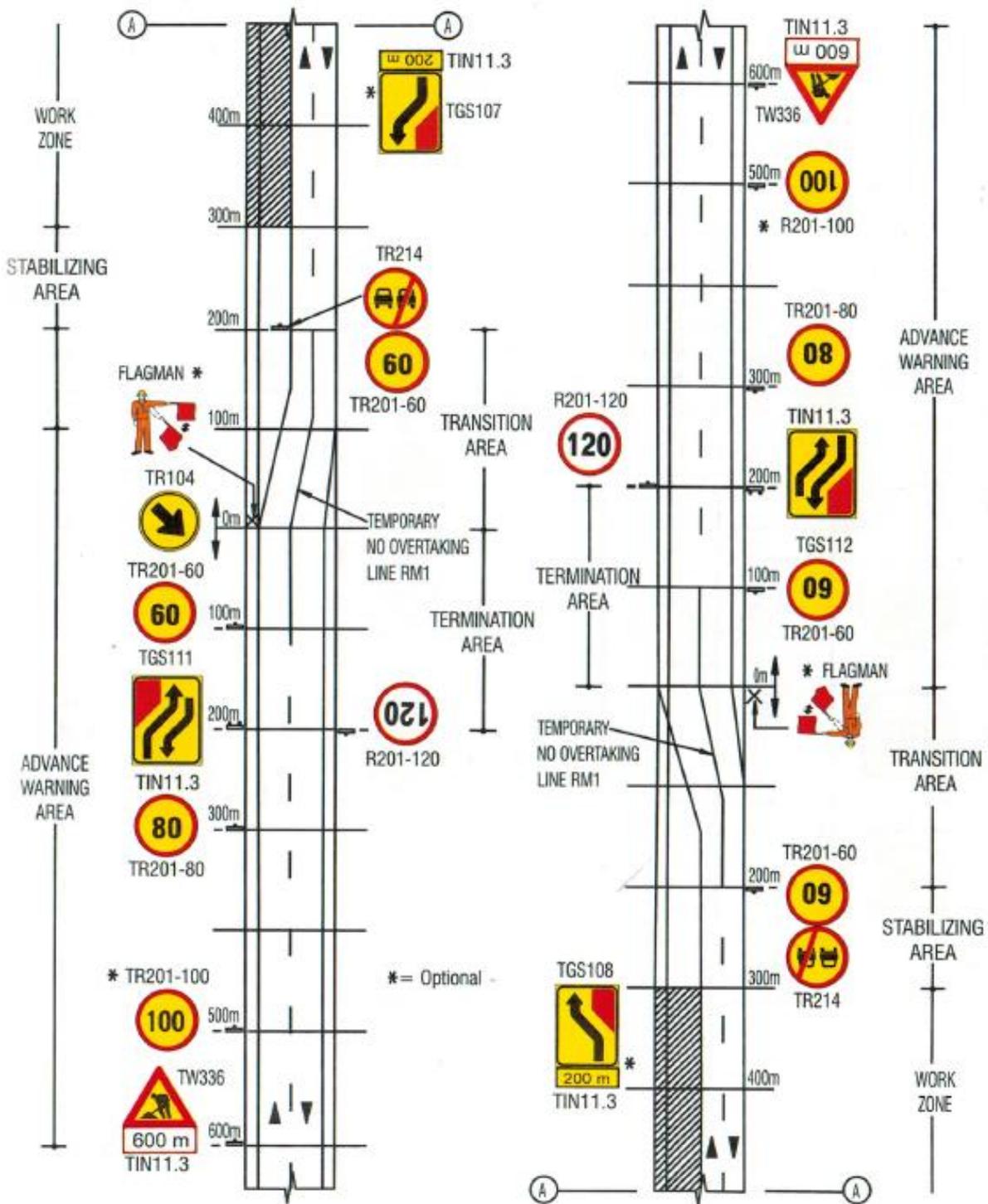
Typical/Generic Temporary Signage Plans



