

Chapter 15

Traffic and transport

15 Traffic and transport

15.1 Introduction

This chapter outlines the traffic and transport impacts from the construction and operation of the proposal. A Traffic and Transport Assessment has been prepared and is included as **Technical Report K**.

The methodology for completing the Traffic and Transport Assessment included:

- Investigating the existing transport network near the proposal
- Carrying out a quantitative assessment of the vehicle generation of the proposal in construction and operation
- Assessing the potential impacts of the proposal on the road network, including traffic modelling of intersections directly affected by the proposal
- Setting up mitigation measures to manage the traffic impacts and encourage sustainable travel patterns.

The traffic and transport assessment has been prepared in line with the following standards and guidelines:

- Guide to Traffic Generating Development (Roads and Traffic Authority, 2002)
- Guide to Traffic Management Part 12: Traffic Impacts of Developments (Austroads, 2009)
- Traffic Modelling Guidelines (NSW Roads and Maritime Services, 2013)
- Road Design Guide (Roads and Traffic Authority, 1988).
- NSW Freight and Ports Plan 2018–2023 (Transport for NSW, 2018).

15.2 Existing environment

15.2.1 Site access and surrounding transport network

Figure 15.1 below shows the site access and surrounding road network.

The site is located north of an unnamed road, referred to in this EIS as the Austral Bricks Road. The site is currently accessed from a site access road and a give-way intersection with Austral Bricks Road. Austral Bricks Road travels east-west, connecting to Wallgrove Road at its western end. Wallgrove Road is a major distributor which connects to larger arterial routes, such as the Westlink M7 Motorway (the M7) which adjoins the proposal's western boundary.



Service Credits: DFSI, 2020

Figure 15.1: Existing site access and the surrounding road network

The M7 shared path (cycle and pedestrian) is located adjacent to the western perimeter of the site and connects to Austral Bricks Road. This shared path is separated from road traffic and extends almost the entire length of the M7, from Campbelltown to Kings Langley.

Bus stops are located on Wallgrove Road north of the intersection with Austral Bricks Road. The bus stops accommodate bus routes 738 and 835 which run every 30 minutes in peak hours. Bus 738 runs from Mount Druitt and Rooty Hill to Eastern Creek and Horsley Drive. Bus 835 runs from Prairiewood to the Western Sydney University.

15.2.2 Existing vehicle traffic from the site

Baseline surveys of vehicle traffic movements were carried out in July 2019 at the intersection between Austral Bricks Road and the site access. The results indicate that there are about 70 two-way movements from the site daily. The site was used for miscellaneous industrial uses at the time. Most vehicles accessing the site were heavy goods vehicles (HGV), and there is enough clearance under the M7 for HGVs.

15.2.3 Future environment

The site is within the Western Sydney Parklands (WSP), with the Western Sydney Employment Area (WSEA) located west of the M7. The WSEA has been heavily developed in the last five years, with a growth in warehousing and logistics attracted by the proximity to the M7 and M4. The NSW Government is currently considering a proposal to rezone the Mamre Road Precinct for inclusion in WSEA with a focus on warehousing and logistics. This will see a further increase in heavy-vehicle traffic, once developed.

In 2014, plans for a Southern Link Road were announced, comprising an east-west arterial link from Wallgrove Road and Mamre Road. However, based on recent advice from Transport for New South Wales (TfNSW), the alignment for the Southern Link Road is not confirmed, and a potential alignment could connect to the Wallgrove Road and Austral Bricks Road intersection.

A staged State Significant Development (SSD) proposed by Gazcorp Industrial Estate was approved in 2019. The proposal is for an industrial warehouse estate at 813–913 Wallgrove Road. Stage 1 of the proposal is expected to generate 157 peak-hour trips, with this increasing to 600, once the Concept Proposal is complete. This application is relevant to the proposal as it proposes to signalise, widen and add an approach to the Wallgrove Road and Austral Bricks Road intersection.

This proposed arrangement is used when assessing the potential intersection impacts for the WSERRC. Assessing this arrangement represents a worst-case scenario as it considers the additional traffic relating to the Gazcorp Industrial Estate project.

