



## Atlas Campaspe

# Construction Transport Management Plan

**Revision 2**  
**March 2020**

**Management Plan**

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| Revision Number | Amendment/Addition                                                            | Distribution   | Date        |
|-----------------|-------------------------------------------------------------------------------|----------------|-------------|
| Version 1       | Original for stakeholder comment                                              | RMS, BSC, CDSC | June 2018   |
| Revision 1      | Updated following stakeholder comments                                        | DP&E           | August 2018 |
| Revision 2      | Following 2019 Development Consent Mod that includes new light vehicle access | DPIE           | April 2020  |

Next Review :

Owner:

Revision Date:

Approver:

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## 1. INTRODUCTION

### 1.1 BACKGROUND

Cristal Mining Australia was acquired by Tronox Mining Australia in 2019. The Atlas-Campaspe Mineral Sands Project (the Project) is being developed by Tronox Mining Australia Limited (Tronox Mining) (Australian Business Number [ABN]: 60 009 247 858), which is wholly owned by Tronox Holdings plc.

The Project includes the development of a mineral sands mining operation (herein referred to as the Atlas-Campaspe Mine), together with the construction and operation of a rail loadout facility located near the township of Ivanhoe (herein referred to as the Ivanhoe Rail Facility).

The Atlas-Campaspe Mine is located approximately 80 kilometres (km) north of Balranald, New South Wales (NSW) and 270 km south-east of Broken Hill, NSW (Figure 1). The Ivanhoe Rail Facility is located approximately 135 km north-east of the Atlas-Campaspe Mine, and is approximately 4.5 km to the south-west of the township of Ivanhoe (Figure 1).

Product (mineral concentrates) generated as a result of operations at the Atlas-Campaspe Mine will be trucked to the Ivanhoe Rail Facility for transfer to train wagons, which will then be railed to the existing Broken Hill Mineral Separation Plant (the MSP) (Figure 1).

The Project will integrate with currently existing/approved Tronox Mining operations in western NSW, including (Figure 1):

- **the MSP** – located in Broken Hill approximately 270 km north-west of the Atlas-Campaspe Mine;
- **Snapper Mine** – located approximately 105 km to the west of the Atlas-Campaspe Mine;
- **Ginkgo Mine** – located approximately 100 km to the west of the Atlas-Campaspe Mine; and
- **Hatfield Gravel Pit Project** – located approximately 2 km south-east of the Atlas-Campaspe Mine.

The Project general arrangements and activities associated with the two main development components of the Atlas-Campaspe Mine, as well as the Hatfield Gravel Pit Project, are described in the following sub-sections.

#### ***Atlas-Campaspe Mine***

The main activities associated with the development of the Atlas-Campaspe Mine (Figure 2) will include:

- ongoing exploration activities;
- sequential development and operation of two separate mineral sands ore extraction areas within the Mining Lease;

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- use of conventional mobile equipment to mine and place mineral sands ore into dry mining units (DMUs) at a maximum ore production rate of up to 7.2 million tonnes per annum (Mtpa);
- mineral processing infrastructure including the primary gravity concentration unit, salt washing facility and a wet high intensity magnetic separation (WHIMS) circuit;
- mineral concentrate stockpiles and materials handling infrastructure (e.g. towers and stackers);
- progressive backfilling of mine voids with overburden behind the advancing ore extraction areas or in overburden emplacements adjacent to the mine path;

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- placement of sand residues and coarse rejects (and MSP process wastes) following mineral processing to either the active mining area (behind the advancing ore extraction area) or in sand residue dams;
- development of a groundwater borefield at the Atlas deposit and localised dewatering systems (bores, spearfields and trenches) at both the Atlas and Campaspe deposits, including associated pump and pipeline systems;
- reverse osmosis (RO) plant to supply the salt washing facility and potable water;
- progressive development of water storage dams, sediment basins, pumps, pipelines and other water management equipment and structures;
- administration/office buildings, car parking facilities, workshop and stores;
- on-site accommodation camp;
- sewage treatment plant;
- diesel powered generators, electricity distribution station and associated internal electricity transmission lines (ETLs);
- site access road, internal access roads and haul roads;
- roadworks along the mineral concentrate transport route to the Ivanhoe Rail Facility;
- transport of mineral concentrates along the mineral concentrate transport route to the Ivanhoe Rail Facility;
- road transport of MSP process waste in sealed storage containers from the Ivanhoe Rail Facility to the Atlas-Campaspe Mine for subsequent unloading, stockpiling and placement behind the advancing ore extraction areas;
- development of soil stockpiles and laydown areas;
- monitoring and rehabilitation; and
- other associated minor infrastructure, plant, equipment and activities.

#### ***Ivanhoe Rail Facility***

The main activities associated with the construction and operation of the Ivanhoe Rail Facility located approximately 4.5 km south-west of Ivanhoe (Figure 3), will include:

- development of a rail siding for:
  - loading of train wagons with mineral concentrate for rail transport to the MSP via the Orange – Broken Hill railway; and
  - unloading of MSP process waste in sealed storage containers (transported via the Orange – Broken Hill railway) from train wagons;
- site access road and internal haul roads/pavements;

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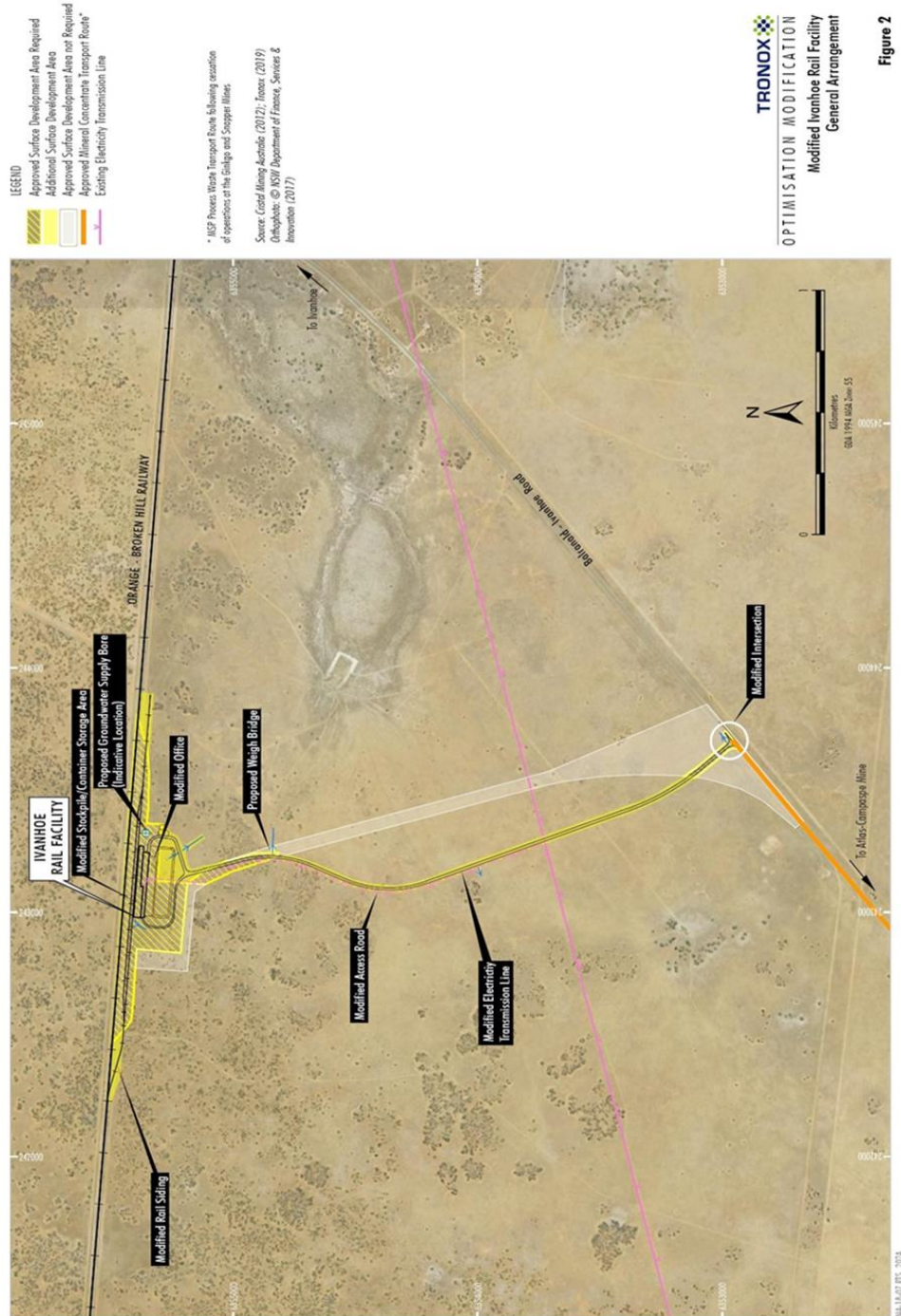
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- hardstand areas for mineral concentrate and MSP process waste unloading, stockpiling/sealed container storage and loading;
- a retention basin, drains, pumps, pipelines and other water management equipment and structures;
- site office and car parking facilities;

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- monitoring, landscaping and rehabilitation; and
- extension to existing 11 kilovolt (kV) powerline;
- other associated minor infrastructure, plant, equipment and activities.

#### **Hatfield Gravel Pit Project**

The Hatfield Gravel Pit Project will involve the development, operation and rehabilitation of three gravel pits along the mineral concentrate transport route (Figures 1 and 2) for the purposes of internal mine and public road upgrades and maintenance.

Site plans for the Hatfield Gravel Pit Project, including access points, parking bays and traffic sign locations, are provided in Attachment 2.

#### **1.2 OBJECTIVE AND STRUCTURE OF THE TMP**

The objective of this Transport Management Plan (TMP) is to address relevant State and Commonwealth approval conditions (Sections 2.1 and 2.2) and facilitate the management of transport at the Project and surrounding road network.