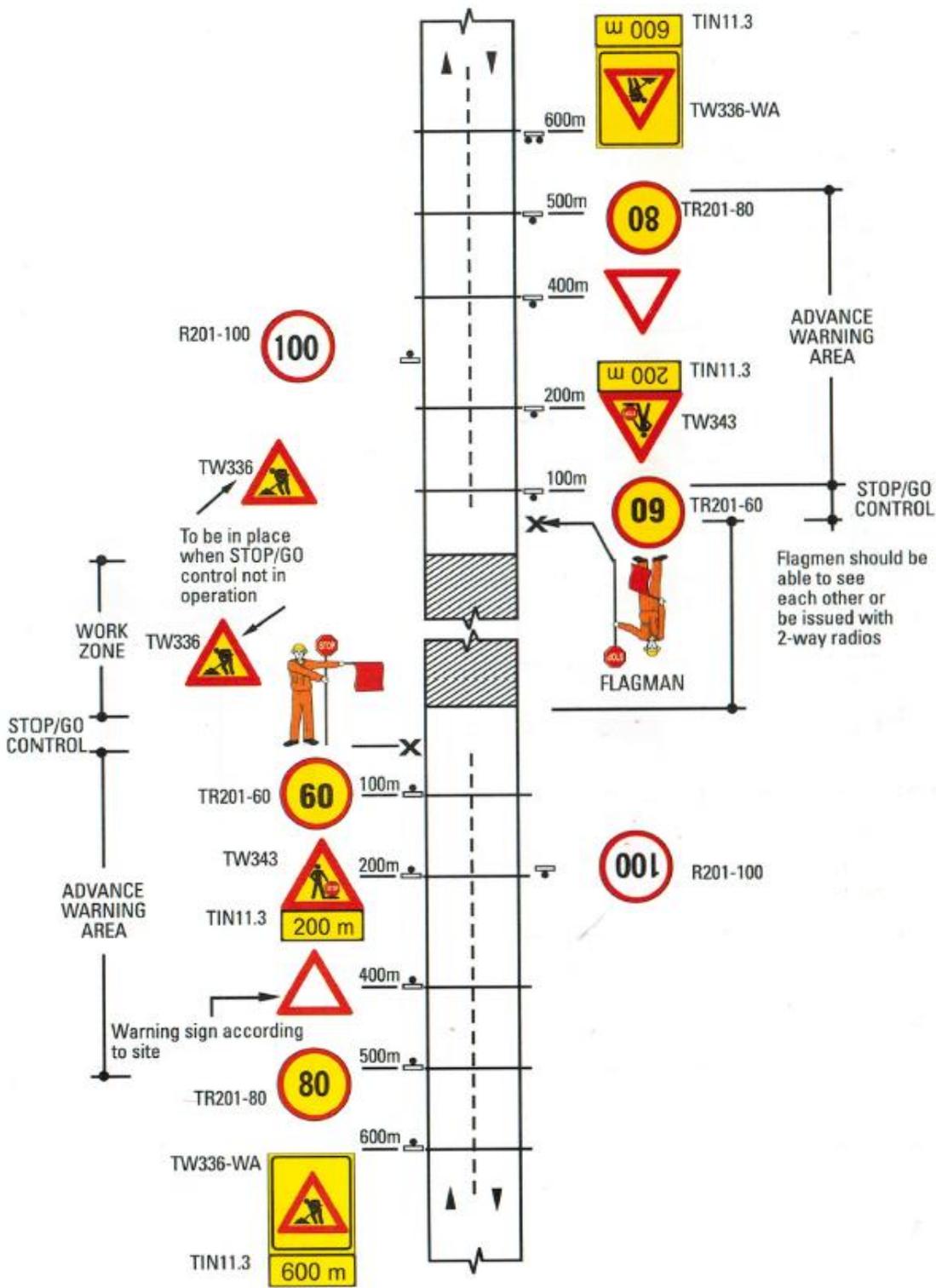
Deviation – High Traffic Volumes



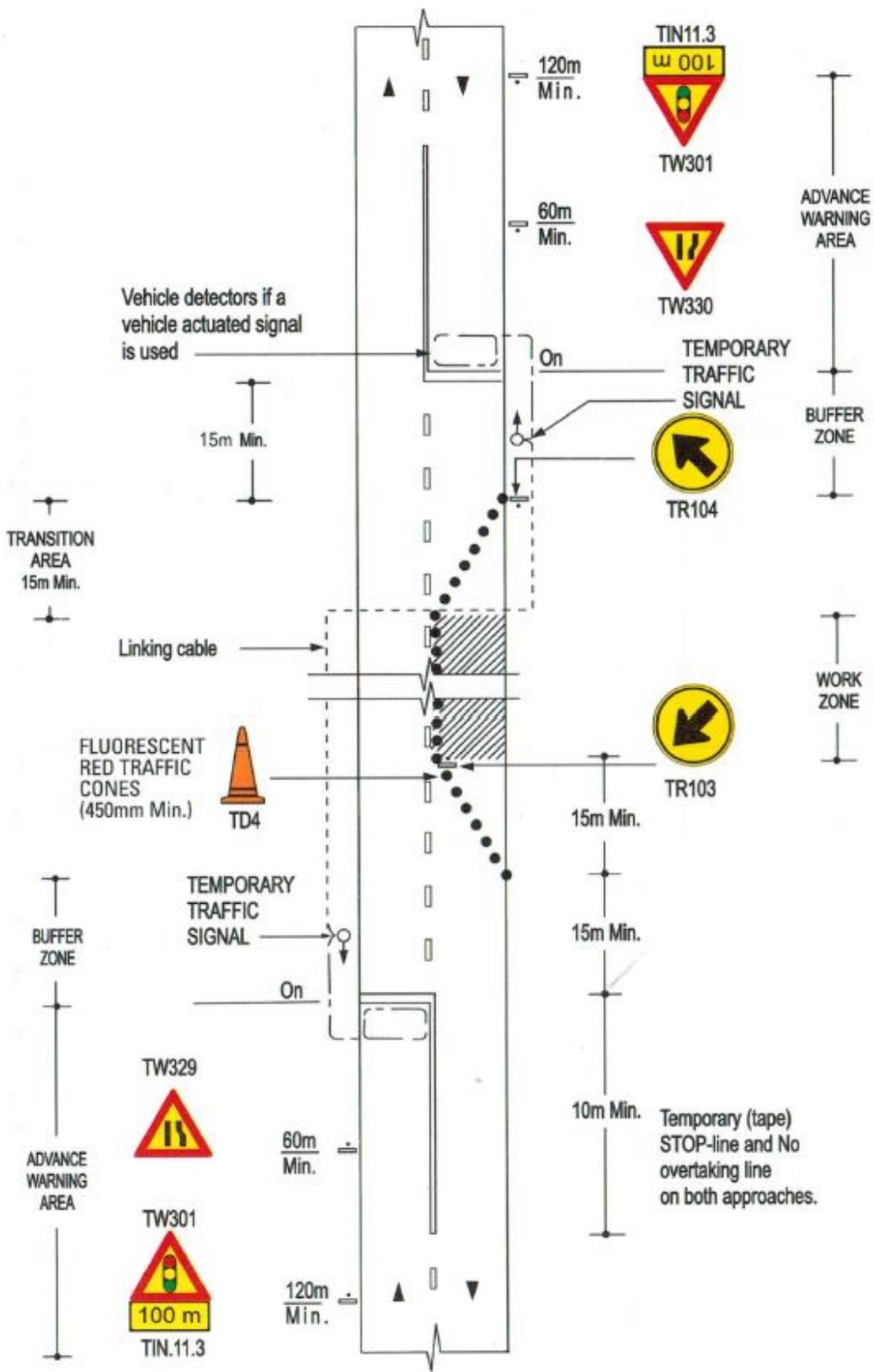