If waste feedstock comes from the Erskine Park Waste Transfer Station to WSERRC, vehicles accessing the site will travel via Lenore Drive / Old Wallgrove Road (also known as the Erskine Park Link Road) which has undergone significant recent improvements.

TfNSW also has plans to upgrade Mamre Road, including the provision of two lanes in each direction, shared bicycle and pedestrian facilities and several new signalised intersections.

15.3 Assessment

This section outlines the potential traffic and transport impacts in construction and operation of the proposal. The assessment considers the traffic generation, intersection impacts and parking impacts.

The SEARs require an assessment of traffic impacts on main intersections, specifically the intersection of Wallgrove Road and Austral Bricks Road. Detailed designs have not yet been approved for the Gazcorp Industrial Estate upgrades to the Wallgrove Road / Austral Bricks Road intersection. However, the traffic assessment has been modelled based on a schematic design for the 2021 scenario included in the Gazcorp Industrial Estate development application documents. SIDRA modelling software was used to assess the intersection impacts.

15.3.1 Construction impacts

Traffic generation

A Construction Traffic Management Plan (CTMP) is included as Appendix A of the **Technical Report K Traffic and Transport Assessment Report**. This CTMP outlines the predicted construction vehicles and worker numbers needed onsite throughout the construction period. These construction traffic predictions are summarised below:

- The peak daily construction vehicle movements are estimated to be 75 two-way per day. It is estimated that there will be 7 two-way construction vehicle movements per hour.
- It is estimated that the proposal will create 900 direct construction jobs over the 3-year construction period. The peak number of workers likely to be onsite over construction would be 600 a day.

- It is assumed that 25% of workers would carshare or arrive to the site in construction vehicles, so construction workers would contribute an additional 450 vehicle trips inbound in the morning period and outbound in the afternoon period.
- Given the standard construction hours are 07:00 to 18:00 Monday to Friday, 50% of workers are expected to arrive in the first hour of the site opening (07:00 to 08:00), and 25% of workers are expected to arrive in the shoulder hours either side of this peak time. In the afternoon period, it is expected that workers would leave between 15:00 and 19:00, so worker vehicle trips are distributed across these timeframes.

Figure 15.2 shows the peak construction daily traffic profile.



Figure 15.2: Daily traffic profile during construction of the proposal

Intersection impacts

The above traffic generation assumptions have been used to model impacts on the nearest intersections. It is assumed that all construction vehicles will use the Wallgrove Road and Austral Bricks Road intersection. Modelling has been completed to compare the proposal construction traffic with the Gazcorp Industrial Estate 2021 intersection layouts. **Table 15.1** shows the results.

The average delay refers to the time vehicles can expect to wait at an intersection. The Level of Service is an index used in the SIDRA model to determine the operational performance of traffic at an intersection. An A Level of Service represents the best operating conditions from the traveller's perspective and an F Level of Service is the worst.

Table 15.1: Wallgrove Road / Austral Bricks Road intersection – construction traffic modelling

Scenario		Total intersection		Austral Bricks approach	
		Average delay (s)	Level of Service	Average delay (s)	95 percentile queue length (m)
2021 Gazcorp intersection	AM	37.4	C	70.3	19
	PM	36.5	C	55.9	24
2021 Gazcorp intersection with the WSERRC construction traffic	AM	36.6	C	72.4	26
	PM	37.7	C	69.0	72

The modelling results show that despite the increase of traffic in both morning and evening periods, an overall Level of Service C is maintained for the intersection. In the morning period, the construction traffic will cause a 7m increase in queue length and a small increase in average delay. The average delay at the intersection decreases because the increased number of vehicles turning left into Austral Bricks Road. In the evening, the average delay and queue length increases on the Austral Bricks Road approach. This impact would only occur in the peak construction period which is three months duration. Throughout the remaining construction programme, there would be fewer workers needed, and therefore less queuing on the Austral Bricks Road. To reduce this queue length and delay time, construction vehicles could be encouraged to turn left instead of right onto Wallgrove Road.