This TMP has been prepared to manage transport for the construction phase of the Project. As per the letter from the DP&E (dated 27 July 2018), management of operational transport (e.g. mineral concentrate transport) will be included in a later revision of this TMP, prior to the commencement of mining operations at the Project.

The TMP also facilitates the management of transport for the Hatfield Gravel Pit Project.

The remainder of the TMP is structured as follows:

- |            |                                                                                                              |
|------------|--------------------------------------------------------------------------------------------------------------|
| Section 2: | Outlines the statutory requirements relevant to the Project.                                                 |
| Section 3: | Provides a description of the existing environment related to the Project and surrounding transport network. |
| Section 4: | Describes the key transport movements associated with the construction phase of the Project.                 |
| Section 5: | Outlines the road upgrades to be implemented by Tronox Mining.                                               |
| Section 6: | Describes the transport design, monitoring and management measures for the Hatfield Gravel Pit Project.      |
| Section 7: | Outlines the reporting, auditing and reviewing requirements.                                                 |
| Section 8: | Provides a list of references used in this TMP.                                                              |

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#### **1.3 CONSULTATION**

A draft version (Version 1) of the TMP was provided to the below listed stakeholders for comment on 25 June 2018:

- NSW Roads and Maritime Services (RMS);
- Balranald Shire Council (BSC); and
- Central Darling Shire Council (CDSC).

Tronox Mining met with representatives from RMS, BSC and CDSC on 11 July 2018. This version (Version 2) has considered comments from RMS, BSC and CDSC provided at this meeting.

#### **1.4 RESPONSIBILITIES**

Tronox Mining (Environmental Lead) will be responsible for monitoring, reviewing and implementing the management activities in this TMP.

#### **1.5 RELATIONSHIP OF THIS PLAN TO OTHER PROJECT MANAGEMENT PLANS**

This TMP or the management of transport at the Project also relates to the Biodiversity Management Plan as described below.

The Biodiversity Management Plan was prepared in accordance with Condition 4 of the Commonwealth Approval (EPBC 2012/6447) and Condition 14, Schedule 3 of the Development Consent (SSD\_5012). The Biodiversity Management Plan includes management measures to reduce the incidence of vehicle collisions with Malleefowl, which are reproduced in Attachment 1 of this TMP.

## **2. STATUTORY REQUIREMENTS**

Tronox Mining's statutory obligations are contained in:

- the conditions of the NSW Development Consent (SSD\_5012) Modification 1;
- the conditions of the Commonwealth Approval (EPBC 2012/6447);
- the conditions of the NSW Western Joint Regional Planning Panel (JRPP) Project Approval (DA 10/2018) for the Hatfield Gravel Pit Project; and
- other relevant approvals and legislation.

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#### 2.1 RELEVANT NSW APPROVAL CONDITIONS

The conditions of the Development Consent (SSD\_5012) relevant to transport management, and where they are referenced in this TMP, are provided in Table 2-1.

**Table 2-1**  
**NSW Project Approval Conditions Relevant to this Transport Management Plan**

| Schedule 3 Environmental Performance Conditions |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Relevant<br>TMP Section                                                                                                                                                                                                                                                      |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transport Management Plan                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                              |
| 9                                               | <p><i>The Applicant shall prepare and implement a Transport Management Plan for the development to the satisfaction of the Secretary. This plan must:</i></p> <p><i>(a) be prepared in consultation with the RMS, BSC and CDSC</i></p> <p><i>(b) be submitted to the Secretary for approval prior to carrying out any construction on site;</i></p> <p><i>(c) include a program to monitor and report on the:</i></p> <ul style="list-style-type: none"> <li><i>amount of mineral concentrate transported from the site;</i></li> <li><i>amount of MSP process waste returned to the site; and</i></li> <li><i>date and time of each train movement generated by the development;</i></li> </ul> <p><i>(d) include the measures that would be implemented to address the relevant requirements in the Code of Practice for the Safe Transport of Radioactive Materials (ARPANSA, 2001, or its latest version);</i></p> <p><i>(e) focus on traffic management along the haulage route and light vehicle access route;</i></p> <p><i>(f) include a <u>Road Transport Protocol</u> for all drivers transporting materials to and from the site with measures to ensure:</i></p> <ul style="list-style-type: none"> <li><i>heavy vehicles adhere to the designated haulage route;</i></li> <li><i>all vehicles transporting mineral concentrate are completely covered whilst in transit;</i></li> <li><i>the staggering of heavy vehicle departures to minimise impacts on the road network, where practicable;</i></li> <li><i>no disruption to school bus timetables;</i></li> <li><i>the management of worker fatigue during trips to and from the site;</i></li> <li><i>appropriate driver behaviour including adherence to speed limits, safe overtaking and maintaining appropriate distances between vehicles (i.e. a Driver Code of Conduct);</i></li> <li><i>adherence to drug and alcohol policies;</i></li> <li><i>appropriate vehicle maintenance and safety;</i></li> <li><i>contingency plans when the haulage route is disrupted due to low visibility or closed due to wet weather;</i></li> </ul> | <p>Section 1.3</p> <p>Section 1.3</p> <p>N/A</p> <p>N/A</p> <p><b>Attachment 1</b></p> <p>Attachment 1</p> <p>Attachment 1</p> <p>N/A</p> <p>Attachment 1</p> <p>Attachment 1</p> <p>Attachment 1</p> <p>Attachment 1</p> <p>Attachment 1</p> <p>Attachment 1</p> <p>N/A</p> |

N/A = Not Applicable (condition is relevant to the operational phase and will be covered in a later revision of the TMP [refer Section 1.2]).

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**Table 2-1 (Continued)**  
**NSW Project Approval Conditions Relevant to this Transport Management Plan**

| Schedule 3 Environmental Performance Conditions |                                                                                                                                                                                                      | Relevant<br>TMP Section             |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <b>Transport Management Plan</b>                |                                                                                                                                                                                                      |                                     |
| 9<br>(Cont.)                                    | <ul style="list-style-type: none"> <li>• emergency response plans;</li> <li>• the safe transportation MSP process wastes; and</li> <li>• compliance with and enforcement of the protocol.</li> </ul> | Attachment 1<br>N/A<br>Attachment 1 |

N/A = Not Applicable (condition is relevant to the operational phase and will be covered in a later revision of the TMP [refer Section 1.2]).

## 2.2 RELEVANT COMMONWEALTH APPROVAL CONDITIONS

The conditions of the Commonwealth Approval (EPBC 2012/6447) (as varied) relevant to transport management, and where they are referenced in this TMP, are provided in Table 2-2.

**Table 2-2**  
**Commonwealth Approval Conditions Relevant to this Transport Management Plan**

| No. | Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Relevant<br>TMP Section |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| 4   | <p><i>The approval holder must prepare and submit to the Minister, at least 3 months prior to commencement of the action, the Biodiversity Management Plan required by NSW approval condition 14 of Schedule 3 to mitigate impacts of the action on the Malleefowl, the Corben's Long-eared Bat, the Winged Peppercreep and the Mossgiel Daisy. The Biodiversity Management Plan must be prepared by a suitably qualified expert, in consultation with the Office of Environment and Heritage, and must:</i></p> <p>...</p> <p><i>b. reduce the risk of road strike to the Malleefowl by including:</i></p> <ul style="list-style-type: none"> <li><i>i. details of the road signs to be installed on roads to warn employees about the presence of Malleefowl, including design, dimensions, number and location;</i></li> <li><i>ii. details of other activities, including speed limits, to be implemented to slow speeds or avoid Malleefowl road strike on roads, including a maximum speed limit of 50km per hour;</i></li> <li><i>iii. arrangements to ensure the ongoing maintenance and operation of the signs and any other activities described in 4a and 4b;</i></li> <li><i>iv. details of communication activities, including their frequency, that will be undertaken to ensure that all staff are aware of the need to protect Malleefowl and minimise road strike to the species. These must occur a minimum of twice a year;</i></li> <li><i>v. details of methods for identifying and measuring Malleefowl mortality associated with road strike as a result of the proposed action;</i></li> <li><i>vi. reporting arrangements to notify relevant state and local agencies and the public of any Malleefowl mortalities, including a log book in which staff must keep records of all reported incidences of vehicle strike including the number of incidences, the location and time of day of each road strike incident; and</i></li> </ul> | Attachment 1            |

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| No. | Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Relevant TMP Section |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
|     | <i>vii. details of additional measures to reduce the speed of vehicles, both permanent and temporary, that will be implemented to further reduce vehicle strike in the case that two or more incidences of vehicle strike on Malleefowl are recorded and reported within a 12 month period. In the event that two or more incidences occur, the Department must be notified within one week of the second incident and interim measures must be put in place within two weeks of the second incident until such time as the agreed measures can be implemented.</i> |                      |
| No. | Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Relevant TMP Section |
| 6   | <i>The Biodiversity Management Plan required by conditions 4 and 5 must be approved by the Minister prior to commencement of the action. The approved Biodiversity Management Plan must be implemented. Once approved, the information required by Condition 4b, must be included in the Road Transport Protocol required by the NSW conditions prior to commencement of the action and must be implemented.</i>                                                                                                                                                    | Attachment 1         |

### 2.3 HATFIELD GRAVEL PIT PROJECT APPROVAL CONDITIONS

The Western JRPP approved the Hatfield Gravel Pit Project (JRPP No. 2017WES008, Project Approval [DA 10/2018]) on 20 November 2017. The development application was approved by the Western JRPP subject to the draft conditions provided in the BSC's Assessment Report for the Hatfield Gravel Pit Project.

Conditions from the BSC's Assessment Report relevant to transport management for the Hatfield Gravel Pit Project are provided in Table 2-3.