Road Closure - CBD



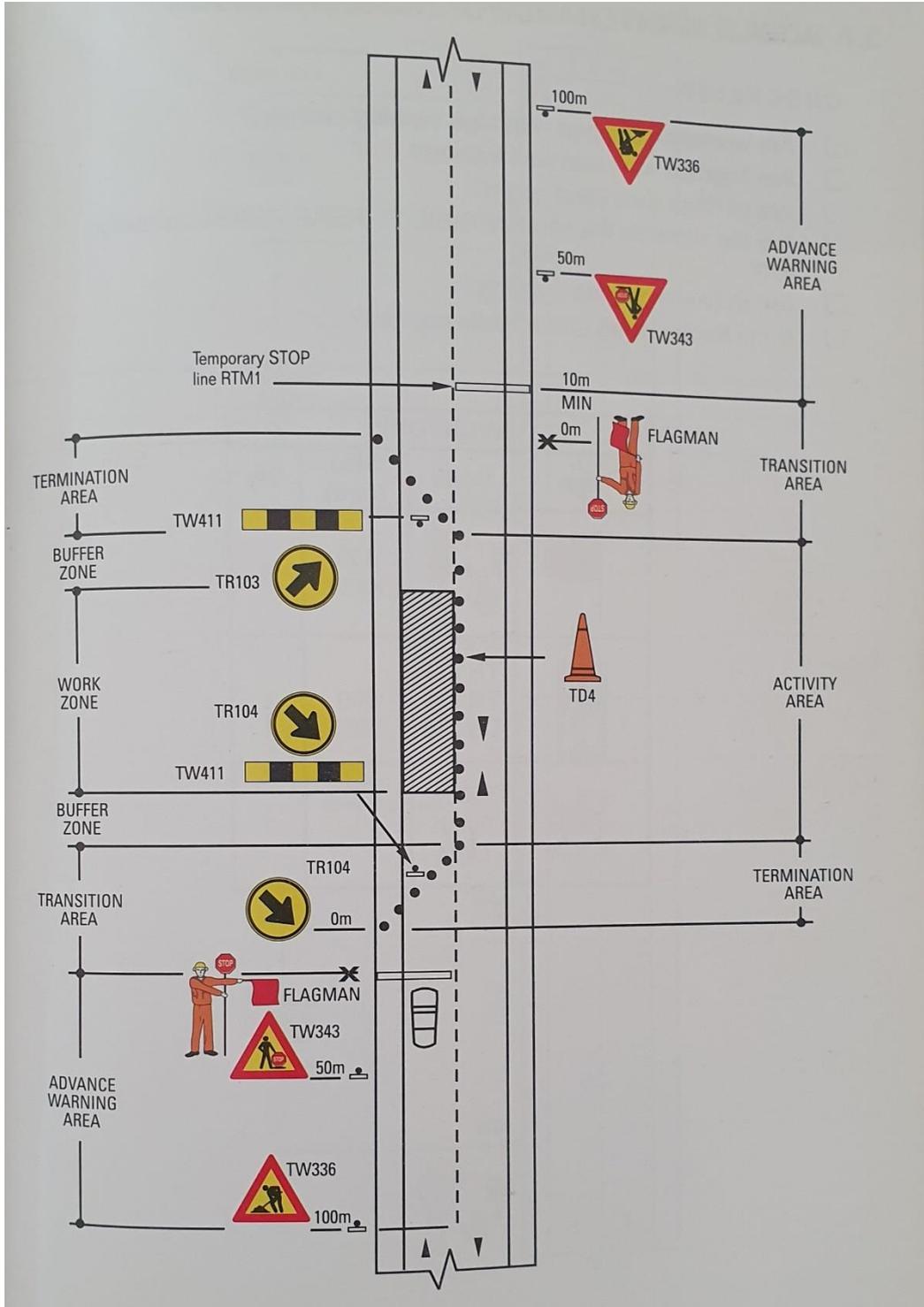
Reduced Width Operation –
Two Way Traffic