The SIDRA model was used to compare the impacts of the construction vehicle traffic with the existing give-way intersection between the site access and Austral Bricks Road. Construction traffic would turn right onto Austral Bricks Road.

Table 15.2 shows the results.

Table 15.2: Austral Bricks Road / site access intersection – construction traffic modelling

Scenario	Average delay (s)	Level of Service
AM peak hour (09:00 to 10:00)	2.8	A
PM peak hour (17:00 to 18:00)	4.7	A

The results show that the existing give-way arrangement has enough capacity to accommodate the expected construction traffic morning and evening peaks. The same level of service is maintained.

Parking impacts

All construction and construction worker vehicles will be able to park within the proposal site. It is expected that most of the construction and construction worker vehicles will park in the northern section of the site on existing hardstand. Therefore, no offsite parking impacts are anticipated.

15.3.2 Operation impacts

Traffic generation

Once the proposal is operational, traffic would be generated by waste vehicles and employee and visitor vehicles. Various service vehicles would be needed to support the operation of the proposal, including heavy vehicles to deliver waste feedstock to the site. The estimated number of vehicle movements for each individual service vehicle is available in **Section 4.1 of Technical Report K Traffic and Transport Assessment Report**.

The proposal is expected to need a total of 188 two-way waste vehicle trips per day. The peak hour servicing vehicle demand would be 29 vehicles from 12:00 to 13:00.

About 30 employees will be needed onsite in normal operating times. Most staff will work standard hours, so it is assumed 50% will arrive between 08:00 and 09:00 and depart between 17:00 and 18:00, with 25% arriving in the shoulder hours either side of these peak times.

The visitor and education centre and contractors visiting the site are expected to contribute up to two trips an hour between 08:00 and 17:00. Most of these trips will be made by car, and a small number would be coaches taking groups to the visitor and education centre.

Based on the above estimates, the overall daily vehicle trips from staff and visitors would be 48 two-way trips.

Combining the waste vehicles and employee and visitor vehicle trips, 236 two-way trips would be generated by the proposal each day. **Figure 15.3** below shows the demand profile for the traffic generation. The peak hour is between 09:00 and 10:00, with 33 vehicles arriving to the site.

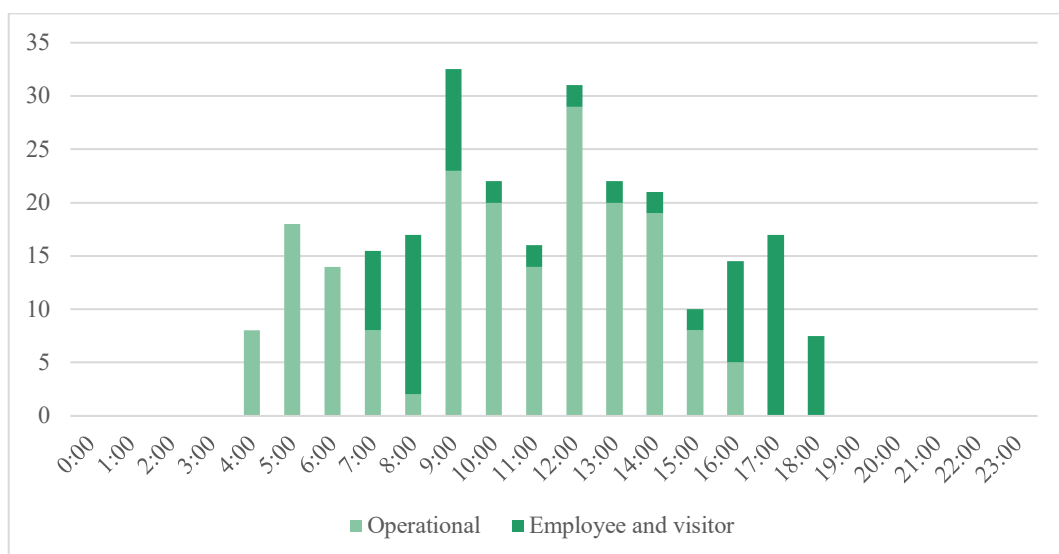


Figure 15.3: Daily traffic generation during operation of the proposal

Network impacts

The above traffic generation assumptions have been used to model impacts on the nearest intersections. **Table 15.3** shows the model results on the Wallgrove Road and Austral Bricks Road intersection.