**Table 2-3**  
**Hatfield Gravel Pit Project Approval Conditions Relevant to this Transport Management Plan**

| No.                         | Condition                                                                                                                                                                                                                                                                                                                                                      | Relevant TMP Section |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| <b>Roads &amp; Maritime</b> |                                                                                                                                                                                                                                                                                                                                                                |                      |
| 14                          | <i>Any driveway to the public road network is to be located and maintained so as to comply with the required Sight Distance requirements in accordance with the Austroads Publications for the posted speed limit. Compliance with this requirement is to be certified by an appropriately qualified person prior to construction of the vehicular access.</i> | Section 6            |
| 15                          | <i>As a minimum any driveway to the public road network shall be constructed as a "Rural Property Access" type treatment in accordance with the Austroads Guide to Road Design. The driveway is to be constructed with a minimum width to accommodate the largest size of vehicle likely to access the subject site.</i>                                       |                      |
| 16                          | <i>Where the driveway is to a sealed road any access driveway shall be sealed for at least 10m from the edge of seal of the carriageway in accordance with the Austroads Guide to Road Design. This is required to prevent deterioration of the road shoulder and the tracking of gravel onto the roadway.</i>                                                 |                      |

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| No. | Condition                                                                                                                                                                                                                                                                                              | Relevant TMP Section |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 17  | <i>Any entry gate to the site shall be located at least 40m from the edge of seal of the carriageway or at the property boundary whichever is the greater. This is to allow for the standing of large vehicles when gates are to be opened.</i>                                                        |                      |
| 18  | <i>Measures to minimise dust generation from the site impacting on road users on the adjoining public roads shall be implemented for each of the quarry sites.</i>                                                                                                                                     |                      |
| 19  | <i>Any damage or disturbance to the road reserve (other than the driveway) is to be restored to match surrounding landform in accordance with Council requirements.</i>                                                                                                                                |                      |
| 20  | <i>Any access driveway is to be designed and constructed to prevent water from proceeding onto, or ponding within, the carriageway. If a culvert is to be located within the clear zone of the carriageway for the prevailing speed zone it is to be constructed with a traversable type headwall.</i> |                      |
| 21  | <i>“Truck Entering” signs, specification W5-22C, must be installed on both approaches to quarrying sites to warn motorists of possible truck movements during periods of active haulage of extractive materials.</i><br><br><i>Reason: To ensure traffic safety (condition 11-18).</i>                 |                      |

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**Table 2-3 (Continued)**  
**Hatfield Gravel Pit Project Approval Conditions Relevant to this Transport Management Plan**

| No.                                                     | Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Relevant TMP Section |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 22                                                      | <i>Works associated with the development shall be at no cost to Roads and Maritime Services.<br/>Reason: To clarify cost burden.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Section 6            |
| 23                                                      | <i>The quarry operator is to record and maintain a log of the extraction quantities and traffic movement in and out of the subject site. This log is to be kept on site and be available for inspection at the request of the consent authority.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                      |
| 24                                                      | <i>The proponent must provide annual production data to the Division of Resources and Geoscience.<br/>Reason: To inform natural resource management planning (condition 20-21).</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |
| <b>BSC QUARRY SITE &amp; ACCESS DRIVEWAY CONDITIONS</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      |
| 25                                                      | <i>The applicant must obtain a road opening permit prior to the commencement of construction of rural driveway accesses to proposed extractive sites.<br/>Reason: Statutory requirement under S138 of the Roads Act 1993.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Section 6            |
| 26                                                      | <i>As a minimum any driveway to the public road network, the applicant must construct as a “Rural Property Access” type treatment in accordance with the Austroads Guide to Road Design (see attached specification SD265). The driveway is to be constructed with a minimum width to accommodate the largest size of vehicle likely to access the subject site. The access driveway is to be designed and constructed to prevent water from proceeding onto, or ponding within, the existing public road. Any entry gate to the site shall be located a minimum of 40m offset from the edge of the carriageway or at the property boundary whichever is the greater. Gates are to be splayed as necessary to accommodate this offset. This is to allow for the standing of the longest expected heavy vehicles on the driveway approach – clear of the public road, when gates are to be opened.<br/>Reason: To ensure traffic safety.</i> |                      |
| 27                                                      | <i>The applicant must construct culverts where rural property accesses are to cross road swale drains so as to not inhibit drainage flow. They must utilise materials and be installed to a standard that accommodates the largest vehicle mass likely to access the quarry site. The culvert is to be constructed with traversable type headwalls.<br/>Reason: To ensure the correct operation of roadway drainage systems and traffic safety.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |
| 28                                                      | <i>The applicant must locate and maintain the driveway approach to the public road network so as to comply with the required Sight Distance requirements in accordance with the Austroads Publications for the posted speed limit. Compliance with this requirement is to be certified by an appropriately qualified person prior to construction of the vehicular access.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                      |
| 29                                                      | <i>The applicant must implement measures to minimise and suppress dust generation from the gravel extraction quarries that might impact on road users visibility on the adjoining public roads.<br/>Reason: To ensure traffic safety (condition 25-26).</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |
| 30                                                      | <i>The quarry operator is to record and maintain a log of the extraction quantities and traffic movement in and out of the subject site. This log is to be kept on site and be available for inspection at the request of the consent authority. Records are to be supplied to Balranald Shire Council, on a quarterly basis, preferably in the form of a data report from an automatic vehicle classifier located at quarry entrances.<br/>Reason: To inform resource management planning for the built environment.</i>                                                                                                                                                                                                                                                                                                                                                                                                                   |                      |

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|    |                                                                                                                                                                                                                                                                                                            |  |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 31 | <p>The applicant must install “Truck Entering” signs – specification W5-22C (hinged) – on both the approaches to the Rural Property Access and the signs are to be open and visible during periods of active gravel extraction and haulage to warn motorists.</p> <p>Reason: To ensure traffic safety.</p> |  |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

Table 2-3 (Continued)

## Hatfield Gravel Pit Project Approval Conditions Relevant to this Transport Management Plan

| No. | Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Relevant TMP Section |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 26  | <p>As a minimum any driveway to the public road network, the applicant must construct as a “Rural Property Access” type treatment in accordance with the Austroads Guide to Road Design (see attached specification SD265). The driveway is to be constructed with a minimum width to accommodate the largest size of vehicle likely to access the subject site. The access driveway is to be designed and constructed to prevent water from proceeding onto, or ponding within, the existing public road. Any entry gate to the site shall be located a minimum of 40m offset from the edge of the carriageway or at the property boundary whichever is the greater. Gates are to be splayed as necessary to accommodate this offset. This is to allow for the standing of the longest expected heavy vehicles on the driveway approach – clear of the public road, when gates are to be opened.</p> <p>Reason: To ensure traffic safety.</p> | Section 6            |
| 27  | <p>The applicant must construct culverts where rural property accesses are to cross road swale drains so as to not inhibit drainage flow. They must utilise materials and be installed to a standard that accommodates the largest vehicle mass likely to access the quarry site. The culvert is to be constructed with traversable type headwalls.</p> <p>Reason: To ensure the correct operation of roadway drainage systems and traffic safety.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |
| 28  | <p>The applicant must locate and maintain the driveway approach to the public road network so as to comply with the required Sight Distance requirements in accordance with the Austroads Publications for the posted speed limit. Compliance with this requirement is to be certified by an appropriately qualified person prior to construction of the vehicular access.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |
| 29  | <p>The applicant must implement measures to minimise and suppress dust generation from the gravel extraction quarries that might impact on road users visibility on the adjoining public roads.</p> <p>Reason: To ensure traffic safety (condition 25-26).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |
| 30  | <p>The quarry operator is to record and maintain a log of the extraction quantities and traffic movement in and out of the subject site. This log is to be kept on site and be available for inspection at the request of the consent authority. Records are to be supplied to Balranald Shire Council, on a quarterly basis, preferably in the form of a data report from an automatic vehicle classifier located at quarry entrances.</p> <p>Reason: To inform resource management planning for the built environment.</p>                                                                                                                                                                                                                                                                                                                                                                                                                   |                      |
| 31  | <p>The applicant must install “Truck Entering” signs – specification W5-22C (hinged) – on both the approaches to the Rural Property Access and the signs are to be open and visible during periods of active gravel extraction and haulage to warn motorists.</p> <p>Reason: To ensure traffic safety.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                      |

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| BSC HEAVY HAULAGE OF EXTRACTIVE MATERIALS CONDITIONS |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |
|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 32                                                   | Any damage or disturbance to the road reserve (other than the driveway) by the applicant must be restored to match surrounding landform in accordance with Council requirements.                                                                                                                                                                                                                                                                                                               | Section 6 |
| 33                                                   | The Applicant must ensure that no gravel-haulage-related traffic (including employees and contractors) uses local roads to access the site, other than those local roads that form part of the haulage route shown in Appendix 3 of State Significant Development Consent SSD_5012, except in an emergency to avoid injury, the loss of life, property and/or to prevent environmental harm.<br><br>Reason: To minimise the impact of the proposal on the built environment (condition 29-30). |           |
| 34                                                   | All gravel-loaded heavy haulage vehicles leaving the site must be loaded so as not to exceed the legal weight limitations and must enter and leave the site in a forward direction.<br><br>Reason: Statutory compliance.                                                                                                                                                                                                                                                                       |           |
| 35                                                   | The applicant must ensure all heavy haulage vehicles and associated plant are fitted with properly maintained emission controls relevant to their date of manufacture.<br><br>Reason: Statutory compliance.                                                                                                                                                                                                                                                                                    |           |

**Table 2-3 (Continued)**

#### Hatfield Gravel Pit Project Approval Conditions Relevant to this Transport Management Plan

| No. | Condition                                                                                                                                                                                                                                            | Relevant TMP Section |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 36  | During periods of wet weather or in a declared state of emergency, the applicant must adhere to any road closures enforced by the designated road authority, Balranald Shire Council.<br><br>Reason: Statutory compliance.                           | Section 6            |
| 37  | The applicant must ensure all heavy haulage vehicles loaded with gravel be suitably covered so as to prevent accidental spillage or dust falling from loads or sediment being tracked onto any public road.<br><br>Reason: To ensure traffic safety. |                      |
| 38  | The applicant must ensure all loading and unloading take place within designated property bounds, including the parking of construction and private vehicles associated with the development.<br><br>Reason: To ensure traffic safety.               |                      |

## 2.4 GUIDELINES

Guidelines that have been used during the preparation of this TMP include the *Guide to Road Design* (Austroads, 2009 [or its latest version]).