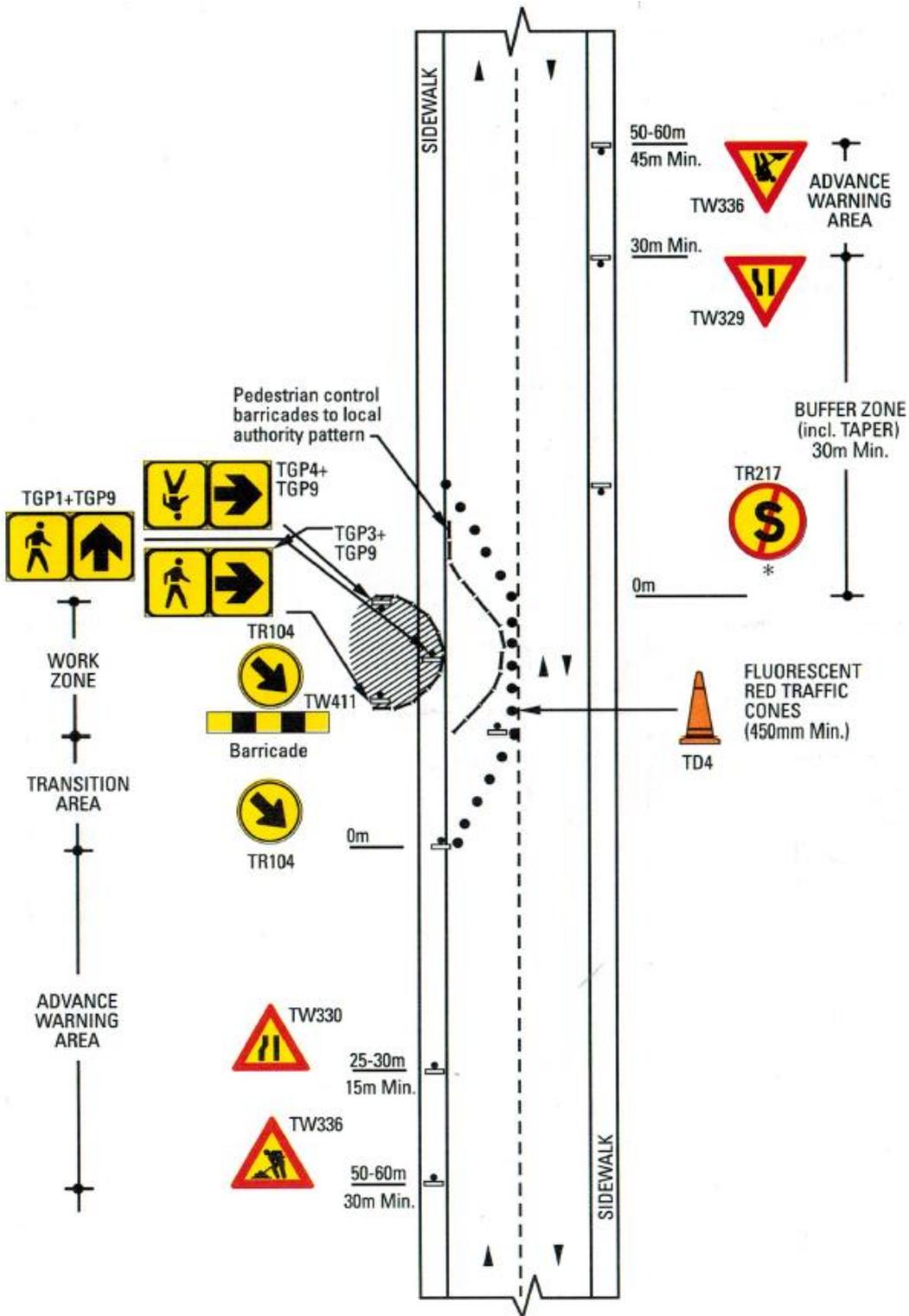
STOP/GO Operation



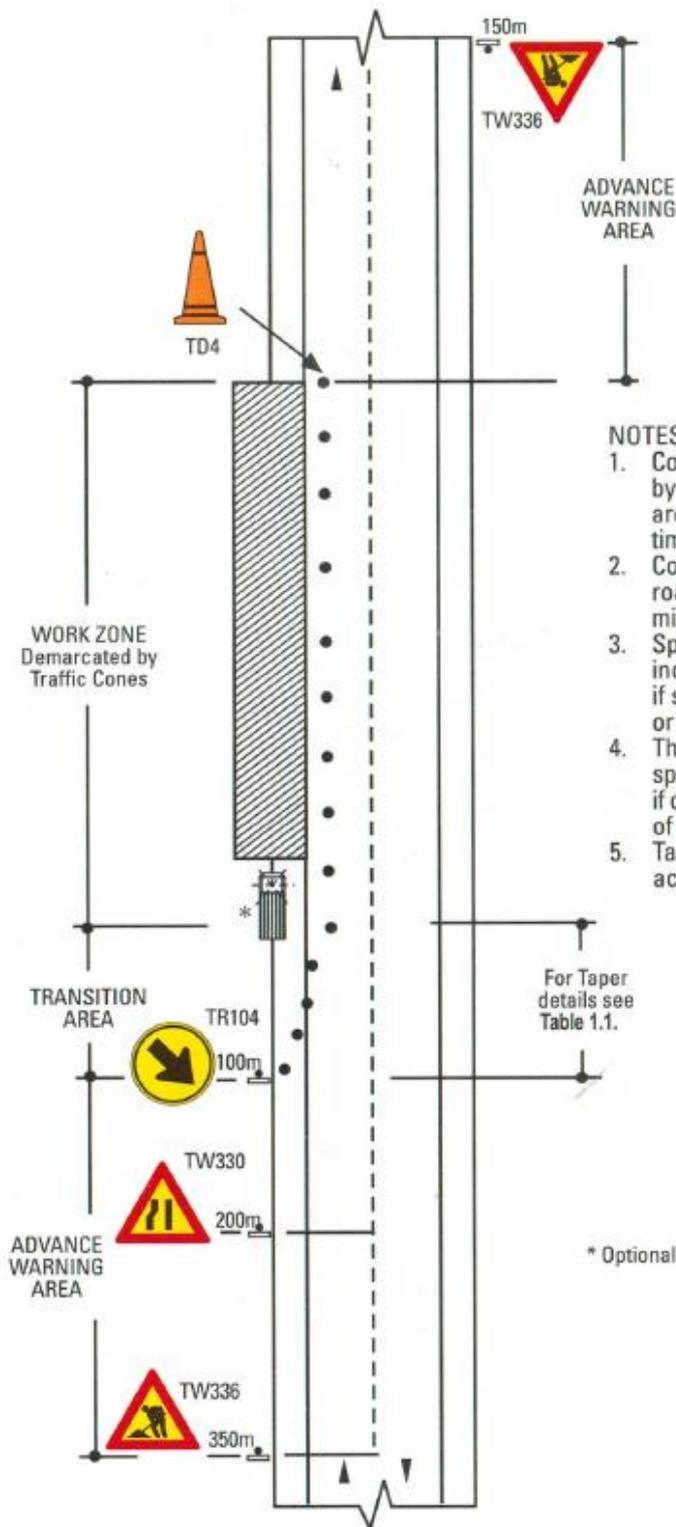
Temporary Traffic Signals – STOP/GO



STOP/GO Traffic Control – Minor Works



Footpath Deviation



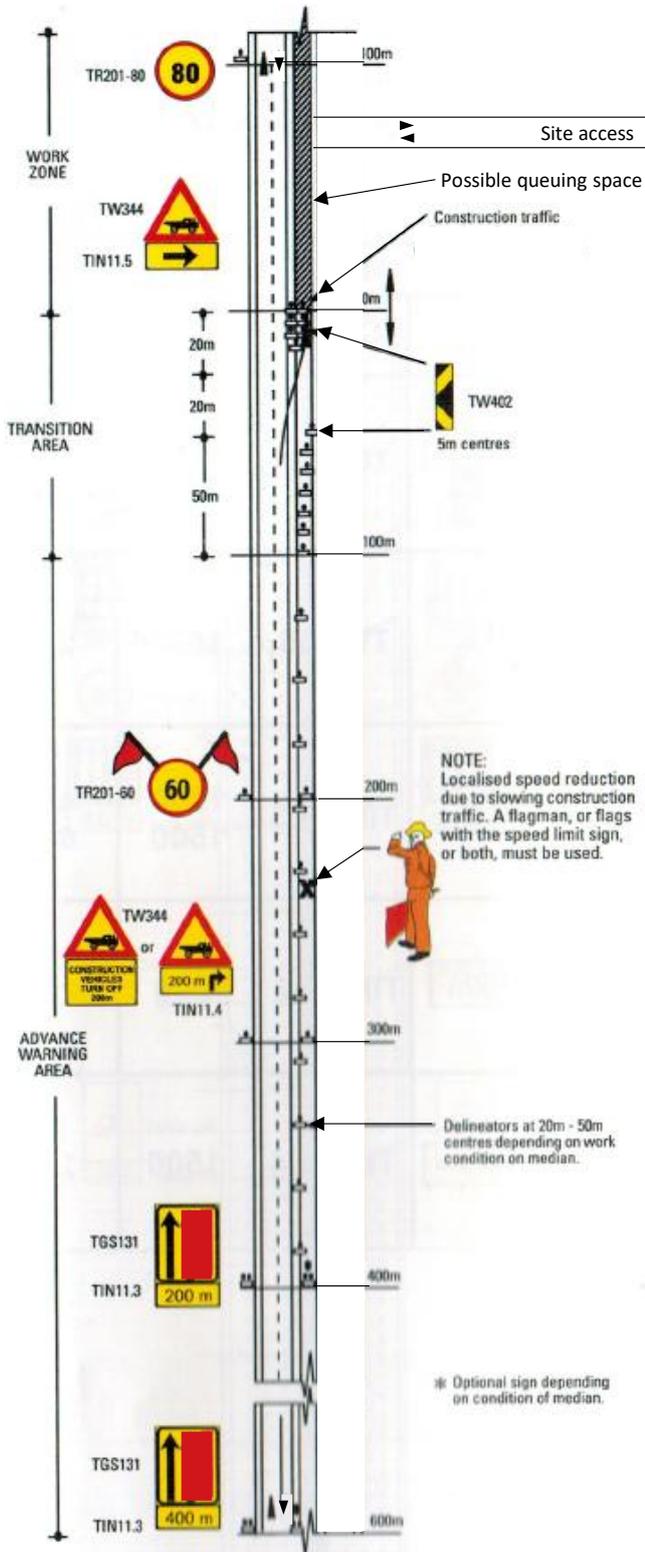
NOTES:

1. Cones should be replaced by delineators if the work area represents a night time hazard.
2. Cones used on high speed roads should have a minimum height of 700mm.
3. Spacing of signs may be increased to start from 600m if speeds are 80km/h or higher or sight distance is limited.
4. The imposition of a temporary speed limit should be considered if operating speeds are in excess of 80km/h.
5. Taper lengths should be in accordance with Table 1.1.