Table 15.3: Wallgrove Road / Austral Bricks intersection – operation traffic modelling

Scenario		Total intersection		Austral Bricks approach	
		Average delay (s)	Level of Service	Average delay (s)	Queue length (m)
2021 Gazcorp	AM	37.4	C	70.3	19
	PM	36.5	C	55.9	24
2021 Gazcorp with the WSERRC operation traffic	AM	37.3	C	70.3	19
	PM	36.6	C	57.2	34

The modelling shows the average delay decreases slightly in the morning period because of the addition of vehicles turning left into Austral Bricks Road. There is no change to delay time or queue length expected on the Austral Bricks Road approach in the morning period. In the evening period, queuing would increase by 10m on the Austral Bricks Road approach to the intersection. Overall, the same Level of Service (C) is still maintained for the intersection.

The model was used to compare the impacts of the operational vehicle traffic with the existing give-way intersection between the site access and Austral Bricks Road. **Table 15.4** shows the results.

Table 15.4: Austral Bricks / site access intersection – operation traffic modelling

Scenario	Average delay (s)	Level of Service
AM peak hour (09:00 to 10:00)	1.1	A
PM peak hour (17:00 to 18:00)	3.2	A

The results show that even with the operational traffic from the proposal, the intersection would maintain a high Level of Service (A).

A swept path analysis and safe intersection distance analysis have been carried out of the proposed vehicle movements from the site access road to Austral Bricks Road (see Appendix B of **Technical report K**). The results show that the intersection can accommodate the proposed vehicle movements, ensuring the safety of the road network is maintained.

Service vehicle routes

It has been assumed that about 50% of the feedstock waste deliveries will originate from the Cleanaway Erskine Park Waste Transfer Station (85–87 Quarry Road, Erskine Park). The expected route between this facility and the proposal site would be via Erskine Road, Lenore Drive and Old Wallgrove Road as shown on **Figure 15.4**. All these roads can accommodate HGV movements, and there is enough clearance under the M7 for HGVs.