## 2.5 RELEVANT REQUIREMENTS OF THE NSW ROADS ACT 1993

In accordance with section 138 of the *NSW Roads Act 1993*, Tronox Mining will obtain the consent of the appropriate roads authority prior to undertaking any of the following activities during the construction phase of the Project:

- erect a structure or carry out a work in, on or over a public road;

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- dig up or disturb the surface of a public road,
- remove or interfere with a structure, work or tree on a public road;
- pump water into a public road from any land adjoining the road; or
- connect a road (whether public or private) to a classified road.

## 3 EXISTING ENVIRONMENT

### *Road Hierarchy and Conditions*

#### *State Roads*

The *Sturt Highway* (State Highway 14) provides access to regional centres such as Buronga, Balranald, Hay, Narrandera and Wagga Wagga. In the vicinity of Balranald, the Sturt Highway has a sealed surface and a single travel lane in each direction. The Sturt Highway (Figure 1) runs generally east-west to the south of the Project and provides a link between the Hume Highway to Buronga in south-west NSW (GTA Consultants, 2012).

#### *Regional Roads*

The Balranald-Ivanhoe Road (Main Road 67) provides access between the Sturt Highway in Balranald to the Cobb Highway at Ivanhoe (Figure 1). The Balranald-Ivanhoe Road is a two-lane road and has a sealed surface between Balranald and Ivanhoe. North of this point, the road includes sections of unsealed and sealed road surface. This road is an approved route for road trains (GTA Consultants, 2012).

#### *Local Roads*

Hatfield-The Vale Road provides an east-west link between Balranald-Ivanhoe Road and Magenta Road and continues to the north past its intersection with Magenta Road (Figure 2). Traffic on Hatfield-The Vale Road has priority at the intersection with Magenta Road. It is unsealed with a poor road surface which does not allow for wet weather access or for two large vehicles to pass at speed (GTA Consultants, 2012).

Magenta Road extends in a north-south direction between Hatfield-The Vale Road and Boree Plains-Gol Gol Road (Figure 2). It is unsealed with a poor road surface which does not allow for wet weather access or for two large vehicles to pass at speed. The intersections at each end of Magenta Road are T-intersections, with Magenta Road as the terminating leg. Traffic on Hatfield-The Vale Road and Boree Plains-Gol Gol Road has priority at these intersections (GTA Consultants, 2012).

Link Road links Boree Plains-Gol Gol Road to the intersection of Marma Magenta Wampo Road and Box Creek Road (Figure 2). It is unsealed with a poor road surface which does not allow for wet weather access. The road width is sufficient for two large vehicles to pass (GTA Consultants, 2012).

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Boree Plains-Gol Gol Road extends from Balranald-Ivanhoe Road to Boree Plains Station (Figure 2). Its intersection with Magenta Road is a T-intersection and is aligned such that Boree Plains-Gol Gol Road has priority. The Boree Plains-Gol Gol Road and Link Road intersection is also aligned such that Boree Plains-Gol Gol Road has priority. Boree Plains-Gol Gol Road is an unsealed road with a poor road surface. East of its intersection with Link Road, it has sufficient width for two large vehicles to pass (GTA Consultants, 2012). Marma Magenta Wampo Road provides an east-west link between the Link Road and Box Creek Road intersection and Arumpo Road. It is unsealed with a poor road surface which does not allow for wet weather access. The intersection of Marma Magenta Wampo Road with Link Road and Box Creek Road is a T-intersection with Link Road, with Link Road as the terminating leg (GTA Consultants, 2012).

***Mineral Concentrate Transport Route***

Mineral concentrate will be hauled via road approximately 175 km from the Atlas-Campaspe Mine to the Ivanhoe Rail Facility. The mineral concentrate would be transported in road trains. The Balranald-Ivanhoe Road is an approved route for road trains.

The proposed mineral concentrate transport route to the Ivanhoe Rail Facility is shown on Figure 1. The road haulage route would comprise sections of the following public roads (Figures 1 and 2):

- Link Road;
- Boree Plains-Gol Gol Road;
- Magenta Road;
- Hatfield-The Vale Road; and
- Balranald-Ivanhoe Road.

The management of mineral concentrate transport will be included in a later revision of the TMP, prior to the commencement of mining activities (and therefore mineral concentrate transport) at the Project.

***Light Vehicle Access Routes***

Following the approval of Atlas-Campaspe Modification 1 (November, 2019) two additional light vehicle access routes to the project were approved (see Figure 4a).

The primary light vehicle route from Mildura will be via:

- Arumpo road;
- Marma Box Creek Road; and
- Link Road.

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The primary light vehicle route from Balranald will be via:

- Boree Plains–Gol Gol Road; and
- Link Road.

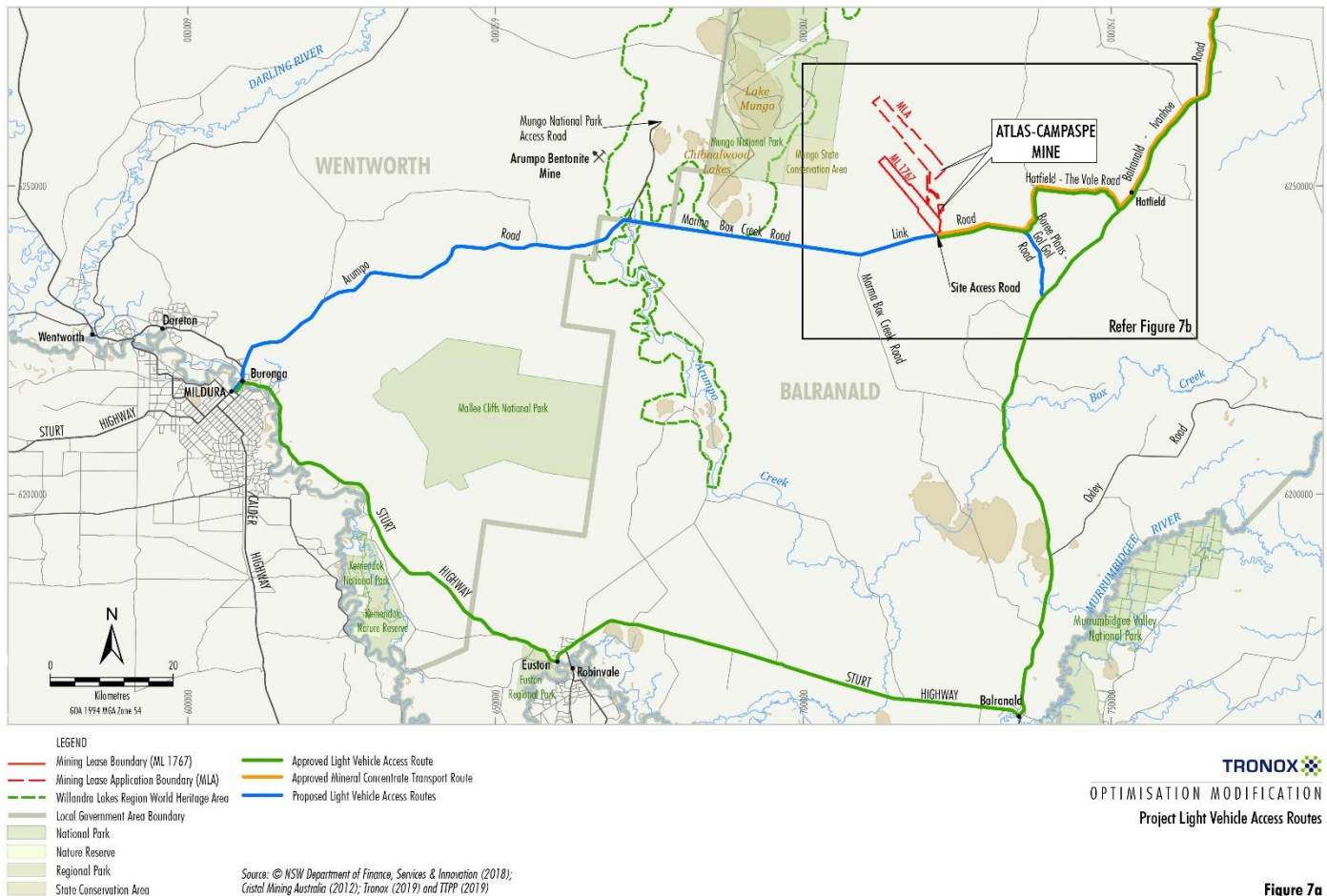


Figure 7a

Figure 4a – Light Vehicle access routes

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**4. TRANSPORT ASSOCIATED WITH THE CONSTRUCTION PHASE OF THE PROJECT**

Key transport activities associated with the construction phase of the Project include (but are not limited to) the transport of the following items:

- accommodation camp buildings (e.g. dongas, laundries, toilets);
- earthmoving fleet;
- site buildings (e.g. administration building, lunchroom);
- primary gravity concentration unit;
- DMUs; and
- overburden conveyors.

The above items will generally be sourced from Buronga, Melbourne and Adelaide and require loads of varying sizes, including oversize and/or overmass (OSOM) loads.

The transport routes for construction vehicles will undergo ongoing logistical planning throughout the construction phase of the Project. The indicative routes within NSW which may be used for construction vehicles are shown on Figure 4.