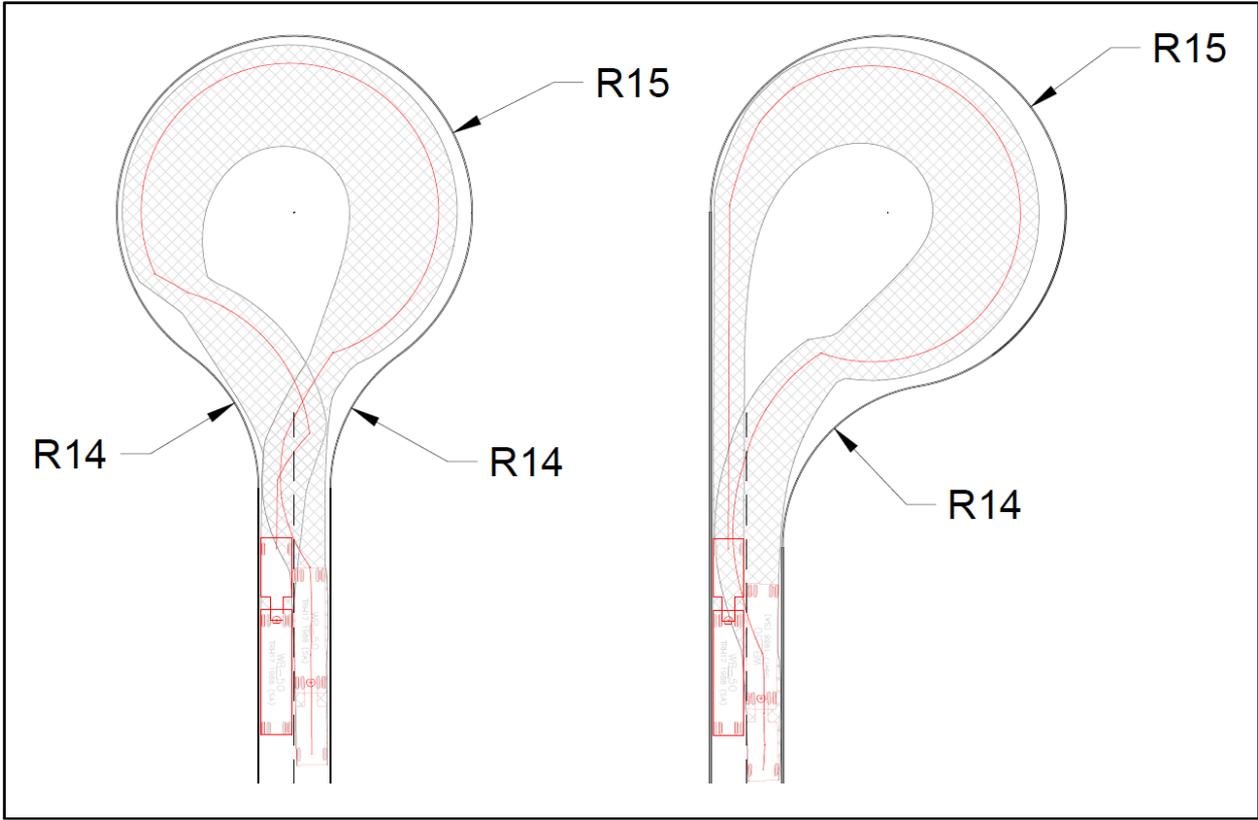
For Taper details see Table 1.1.