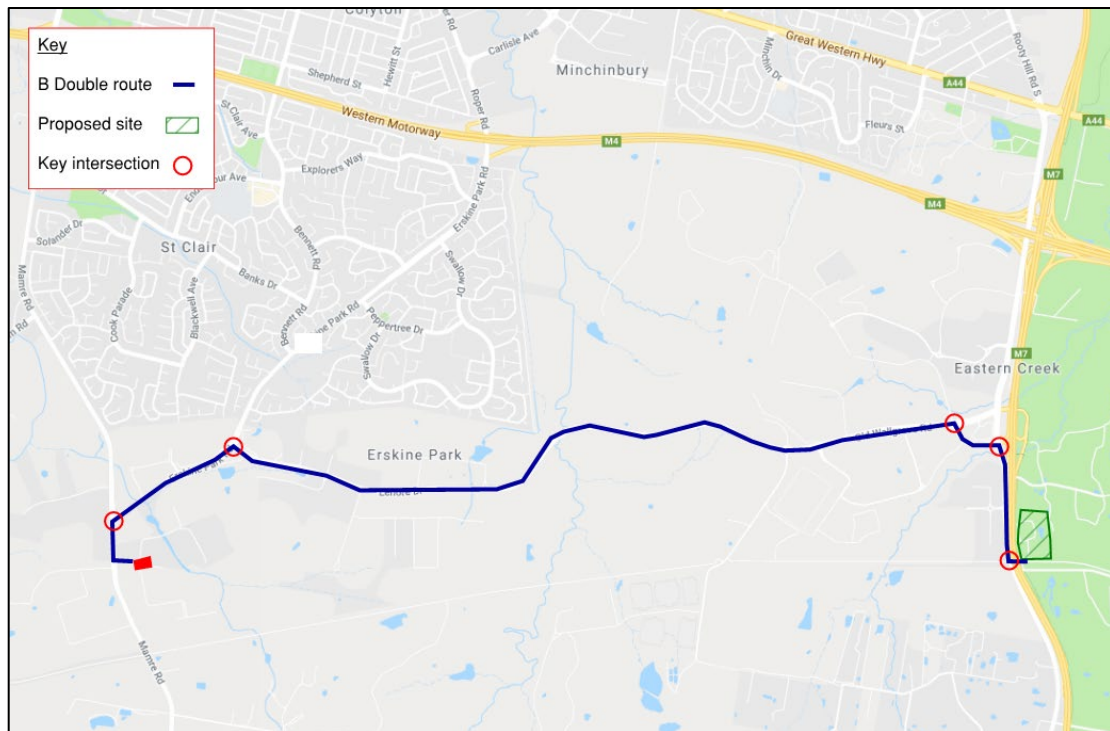


Figure 15.4: Indicative route for residual waste from the Cleanaway Erskine Park Waste Transfer Station

The remaining 50% of feedstock waste deliveries will come from a variety of locations but are likely to use similar routes along main roads capable of accommodating HGV movements.

Flue gas treatment residues (FGTr) will be transported offsite to be treated at the Cleanaway Hazardous Solid Treatment Facility (40 Christie Street, St Marys) and disposed of at a licensed landfill such as the SUEZ Kemps Creek Landfill (1725 Elizabeth Drive, Kemps Creek), which has been assumed for the purpose of the traffic assessment. The proposed route complies with the requirements for HGV routes under the NSW Heavy Vehicle Access Policy Framework (TfNSW, 2018).

Incinerator Bottom Ash (IBA) is produced as a waste by-product from the EfW combustion process. IBA is an inert by-product which contains ferrous and non-ferrous metals. The WSERRC will include a ferrous metal separator onsite to recover large ferrous metals from the IBA for recycling and sale to market.

The remaining IBA may be transported to a dedicated IBA storage, treatment, metal recovery and maturation facility where non-ferrous metals (or secondary metals) recovery may be carried out. The IBA facility, if progressed, will be subject to a separate development application process. However, the site location for storage and/or treatment has not been finalised at this stage. It is anticipated that any vehicle routes for the transport of IBA will be capable of handling HGVs.

It is noted that part of the boiler fly ash stream is captured with the IBA and part of the boiler fly ash stream is captured with the FGTr and transported for disposal according to the ash type it is collected with, as noted above.

The types of material to be transported to and from the site are covered in **Chapter 14 Hazard and risk**.

Site access

Access to the site is via an existing access off Austral Bricks Road which crosses over the Warragamba pipelines corridor and into the proposal site. This existing site access will need to be upgraded to accommodate the proposals traffic movements. These site access works and any corresponding road upgrades are related development and will be assessed and determined through separate approval processes (refer to **Chapter 22 Related development**). **Figure 15.5** shows how vehicles would access the site.