Tronox Mining will obtain relevant access permits for construction-related vehicles. The type of access permit will depend on the type of load and requirements for interstate travel.

A specific transport management plan describing how an OSOM movement will be safely undertaken within NSW (OSOM TMP) will be prepared and submitted to RMS for assessment and review for any OSOM movements which fall under the following criteria (RMS, 2018):

- all OSOM movements that are classified as 'High Risk' due to their dimensions and/or weights;
- all OSOM movements that travel on a 'High Risk' route; and
- all OSOM movements that involve transport of a 'Critical/Sensitive' load.

Each OSOM TMP will include specific details for the relevant movement, including the following (RMS, 2018):

- vehicle and load details;
- route survey details of the proposed route(s);
- traffic management arrangements;
- stakeholder and community consultations; and

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- Rail Infrastructure Manager (RIM) approval.

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Figure 4b – Heavy vehicle access route

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#### 4.1 CONSTRUCTION PHASE TRAFFIC VOLUMES

Construction activity for the Project will require approximately 150 employees on average and 300 employees at peak (GTA Consulting, 2012).

Project-related vehicle trips will vary throughout the construction phase, with variable employment numbers and employees working on a shift basis with on-site accommodation.

The estimated peak daily vehicle trips generated by the construction phase of the Project are provided in Table 4-1.

The peak daily vehicle trips in Table 4-1 would coincide with the peak construction employment (i.e. 300 employees) and peak employee arrival days (i.e. Monday) (GTA Consultants, 2012).

**Table 4-1**  
**Estimated Peak Daily Vehicle Trips Generated by Construction Phase**

| Vehicle Type                                                       | Peak Daily Vehicle Trips<br>(vehicles per day) |
|--------------------------------------------------------------------|------------------------------------------------|
| Construction Employees (Atlas-Campaspe Mine Site) [light vehicles] | 218                                            |
| Construction Employees (Ivanhoe Rail Facility) [light vehicles]    | 16                                             |
| Construction Deliveries [heavy vehicles]                           | 10                                             |
| Construction Visitors [light vehicles]                             | 10                                             |

Source: GTA Consulting (2012).

#### 5. ROAD UPGRADES

Within 12 months of commencing construction of the site and prior to the haulage of mineral concentrate, unless otherwise agreed with the Secretary of the Department of Planning and Environment, Tronox Mining will implement the road upgrade, realignment and intersections detailed in Table 1 of Development Consent (SSD\_5012) (reproduced in Table 5-1).

**Table 5-1**  
**Road Upgrade Works**

| Measures                                                                                                                                                                                                                               | Applicable Roads<br>Authority |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| Upgrade existing Balranald-Ivanhoe Road and Hatfield-The Vale Road intersection                                                                                                                                                        | RMS, BSC                      |
| Road widening and associated drainage works along: <ul style="list-style-type: none"> <li>Hatfield-The Vale Road (14.5km section);</li> <li>Magenta Road (3km section);</li> <li>Boree Plains-Gol Gol Road (5.5km section);</li> </ul> | BSC                           |

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|                                                                                                                                                                                                                                                                             |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <ul style="list-style-type: none"> <li>Link Road (8km section)</li> </ul>                                                                                                                                                                                                   |           |
| Construction of unsealed two lane road between: <ul style="list-style-type: none"> <li>Hatfield-The Vale Road and Boree Plains-Gol Gol Road intersections (2km section);</li> <li>Magenta Road and Boree Plains-Gol Gol Road intersections (2km section) liaised</li> </ul> | BSC       |
| Construction of new intersections at: <ul style="list-style-type: none"> <li>Hatfield-The Vale Road and Magenta Road;</li> <li>Magenta Road and Boree Plains-Gol Gol Road;</li> <li>Link Road and Atlas-Campaspe site access road</li> </ul>                                | BSC       |
| Construction of a new intersection at Balranald-Ivanhoe Road and Ivanhoe rail facility access road                                                                                                                                                                          | RMS, CDSC |
| Seal and undertake drainage works along Magenta Road (2km section)                                                                                                                                                                                                          | BSC       |
| High risk safety deficiencies along Balranald-Ivanhoe Road as identified in the Road Safety Audit                                                                                                                                                                           | BSC, CDSC |

According to Section 1A of Schedule 3 of Development Consent (SSD\_5012) Table 5-2 below must be completed to an acceptable standard, to the satisfaction of the applicable roads authority.

Section 1A requires that the following light vehicle road upgrades be undertaken:

**Table 5-2**  
**Light Vehicle Routes Road Upgrade Works**

| <i>Measures</i>                                                                                                             | <i>Applicable Roads Authority</i> |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Widen Link Road (between Atlas-Campaspe Mine access road and Marma Box Creek Road)                                          | BSC                               |
| Seal at least the first 100m of the surface of Boree Plains–Gol Gol Road from its intersection with Balranald-Ivanhoe Road. | BSC, RMS                          |

## 6. HATFIELD GRAVEL PIT PROJECT TRANSPORT DESIGN, MONITORING AND MANAGEMENT

The approval conditions for the Hatfield Gravel Pit Project (Section 2.3) outline the criteria and guidelines that must be considered for the design and construction of driveways providing access for the Hatfield Gravel Pit Project, as well as transport management and monitoring requirements.

Table 6-1 provides a description of the design, monitoring and management measures relevant to transport for the Hatfield Gravel Pit Project.

Site plans for the Hatfield Gravel Pit Project, including access points, parking bays and traffic sign locations, are provided in Attachment 2.

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**Table 6-1**  
**Hatfield Gravel Pit Project Transport Design, Monitoring and Management**

| Component                          | Hatfield Gravel Pit Project Approval Condition | Design / Monitoring / Management Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Driveway Design                    | 14, 15, 16, 17, 25, 26 and 28                  | <p>Driveways to the public road network will be located and maintained to comply with the sight distance requirements of the <i>Guide to Road Design</i> (Austroads, 2009 [or its latest version]) for the posted speed limit of 100 km per hour along the mineral concentrate transport route. Compliance with the <i>Guide to Road Design</i> (Austroads, 2009 [or its latest version]) will be certified by an appropriately qualified person prior to construction.</p> <p>Driveways to the public road network will be constructed as a "Rural Property Access" type treatment in accordance with the <i>Guide to Road Design</i> (Austroads, 2009 [or its latest version]), with a minimum width to accommodate the largest size of vehicle likely to access the Hatfield Gravel Pit Project.</p> <p>Any driveways to sealed roads will be sealed for at least 10 m from the edge of the seal of the carriageway in accordance with the <i>Guide to Road Design</i> (Austroads, 2009 [or its latest version]).</p> <p>Entry gates to the Hatfield Gravel Pit Project will be located at least 40 m from the seal of the carriageway or at the property boundary (whichever is greater). Gates will be splayed as necessary to accommodate this offset.</p> <p>Tronox Mining will obtain a road opening permit from the BSC prior to the commencement of construction of access driveways to the Hatfield Gravel Pit Project in accordance with section 138 of the <i>Roads Act 1993</i>.</p> |
| Water management                   | 20, 26 and 27                                  | <p>Driveways will be designed and constructed to prevent water proceeding onto, or ponding within, the carriageway.</p> <p>Tronox Mining will construct culverts where access driveways cross road swale drains to a standard to accommodate the greatest vehicular mass likely to access the Hatfield Gravel Pit Project sites, with a traversable type headwall.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Dust and vehicle emissions control | 18, 29, 35                                     | <p>Measures to minimise dust generation will be implemented in accordance with the Atlas-Campaspe Air Quality Management Plan.</p> <p>All heavy haulage vehicles and associated plant will be fitted with properly maintained emission controls relevant to their date of manufacture.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Management of road reserves        | 19 and 32                                      | Any damage or disturbance to the road reserve (other than the driveway) due to the Hatfield Gravel Pit Project will be restored to match the surrounding landform in accordance with BSC requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Road signage                       | 21 and 31                                      | "Truck Entering" signs (design specification W5-22C) will be installed on both approaches to driveways for the Hatfield Gravel Pit Project. The signs will be open and visible during periods of active gravel extraction and haulage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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**Table 6-1 (Continued)**  
**Hatfield Gravel Pit Project Transport Design, Monitoring and Management**

| Component       | Hatfield Gravel Pit Project Approval Condition | Design / Monitoring / Management Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Road work costs | 22                                             | Tronox Mining will pay for road works associated with the Hatfield Gravel Pit Project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Gravel hauling  | 23, 24, 30, 33, 34, 37 and 38                  | <p>Gravel-haulage-related traffic will only use roads which form part of the mineral concentrate transport route (Figures 1 and 2), except in an emergency to avoid injury, loss of life, property and/or prevent environmental harm. Drivers will be made aware of the designated haulage routes during training.</p> <p>All gravel-loaded heavy haulage vehicles leaving the Hatfield Gravel Pit Project sites will be loaded so as not to exceed the legal weight limitations.</p> <p>Operational staff will record and maintain a log of all extraction quantities and traffic movements to and from the Hatfield Gravel Pit Project sites. This log will be kept on site and be available for inspection at request by the BSC.</p> <p>Tronox Mining will provide production data for the Hatfield Gravel Pit Project to the NSW Department of Planning and Environment – Division of Resources and Geoscience on an annual basis, and to the BSC on a quarterly basis.</p> <p>During inductions, drivers will be made aware that all trucks must enter and exit the Hatfield Gravel Pit Project sites in a forward direction, as per the Road Transport Protocol (Attachment 1).</p> <p>All heavy vehicles loaded with gravel will be suitably covered to prevent accidental spillage or dust falling from loads or sediment being tracked onto any public roads.</p> <p>All loading and unloading will occur within the designated property bounds, including the parking of construction and private vehicles associated with Hatfield Gravel Pit Project.</p> |
| Road Closures   | 36                                             | <p>Tronox Mining will not use roads which have been closed by the relevant road authority.</p> <p>Tronox Mining will keep in contact with the relevant road authorities to be alerted of any road closures or reopenings along routes used for the construction phase of the Project.</p> <p>Where possible, Tronox Mining will inform employees and transport contractors to keep staff informed of any road closures in advance of commencing a journey.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

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## 7. REPORTING, AUDIT AND REVIEWING

### 7.1 REPORTING

#### 7.1.1 Incident Reporting

An incident is defined as a set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in NSW Development Consent (SSD\_5012).