* Optional treatment

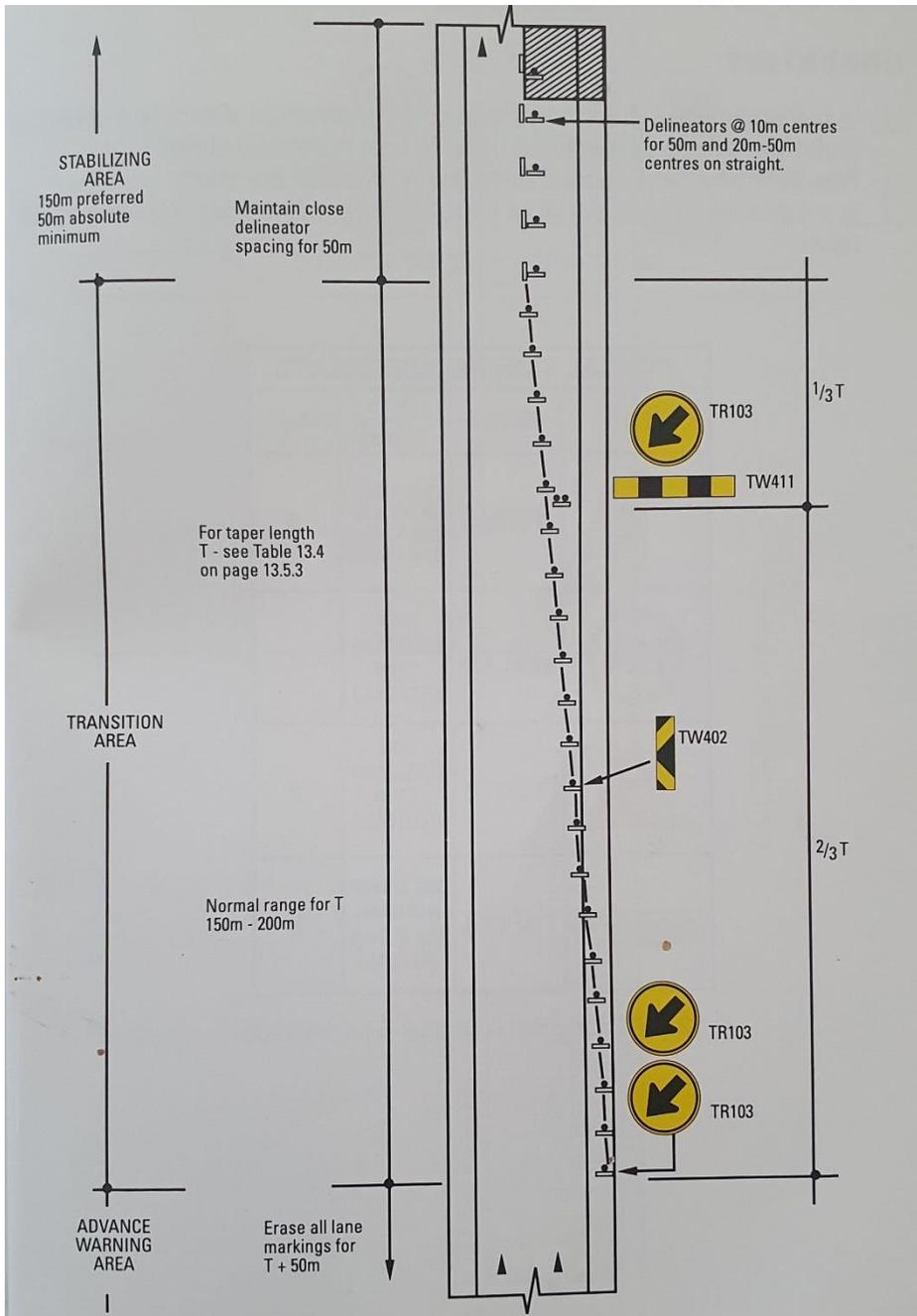
Fixed Site – Work on Shoulder



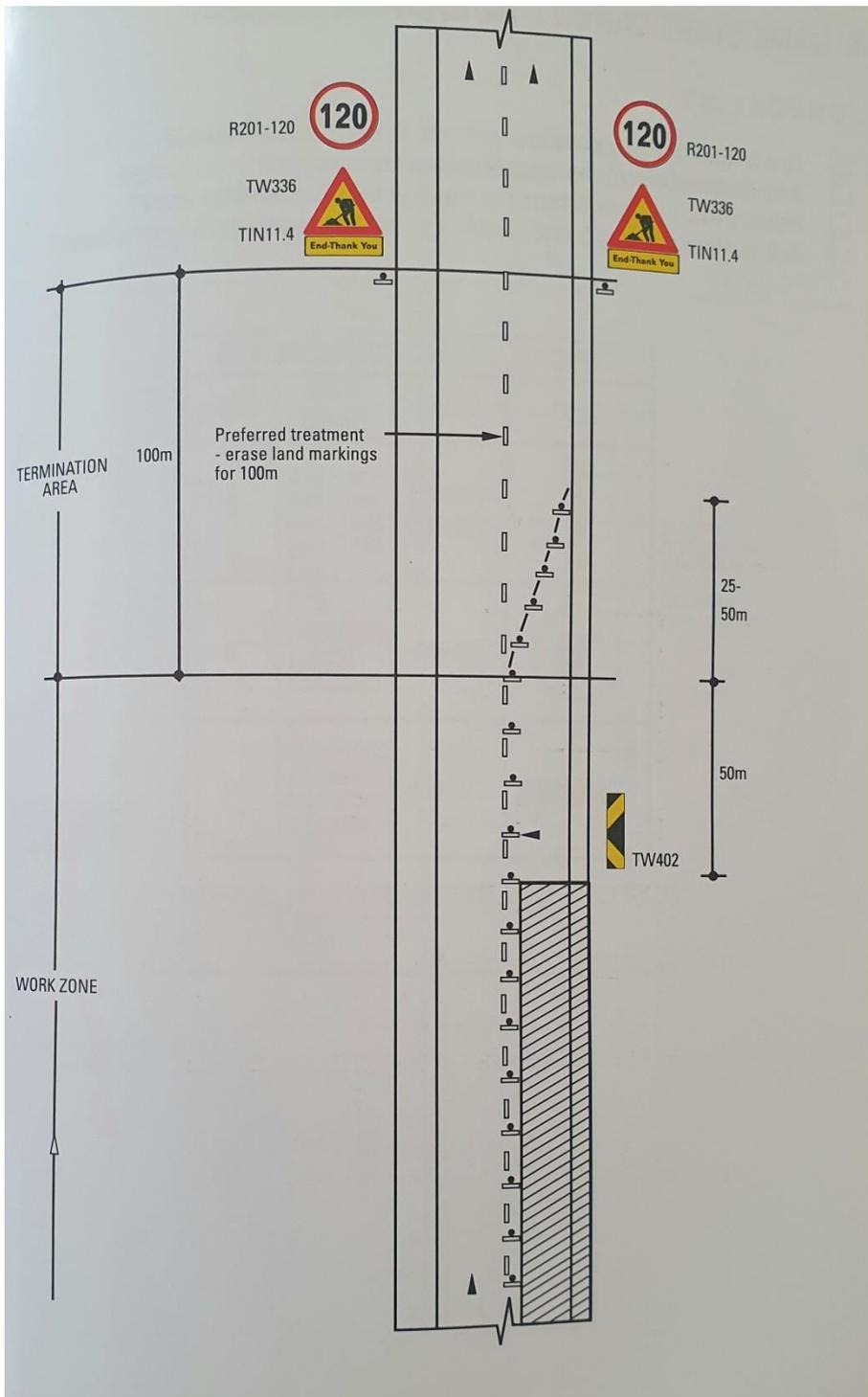
Access Point to Demolition Site



Typical Turning Head Layout – WB-50



Lane Drop Taper –
Upstream Transition Area



Taper – Downstream Termination Area

Appendix B

Detailed Conceptual Layouts



Notes:

1. All temporary and long-term roads shown are conceptual. The detail designs will be undertaken at the appropriate stage in consultation with relevant stakeholders.

Rev	Date	By	Chkd	Appd
-----	------	----	------	------

ARUP

167 Florida Road, Morningside,
Durban, 4001
Tel +27 (0)31 328 8700 Fax +27 (0)31 328 8701
www.arup.com

Client
Coega Development Corporation

Project Title
**Port of Durban Validation
Part D - Demolition
Phase 1a**

Drawing Title
Traffic Road Layout (TRL)