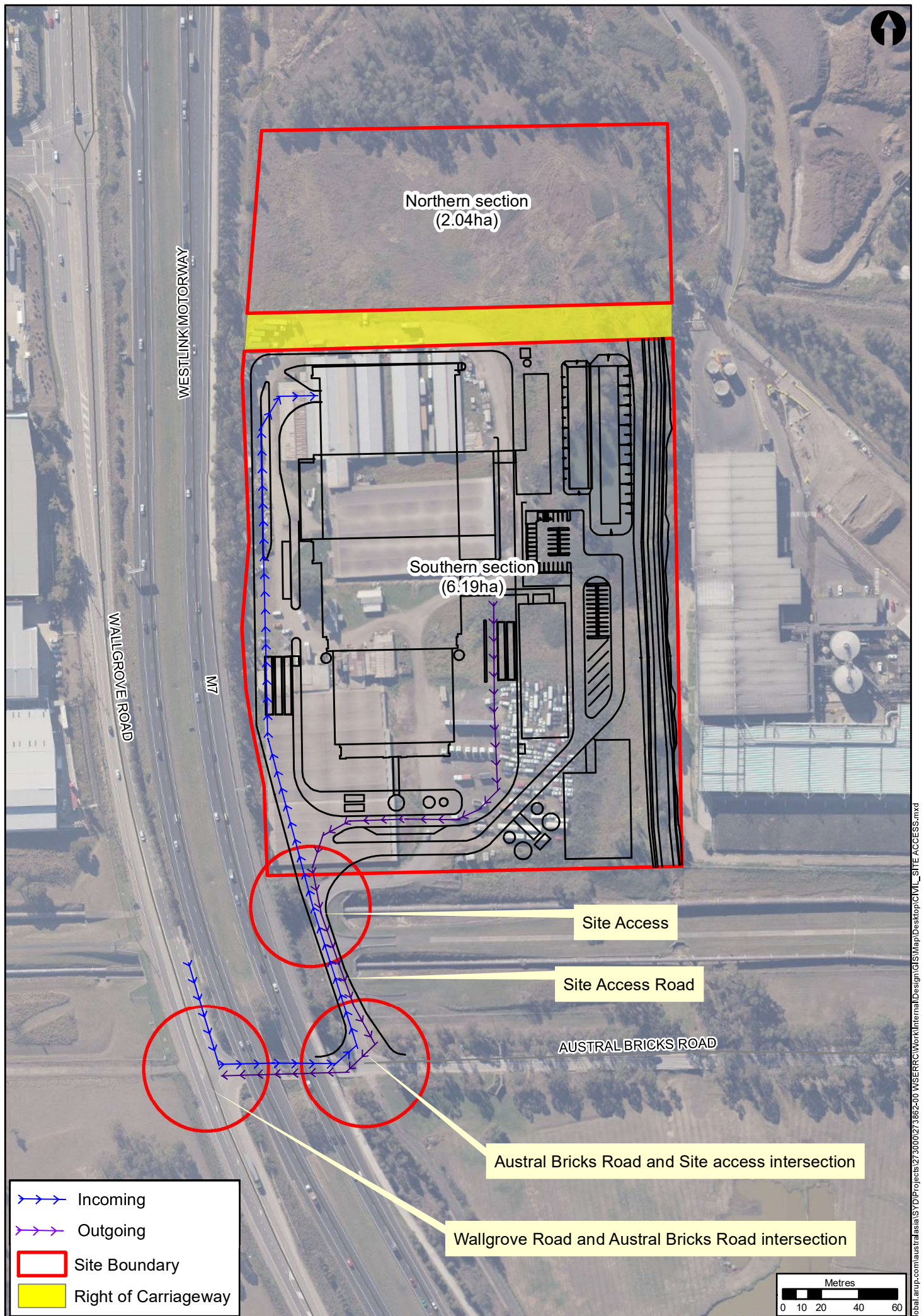


Figure 15.5: Route for vehicle access to the site

Alternative access arrangements and alternative site layouts were considered for this proposal which is discussed in **Section 2.6.7 of Chapter 2 Strategic context**. The site layout option chosen maximises the space between the site entry and the waste receiving hall where trucks tip their waste. This layout was chosen because it means there is enough space for internal truck queuing, reducing the impact on public roads and intersections. The proposed site layout is shown in **Figure 15.6**.

All vehicles will enter the site from the access proposed at the southern boundary. The existing access will be upgraded to accommodate two-way B-double type heavy vehicle movements and will be designed to comply with the relevant Australian Standards. A vehicle swept analysis of the proposed access has been completed using expected design vehicles, including B-doubles. It is included in Appendix B of **Technical Report K**.

Traffic routes onsite

Figure 15.6 shows the different traffic routes used on site.

Staff and visitor vehicles would be directed to turn right to access the car park, the office and the visitor and education centre. This road is separated from the route for service vehicles for safety and to reduce the likelihood of conflicts with servicing vehicles.

Separate paved pedestrian and cycling routes will be arranged to the office and the visitor and education centre.