A hazard Incident Reporting System will be implemented at the Project. All transport related incidents, including harm to fauna or livestock or livestock, will be reported the hazard Incident Reporting System as soon as practical.

As detailed in Attachment 1, a log book will be held in which staff must keep records of all reported incidences of vehicle strikes on Malleefowl on internal mine roads including:

- who recorded the incident;
- the number of Malleefowl involved in the incident;
- the location of the incident;
- the time of day the incident occurred; and
- the nature of the incident (e.g. mortality, injury).

In the event an incident associated with the Project has occurred, which causes or threatens to cause material harm to the environment, the incident will be managed in accordance with relevant regulatory approvals and statutory obligations.

The reporting of incidents will be conducted in accordance with Condition 6, Schedule 5 of NSW Development Consent (SSD\_5012) and in accordance with the protocol for industry notification of pollution incidents under Part 5.7 of the *Protection of the Environment Operations Act, 1997*. Tronox Mining will notify the Secretary of the DP&E and any other relevant agencies immediately after becoming aware of the incident.

Within seven days of the date of the incident, Tronox Mining will provide the Secretary of the DP&E and any other relevant agencies with a detailed report on the incident. The report will:

- describe the date, time and nature of the exceedance/incident;
- identify the cause (or likely cause) of the exceedance/incident;
- describe what action has been taken to date; and
- describe the proposed measures to address the exceedance/incident.

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#### **7.1.2 Annual Review**

In accordance with Condition 4, Schedule 5 of the Development Consent (SSD\_5012), Tronox Mining will conduct an Annual Review before the end of March each year.

The Annual Review will specifically address the following aspects of Condition 4, which directly relate to transport:

- include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against:
  - the relevant statutory requirements, limits or performance measures/criteria;
  - the monitoring results of previous years; and
  - the relevant predictions in the EIS;
- identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;
- identify any trends in the monitoring data over the life of the development;
- identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next year to improve the environmental performance of the development.

The Annual Review will be made available to RMS, BSC and CDSC.

#### **7.1.3 Publishing of this TMP**

This TMP will be made available on the Tronox Mining website, also in accordance with Condition 10, Schedule 5 of the Development Consent (SSD\_5012).

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#### 7.2 INDEPENDENT ENVIRONMENTAL AUDIT

Within 18 months of the commencement of construction, and every three years after, unless the NSW Secretary of the DP&E directs otherwise, an Independent Environmental Audit will be conducted in accordance with Condition 8, Schedule 5 of the Development Consent (SSD\_5012).

The results of independent environmental audits will be made available to RMS, BSC and CDSC.

#### 7.3 REVIEW AND REVISION OF THIS PLAN

In accordance with Condition 5, Schedule 5 of the NSW Development Consent (SSD\_5012) this TMP will be reviewed, and if necessary, revised to the satisfaction of the Secretary of DP&E, within 3 months of the submission of:

- (a) an Annual Review in accordance with Condition 4, Schedule 5 of the Development Consent (SSD\_5012);
- (b) an incident report in accordance with Condition 6, Schedule 5 of the Development Consent (SSD\_5012);
- (c) an audit in accordance with Condition 8, Schedule 5 of the Development Consent (SSD\_5012); or
- (d) any modification to the conditions of the approval or MP 05\_0117 (unless the conditions require otherwise).

## 8 REFERENCES

Austrroads (2009) *Guide to Road Design*.

GTA Consultants (2012) *Atlas-Campaspe Mineral Sands Project Road Transport Assessment*.

Roads and Maritime Services (2018) *Oversize and/or overmass (OSOM) vehicles and loads*.  
Website: <http://www.rms.nsw.gov.au/business-industry/heavy-vehicles/road-access/restricted-access-vehicles/oversize-overmass/index.html>  
Date Accessed: August 2018.



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**ATTACHMENT 1**

**ATLAS-CAMPASPE MINERAL SANDS PROJECT  
ROAD TRANSPORT PROTOCOL (CONSTRUCTION PHASE)**

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## 1 HEAVY VEHICLE ROAD TRANSPORT PROTOCOL

The below Road Transport Protocol for the Atlas-Campaspe Mineral Sands Project (the Project) has been prepared to address Condition 9(f), Schedule 3 of Development Consent (SSD\_5012) where relevant to the construction phase of the Project.

### ***Stock Losses***

Risk to stock due to the Project will be primarily managed through the use of fencing, as per agreements between Tronox Mining Australia (Tronox Mining) and nearby landholders.

Should stock loss attributed to traffic associated with the Atlas-Campaspe Mine or other Project-related activities occur, Tronox Mining will consult with relevant leaseholders and negotiate appropriate reimbursement at current market values in accordance with Condition 7, Schedule 3 of Development Consent (SSD\_5012).

### ***Use of Designated Haulage Route***

The use of local roads is required for the leg between Hatfield and the Atlas-Campaspe Mine (Figure 1). The designated haulage route from Hatfield to the Atlas-Campaspe Mine site includes the highlighted sections of the following roads (Figure 2):

- Link Road;
- Boree Plains-Gol Gol road;
- Magenta Road; and
- Hatfield-The Vale Road.

The above route will be included in the contracts for heavy vehicle transport contractors used for the construction phase, and drivers will be made aware of the route during training.

### ***Heavy Vehicle Departure Staggering***

Construction activities will be carried out up to 24 hours a day, seven days a week, however, will generally be conducted between 7:00 am and 7:00 pm. Where possible, vehicle trips will be spread evenly to minimise impacts on the road network.

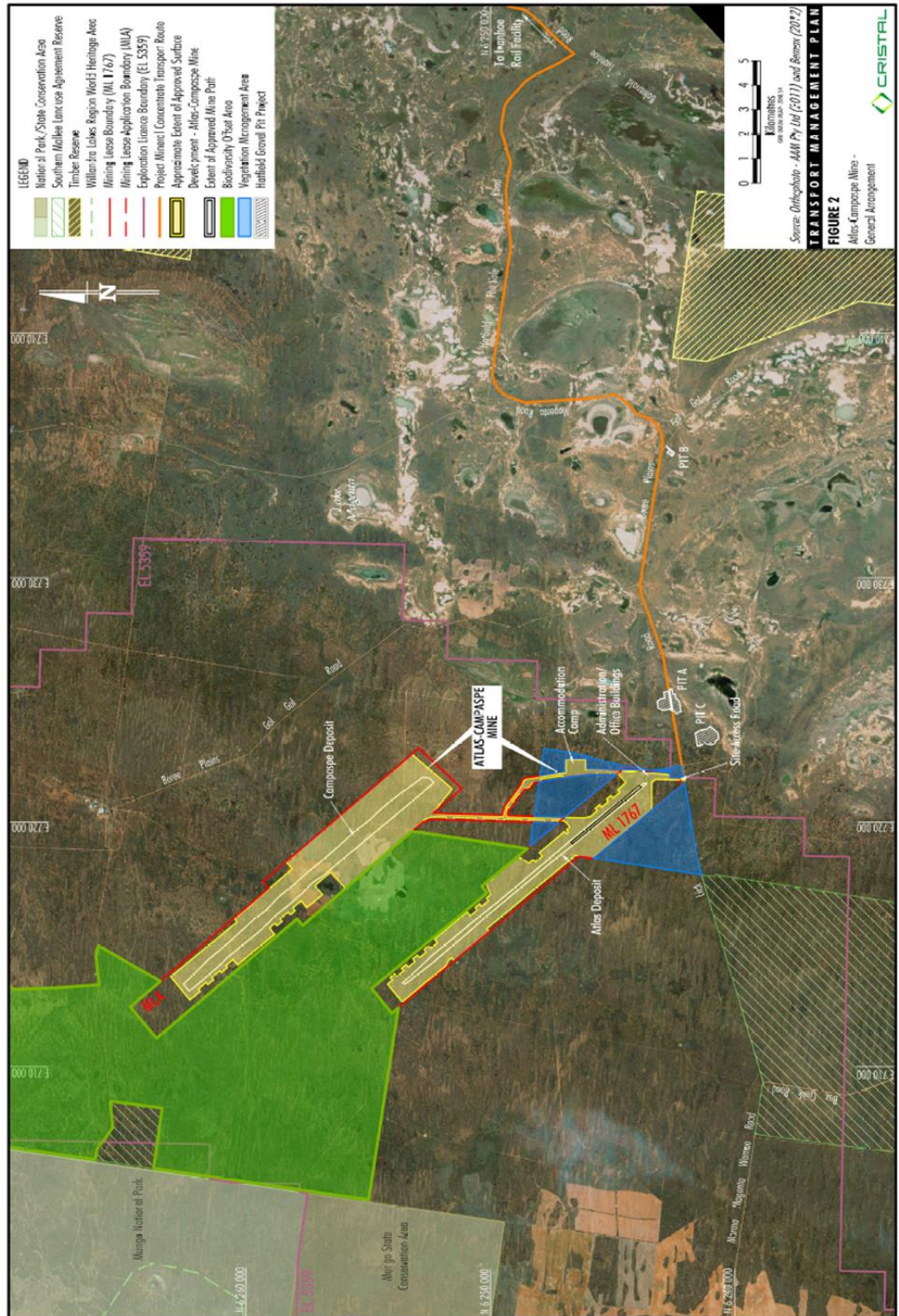
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**Avoidance of School Bus Disruption**

Tronox Mining understands that no commercial school buses currently operate on sections of Link Road, Boree Plains-Gol Gol Road, Magenta Road, Hatfield-The Vale Road, and Balranald Ivanhoe Road to be used for the Project.