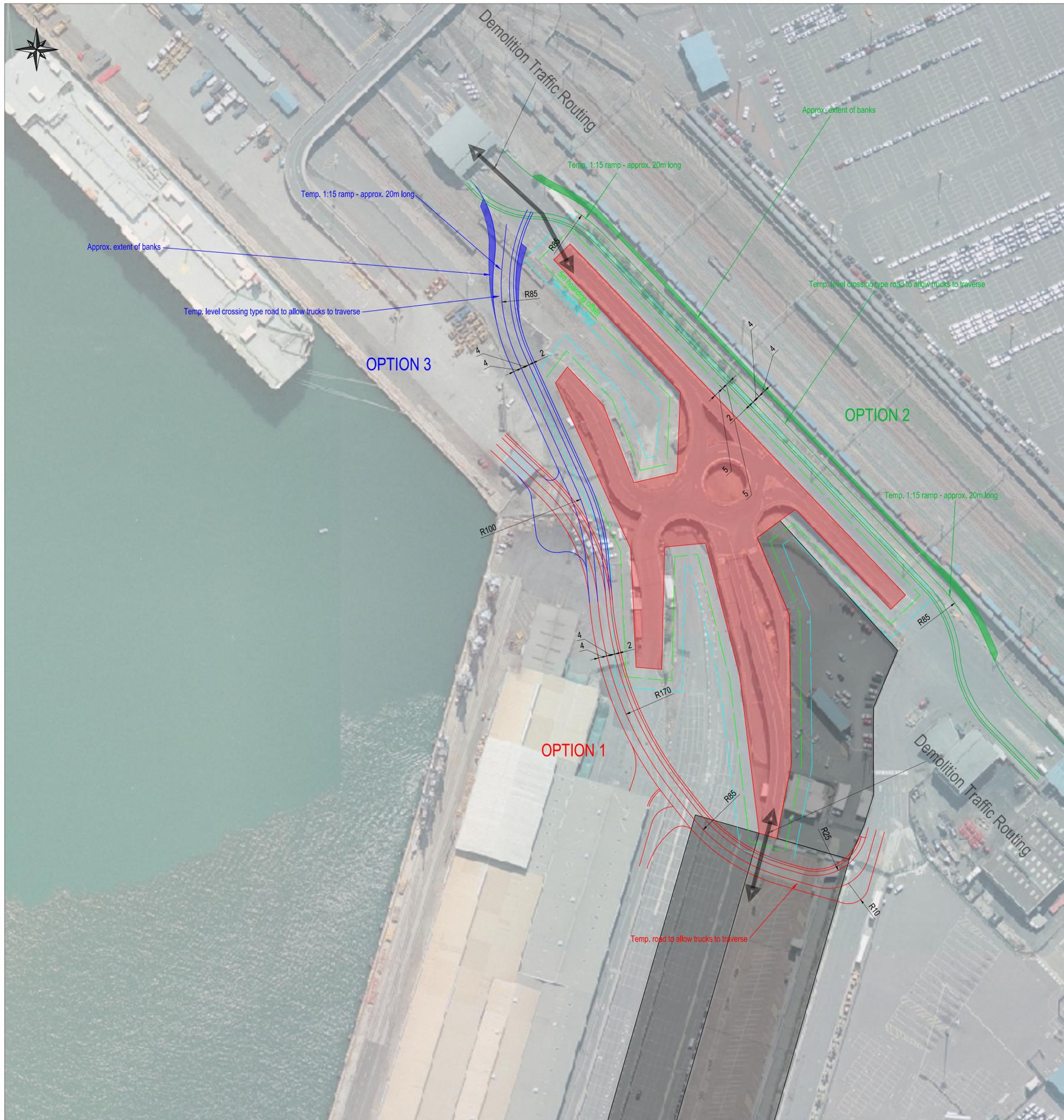
Scale at A1 1:2000

Role Traffic

Suitability **For Information**

Arup Job No 287007	Rev A
------------------------------	-----------------

Name
TP-TRL-001-1



Prelim. layerworks specifications:

For long-term Truck Roads at grade:
 - 40mm Asphalt
 - 120mm BC (asphalt base)
 - 400mm C3

For long-term Truck Roads on fill:
 - 40mm Asphalt
 - 120mm BC (asphalt base)
 - 400mm C3
 - 150mm G7
 - 150mm G9
 - G10

For short-term Truck Roads:
 - 40mm Asphalt
 - 200mm G2
 - min. 150mm G7

Notes:

1. All temporary and long-term roads shown are conceptual. The detail designs will be undertaken at the appropriate stage in consultation with relevant stakeholders.

Rev	Date	By	Chkd	Appd
-----	------	----	------	------

ARUP

167 Florida Road, Morningside,
 Durban, 4001
 Tel +27 (0)31 328 8700 Fax +27 (0)31 328 8701
 www.arup.com

Client
Coega Development Corporation

Project Title
**Port of Durban Validation
 Part D - Demolition
 Phase 1b**

Drawing Title
Traffic Road Layout (TRL)

Scale at A1 1:1000

Role Traffic

Suitability **For Information**

Arup Job No 287007	Rev A
------------------------------	-----------------

Name
TP-TRL-001-2



Prelim. layerworks specifications:

For long-term Truck Roads at grade:
 - 40mm Asphalt
 - 120mm BC (asphalt base)
 - 400mm C3

For long-term Truck Roads on fill:
 - 40mm Asphalt
 - 120mm BC (asphalt base)
 - 400mm C3
 - 150mm G7
 - 150mm G9
 - G10

Notes:

1. All temporary and long-term roads shown are conceptual. The detail designs will be undertaken at the appropriate stage in consultation with relevant stakeholders.

Rev	Date	By	Chkd	Appd
-----	------	----	------	------

ARUP

167 Florida Road, Morningside,
 Durban, 4001
 Tel +27 (0)31 328 8700 Fax +27 (0)31 328 8701
 www.arup.com

Client
Coega Development Corporation

Project Title
**Port of Durban Validation
 Part D - Demolition
 Phase 1c**

Drawing Title
Traffic Road Layout (TRL)

Scale at A1 1:2000

Role Traffic

Suitability **For Information**

Arup Job No 287007	Rev A
------------------------------	-----------------

Name
TP-TRL-001-4