Service vehicles (all heavy vehicles carrying waste delivery, consumables and residues) will follow a one-way circular system in a clockwise direction. There will be no onsite heavy vehicle parking, rather vehicles will follow the circulation loop and queue within the site where necessary. Vehicles with incoming waste will be weighed at one of the three weighbridges proposed at the entrance to the facility. It is estimated it will take about two minutes for any truck to be weighed. The facility would be able to process about 90 incoming servicing vehicles in an hour. The capacity and location of the weighbridges would be good enough to manage the influx of vehicles without queuing onto Austral Bricks Road.

The design allows appropriate width for emergency vehicles to circulate around the main building of the facility to access various parts of the site. When an emergency vehicle needs access, other vehicles within the site will be directed to areas where they would not obstruct the circulation route for emergency vehicles. Because of the nature and size of the activity, no specific emergency vehicle parking is available as they may need to access a range of locations. The circulation loop allows for this.

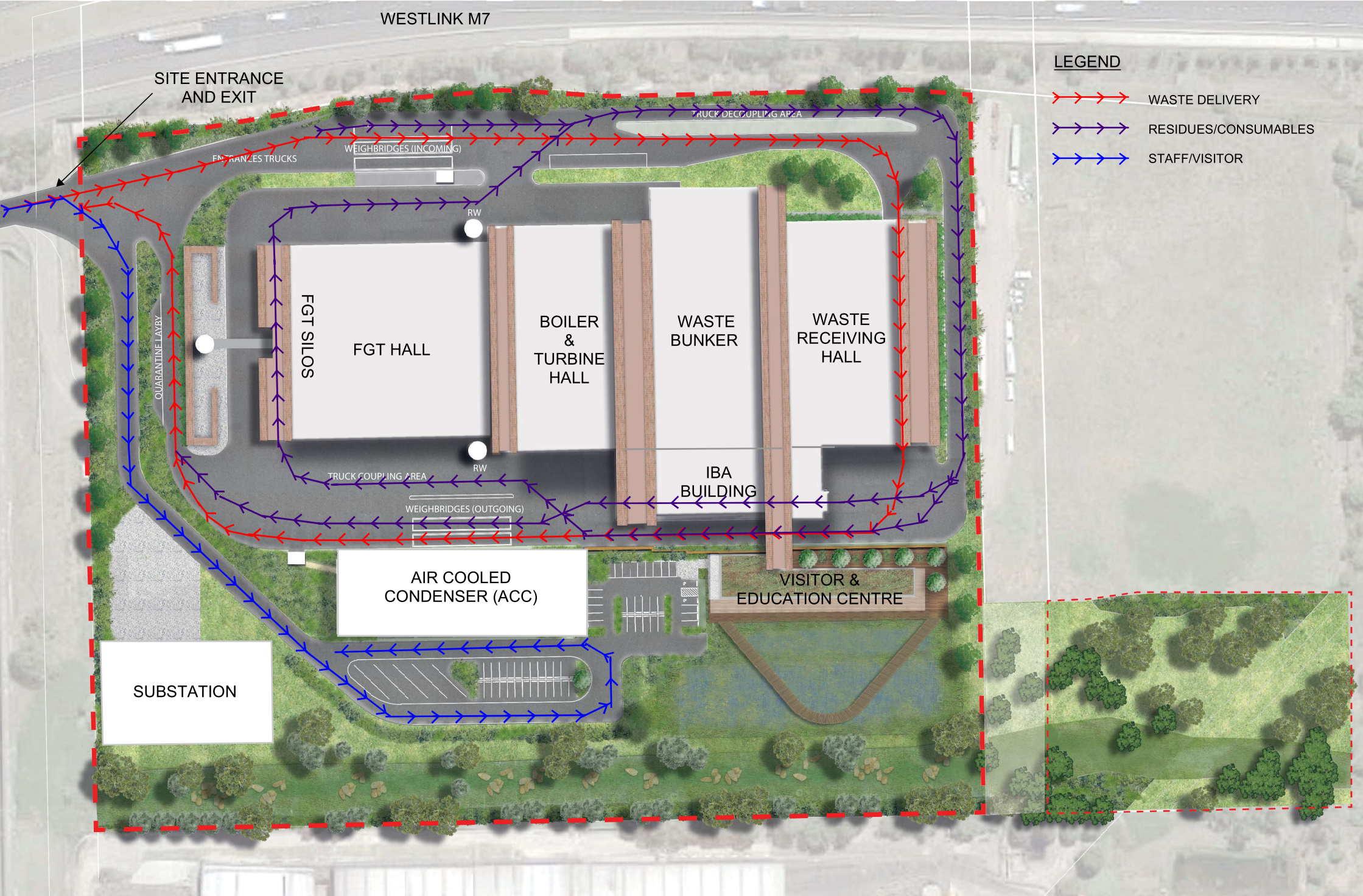


Figure 15.6: Traffic routes on site

Parking

The proposal will include the following car parking onsite:

- 40 staff car parking spaces
- 10 visitor/contractor parking spaces
- 4 coach bays.

These parking provisions meet the Blacktown City Council Development Control Plan 2015 requirements and are considered sufficient for all staff, visitors and contractors to park within the site and to avoid offsite parking impacts.

Sustainable and active transport

As outlined above in **Section 15.2.1**, public transport bus routes are located across Wallgrove Road and the M7 shared cycle path is located adjacent to the western perimeter of the site.

Direct bike and walking path linkages to other areas of the Western Sydney Parklands (WSP) have not been made available to this stage of the design mostly for safety reasons, because of the industrial nature of operational activities to occur on the site. The location of the site on the western perimeter of the Parklands avoids impact on the main north-south circulation and access network that runs through the Parklands. The site is in the Wallgrove Precinct which comprises services land and industrial facilities not accessible to the public. The main walking and cycling routes through the WSP are located east of the site, with the M7 cycle track located adjacent to the western perimeter of the site. However, although direct path linkages through the site have not been made available to this stage of the design, the proposal has incorporated a visitor and education centre which will encourage visitors to the WSP.