Traffic associated with the construction phase of the Project will become less significant south and west of Balranald.

Tronox Mining is aware that some informal carpooling arrangements may use these routes. Awareness around school operating times will be incorporated into driver training.

**Fatigue Management**

The transport contractors engaged for delivery of site equipment and materials will be required to have a driver fatigue management procedure issued as part of the driver induction process for all employees. This procedure shall be developed in accordance with *Guidelines for Managing Heavy Vehicle Driver Fatigue* (National Transport Commission, 2007) and address requirements in the Chain of Responsibility Legislation and Workplace Health & Safety Legislation, and should also consider Tronox Mining's fatigue management measures. Tronox Mining's Fatigue Management Plan (Cristal Mining, 2015a) is provided in Appendix 1.

All parties in the Chain of Responsibility must take all reasonable steps to manage the risks of driver fatigue. Section 214 of the *Heavy Vehicle National Law No 42a* outlines which parties are in the Chain of Responsibility as follows:

**214 Who is party in the chain of responsibility**

(1) *For the purposes of this Division, each of the following persons is a **party in the chain of responsibility** for a heavy vehicle—*

- (a) *an employer of the vehicle's driver if the driver is an employed driver;*
- (b) *a prime contractor for the vehicle's driver if the driver is a self-employed driver;*
- (c) *an operator of the vehicle;*
- (d) *a scheduler for the vehicle;*
- (e) *a loading manager for any goods in the vehicle;*
- (f) *a commercial consignor of any goods for transport by the vehicle that are in the vehicle;*
- (g) *a consignee of any goods in the vehicle, if Division 4 applies to the consignee.*

**Note—** *The exercise of any of these functions, whether exclusively or occasionally, decides whether a person falls within any of these definitions, rather than the person's job title or contractual description.*

(2) *A person may be a party in the chain of responsibility for a heavy vehicle in more than 1 capacity.*

**Example—** *A person may be simultaneously the driver's employer, an operator and a consignor of goods in relation to a heavy vehicle and be subject to duties in each of the capacities.*

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#### Code of Conduct for Drivers

All drivers of light and/or heavy vehicles that have been engaged by Tronox Mining for transport movements associated with the construction phase of the Project must adhere to the following *Code of Conduct for Drivers* while travelling on the public road network:

- obey all the laws and regulations that apply to vehicles on public and private roads, including posted speed limits;
- respect the rights of others, including drivers and pedestrians, to use and share the road space;
- maintain a safe following distance between vehicles;
- keep the vehicle clean and in good mechanical condition to reduce environmental impacts;
- follow the designated access routes for the Project;
- abide by all New South Wales (NSW) / interstate road rules and vehicle regulations;
- display a high level of courtesy, such as:
  - pulling over to the side of the road (if safe to do so) to let built-up traffic pass; and
  - allowing sufficient space for passing vehicles along the mineral concentrate transport route (i.e. not straddling centre lines);
- turn off flashing/rotating beacons when on public roads, with the exception of vehicles used for road works; and
- only enter and exit public roads in a forward direction.

Notwithstanding the foregoing or any other provision of this Traffic Management Plan, it shall be mandatory for drivers of all heavy and light vehicles to moderate speeds to suit prevailing road and weather conditions, and in no circumstances to exceed 80 km/h when driving on unsealed local roads.

The code of conduct based on the guidelines as indicated above forms part of the transport contractual arrangements entered into by Tronox Mining. Tronox Mining will carry out necessary measures to inform transport contractors, as well as audit for compliance to this code of conduct. This may be via various information forums such as driver inductions, training and toolbox talks.

#### Adherence to Drug and Alcohol Policies

All transport contractors, as well as any employees driving to and from site, will be subjected to Tronox Mining's Drug and Alcohol Policy (Cristal Mining, 2017a) (Appendix 2).

#### Vehicle Maintenance and Safety

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All vehicles used for the Project will be subject to regular maintenance and compliance with all relative safety guidelines, and the minimum safety requirements outlined in Tronox Mining's Vehicle and Mobile Equipment Standard (Cristal Mining, 2017b) (Appendix 3) and Plant and Equipment Commissioning and Compliance Inspection Standard (Cristal Mining, 2015b) (Appendix 4).

#### **Road Closures**

Tronox Mining will implement the road upgrades provided in Section 5 of the Project Transport Management Plan (TMP) within 12 months of the commencement of construction on-site to minimise the requirement for road closures.

Tronox Mining will not use roads which have been closed by the relevant road authority.

Tronox Mining will keep in contact with the relevant road authorities to be alerted of any road closures or reopenings along routes used for the construction phase of the Project. Where possible, Tronox Mining will inform employees and transport contractors to keep staff informed of any road closures in advance of commencing a journey.

#### ***Emergency Response Plans***

All Tronox Mining employees and contractors will be familiarised with Tronox Mining's Mine Safety Management System (Cristal Mining, 2016) (Appendix 5) and Emergency Response Protocol for Atlas Mine Site (Cristal Mining, 2018) (Appendix 6) and during safety inductions and training, including the correct processes for reporting an emergency.

#### **1.1 AVOIDANCE OF VEHICLE COLLISIONS WITH MALLEEFOWL**

The Biodiversity Management Plan was prepared in accordance with Condition 4 of the Commonwealth Approval (EPBC 2012/6447) and Condition 14, Schedule 3 of the Development Consent (SSD\_5012). The Biodiversity Management Plan includes management measures to reduce the incidence of fauna-vehicle collisions, which are reproduced below in accordance with Condition 6 of Commonwealth Approval (EPBC 2012/6447).

##### **Objective**

A number of measures will be implemented with the objective of reducing the occurrence of fauna-vehicle collisions on internal mine roads, particularly Malleefowl. Condition 4b of the Commonwealth Approval (EPBC 2012/6447) requires specific management measures to reduce the risk of road strike to the Malleefowl on internal mine roads.

##### **Goal**



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The goal is to generally minimise the occurrence of fauna-vehicle collisions on internal mine roads and specifically avoid two or more incidences of vehicle strike on Malleefowl within a 12 month period (i.e. the period from 1 January to 31 December in one calendar year).

## Methodology

### *Staff and Contractor Inductions/Ongoing Communications*

Initial staff and contractor inductions will include the following in regard to reducing the occurrence of fauna-vehicle collisions:

- warnings on the hazards of driving at dusk and dawn, when road strike of nocturnally active fauna is most likely;
- speed limits;
- the requirement for vehicles to remain on purpose built roads, where practicable;
- the need to protect the Malleefowl and prevent vehicle strike; and
- requirements to report all incidences of vehicle strike on Malleefowl.

Ongoing communications (a minimum of twice a year – June and December) will be undertaken to remind staff at the Project of the need to protect Malleefowl and how to prevent vehicle strike. This communication will be via email. A poster will also be hung in the administration building.

### *Malleefowl Warning Signs*

Warning signs will be installed on internal roads at the Atlas-Campaspe Mine site to warn employees about the presence of Malleefowl and risk of road strike.

The design of the warning signs (900 centimetres [cm] x 900 cm) will be as follows:

- yellow background;
- a black silhouette of the Malleefowl will be depicted walking;
- the sign will contain the words '*Malleefowl Endangered Species Take Care*'; and
- the speed limit (i.e. 50 kilometres per hour).

Internal mine roads will be progressively constructed and therefore the warning signs will be progressively installed concurrently. The warning signs will be installed every 3 kilometres (km) along internal mine roads passing within 200 metres (m) of Linear Dune Mallee or Sandplain Mallee as part of the construction of the mine road prior to its use. The signs would be placed within 1-2 m of the road, or where safe to do so.

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The warning signs will be maintained during the period the Atlas-Campaspe Mine will be in operation, however when an internal mine road is decommissioned, the signs along the road will be removed. Signage will be routinely inspected (at least annually) for maintenance issues and any issue will be rectified within 15 days.

#### *Speed Limits*

In accordance with Condition 4b(ii) of the Commonwealth Approval (EPBC 2012/6447), speed limits at a maximum of 50 km per hour will be applied and enforced (via hand held speed guns) at the Atlas-Campaspe Mine site on internal mine roads. Speed limit signs (in addition to the warning signs described above) will be maintained during the period the Atlas-Campaspe Mine will be in operation.

#### *Malleefowl Mortality Associated with Road Strike*

Condition 4b(v) of the Commonwealth Approval (EPBC 2012/6447) requires Malleefowl mortality associated with vehicle strike to be identified and measured.

Staff and contractors will be required to report all incidences of vehicle strike on Malleefowl. A log book will be held in which staff must keep records of all reported incidences of vehicle strike on internal mine roads including:

- who recorded the incident;
- the number of Malleefowl involved in the incident;
- the location of the incident;
- the time of day the incident occurred; and
- the nature of the incident (e.g. mortality, injury).

#### ***Performance Indicator and Contingency Measures***

The performance indicator is no mortality or injury of Malleefowl due to vehicle strike. In the event that two or more incidences of vehicle strike on Malleefowl are recorded within a 12 month period (i.e. the period from 1 January to 31 December in one calendar year) additional measures to reduce the speed of vehicles, both permanent and temporary, that will be implemented to further reduce vehicle strike. These may include, further reducing speed limits or installing temporary fencing in high risk areas. In the event that two or more incidences occur, the Commonwealth Department of the Environment and Energy will be notified within one week of the second incident and interim measures (such as interim reductions in speed limits or installing temporary fencing) must be put in place within two weeks of the second incident until such time agreed measures can be implemented.

