7.8 ENERGY ISSUES

The RDC site would be operated in an energy efficient manner. All equipment would be maintained in good working order. To minimise energy use equipment would only be operated when specifically required.

The operations of the plant would consume an average of 7,575,600 KWH per year. Vehicle movements would consume diesel fuel based on the distances travelled. Refer to Section 2 on Alternatives and Technical Reports 5 and 9 for discussion of road versus rail transportation.

The location of the Regional Distribution Centre would sterilise no energy resources and the overall impact on energy use would be low.

7.9 VISUAL ANALYSIS

Context Landscape Design was commissioned to undertake a visual assessment of the proposed RDC. The assessment included recommendations for mitigative measures to ameliorate visual

impacts and preparation of a Landscape Master Plan for the site. The report is provided in Technical Report No 7.

7.9.1 Existing Visual Environment

Surrounding Area

The proposed development site is located in a broad valley which has been extensively modified by urban development. The principle landscape character types surrounding the site are identified in Figure 3.2.

In the immediate vicinity of the site, Nurragingy Reserve adjoins the eastern boundary of the proposed development site and contains dense stands of Sydney Coastal River-Flat Forest and Cumberland Plain Woodland. Throughout the reserve informal grassed areas and picnic bays are situated. The reserve is traversed by Eastern Creek and is joined by Angus Creek, which enters the reserve from the southern part of the proposed development site.

To the south, the Main Western Railway Line bounds the proposed development site and separates it from Blacktown Olympic Centre, which consists of a number of athletic and sports fields in a predominantly open grassed setting, with a few clustered trees and some buildings.

On the western boundary of the site is the OneSteel Mini Mill, which comprises bulky sheds and a tall stack approximately 45 m in height.

The northern boundary of the site faces the industrial corridor running to the north. Many of these sites within the corridor are currently undergoing development or have been cleared of vegetation in preparation for development, including a large cleared area immediately to the north. The angular section of boundary in the north east of the proposed development site is currently occupied by Humes.