Further, enough cycle parking and end-of-trip facilities will be arranged within the office component of the site. The proposal will include 15 cycle parking spaces and end-of-trip facilities for staff. The 15 cycle parking spaces are considered adequate for a demand of 50% of full-time equivalent employees cycling to work each day. This will support employees wishing to travel to the site via bicycle, who can use the M7 shared path to access the site safely.

Information will also be issued as part of the Green Travel Plan to improve awareness of the surrounding cycling routes. The site layout will have a paved path connecting from the entrance to the visitor and education centre, so pedestrians and cyclists can access the proposal site safely.

15.4 Mitigation

Table 15.5 describes the measures that would be applied to mitigate against, manage and monitor the predicted traffic and transport impacts.

Table 15.5: Traffic and transport mitigation measures

ID	Impact	Proposed mitigation
Design embedded mitigation measures		
TT1	Queuing onto the road network	The number of weighbridges and their location on the site is sufficient to avoid queuing onto the road network.
TT2	Safety risks	The site layout has been designed so that staff and visitor vehicles are separated from heavy vehicles.
TT3	Traffic generation	The proposal includes end-of-trip facilities and bicycle parking, to encourage sustainable transport to the site.
Construction mitigation measures		
TT4	Road network / traffic generation	A Draft Construction Traffic Management Plan (CTMP) (Appendix A of Technical report K) has been prepared and includes measures to reduce construction traffic such as adjusting shift patterns, encouraging car sharing and making workers aware of other transport options. This CTMP, as part of the Construction Environment Management Plan (CEMP), will be updated once a contractor is appointed.
Operation mitigation measures		
TT5	Road network / traffic generation	A Green Travel Plan will be prepared and carried out to inform employees on sustainable travel modes and will include measures to support these initiatives. A member of staff will be appointed as the Green Travel Plan coordinator tasked with carrying out and updating the plan.
TT6	Road network / traffic generation	The site will offer designated car parking spaces for carshare use to encourage staff to carshare.
TT7	Road network / traffic generation	Most visitor travel to the visitor and education centre will be via coaches, to minimise additional traffic generation.