#### ***Reporting***

Malleefowl mortalities due to road strike on internal mine roads will be reported in the Project Annual Review (Section 7.1.2 of the TMP) which will be submitted to the NSW Department of Planning and Environment (DP&E) (local agency) and placed on the Tronox Mining website which can be viewed by the public.

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**COMPLIANCE WITH AND ENFORCEMENT OF THE ROAD TRANSPORT PROTOCOL**

Compliance with all approvals, plans and procedures will be the responsibility of all personnel (staff and contractors) employed on or in association with the construction phase of the Project.

The Environment Superintendent will undertake regular inspections, internal audits and initiate directions identifying any remediation/rectification work required, and areas of actual or potential non-compliance.

Tronox Mining will notify the Secretary of the DP&E and any other relevant agencies of any incident associated with the Project as soon as practicable after Tronox Mining becomes aware of the incident. Within seven days of the date of the incident, Tronox Mining will provide the Secretary of the DP&E and any relevant agencies with a detailed report on the incident.

A review of Tronox Mining's compliance with all conditions of the Development Consent, mining leases and all other approvals and licences will be conducted prior to (and included within) each Annual Review. The Annual Review will be made publicly available on the Tronox Mining website.

**REFERENCES**

Cristal Mining (2015a) *Cristal Mining East Fatigue Management Plan*.

Cristal Mining (2015b) *Plant and Equipment Commissioning and Compliance Inspection Standard*.

Cristal Mining (2016) *Cristal Mining Mine Safety Management System*.

Cristal Mining (2017a) *System Procedure CMA004 – Drugs and Alcohol*.

Cristal Mining (2017b) *Vehicle and Mobile Equipment Standard*.

Cristal Mining (2018) *Emergency Protocol for Atlas Mine Site*.

National Transport Commission (2007) *Guidelines for Managing Heavy Vehicle Driver Fatigue*.

**APPENDIX 1**

**TRONOX MINING EAST FATIGUE MANAGEMENT PLAN**

**APPENDIX 2**

**SYSTEM PROCEDURE CMA004 – DRUGS AND ALCOHOL**

**APPENDIX 3**

**VEHICLE AND MOBILE EQUIPMENT STANDARD**



**APPENDIX 4**

**PLANT AND EQUIPMENT COMMISSIONING AND COMPLIANCE INSPECTION STANDARD**

**APPENDIX 5**

**TRONOX MINING MINE SAFETY MANAGEMENT SYSTEM**

**APPENDIX 6**

**EMERGENCY PROTOCOL FOR ATLAS MINE SITE**

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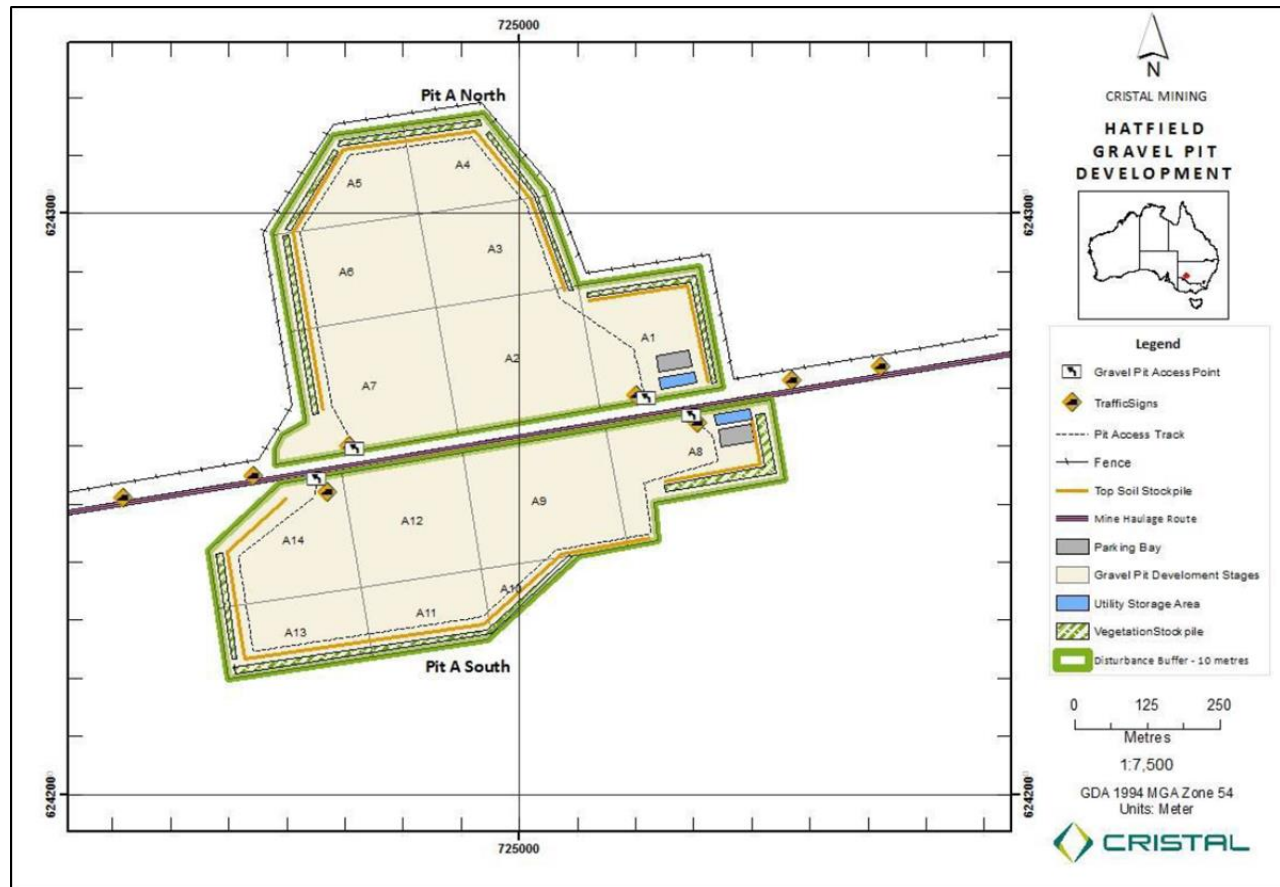
**ATTACHMENT 2**

**HATFIELD GRAVEL PIT PROJECT SITE PLANS**

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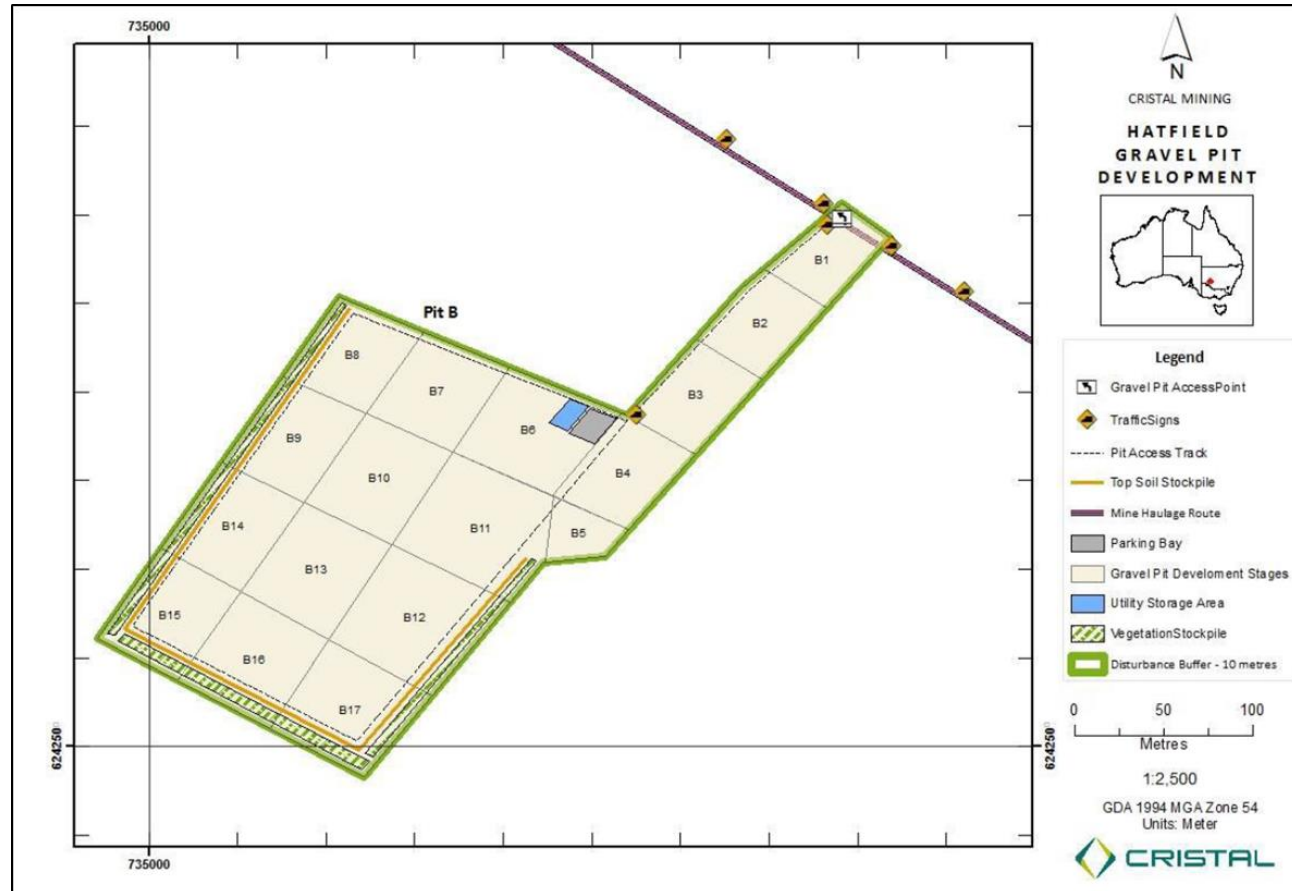
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