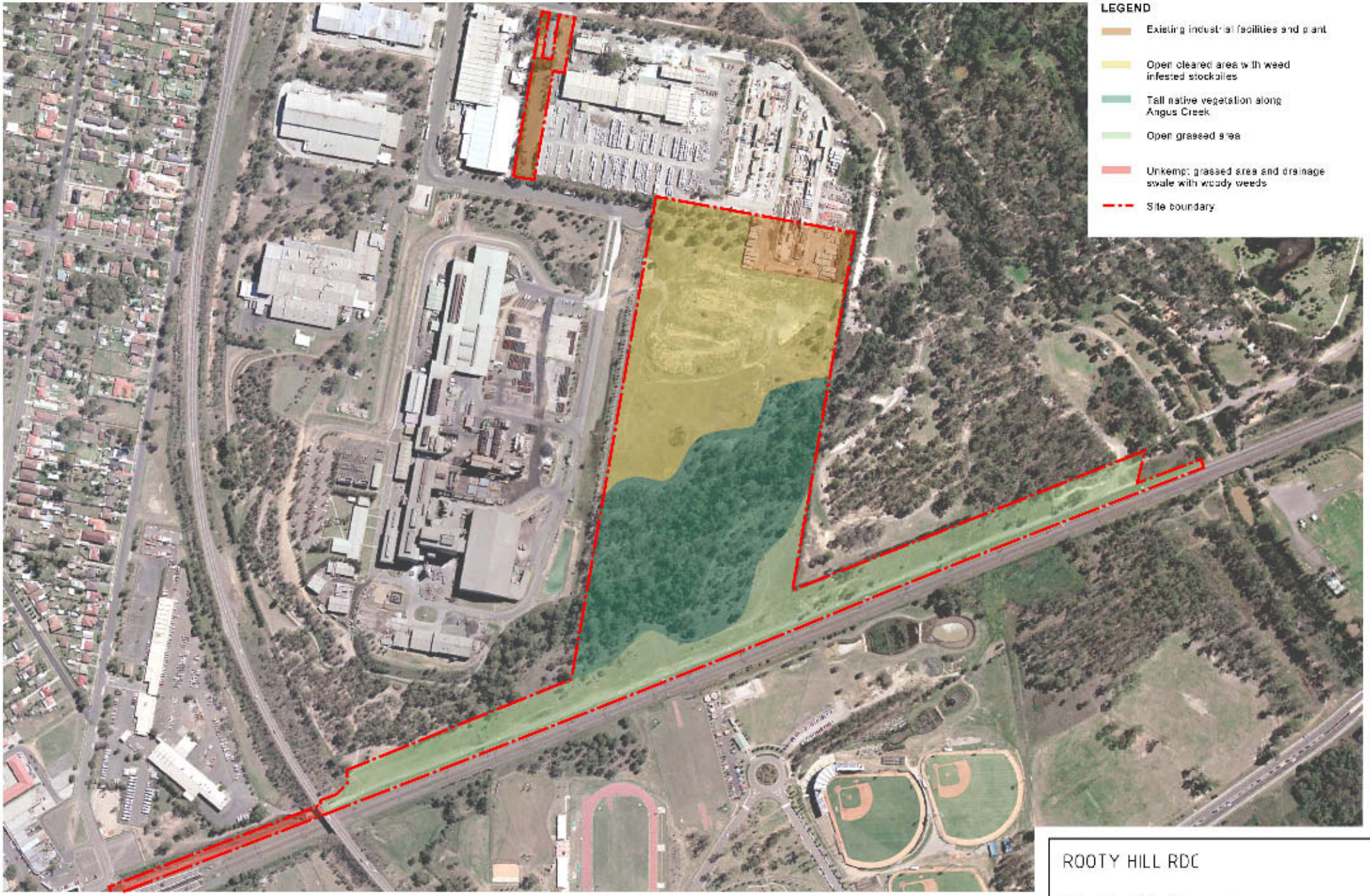
Proposed Development Site

Five distinct character precincts can be identified within the proposed development site (refer Figure 7.16):

- Existing facilities and storage areas including the car park in the northern part of the site currently occupied by Humes;
- Predominantly open cleared area, dominated by weed infested stockpiles, in the central part of the site;
- Tall native vegetation following the line of Angus Creek. The vegetation consists of SCRFF and CPW of high, medium and low conservation value;
- Predominantly open grassed area adjacent to the railway tracks east of the M7; and
- Grassed area/drainage swale with woody weeds adjacent to the railway tracks west of the M7.

7.9.2 View Catchments

The primary view catchment for the proposed development site is largely defined by the low ridges of the valley surrounding the site. These occur in the residential areas to the east and west of the site and in Rooty Hill Reserve to the South.



NTS

ROOTY HILL RDC

Existing Site Character

FIG 7.16

The majority of the views to the site within this view catchment, however, are obscured by vegetation or built form, the effects which are compounded by the undulating nature of the topography. Major visual obstructions block a majority of views from the west, north west and south west, including the M7, existing vegetation, and industrial plant immediately to the west of the site. Similarly, vegetation within Nurragingy Reserve obstructs views to the site from roads and suburbs from the east and north east. The ridgeline and vegetation occurring at the north of the site prevents most views to the site from the north (refer Figures 7.17 and 7.18).

Rooty Hill Reserve has 360^0 views, including residential areas, the industrial corridor, open space and reserve areas, the M7 and the Main Western Railway. The section of the Rooty Hill Reserve which has views of the development site currently does not contain any formal recreational facilities therefore attracting relatively few recreational users. Eastern Road adjacent to Rooty Hill Reserve provides intermittent views towards the proposed development site.

Areas containing filtered/obstructed views of the proposed development site include Nurragingy Reserve, Rooty Hill residential area, Plumpton residential area and Doonside residential area. North Parade, the Main Western Railway Line and Blacktown Olympic Centre, all located south of the development site, have views of the vegetation associated with Angus Creek. This vegetation prevents views of the northern section of the development site however views of the location of the proposed rail siding are clearly visible. Similarly, Rooty Hill town centre has views of where the proposed rail siding is to be located, which is currently an area of unkempt grass.

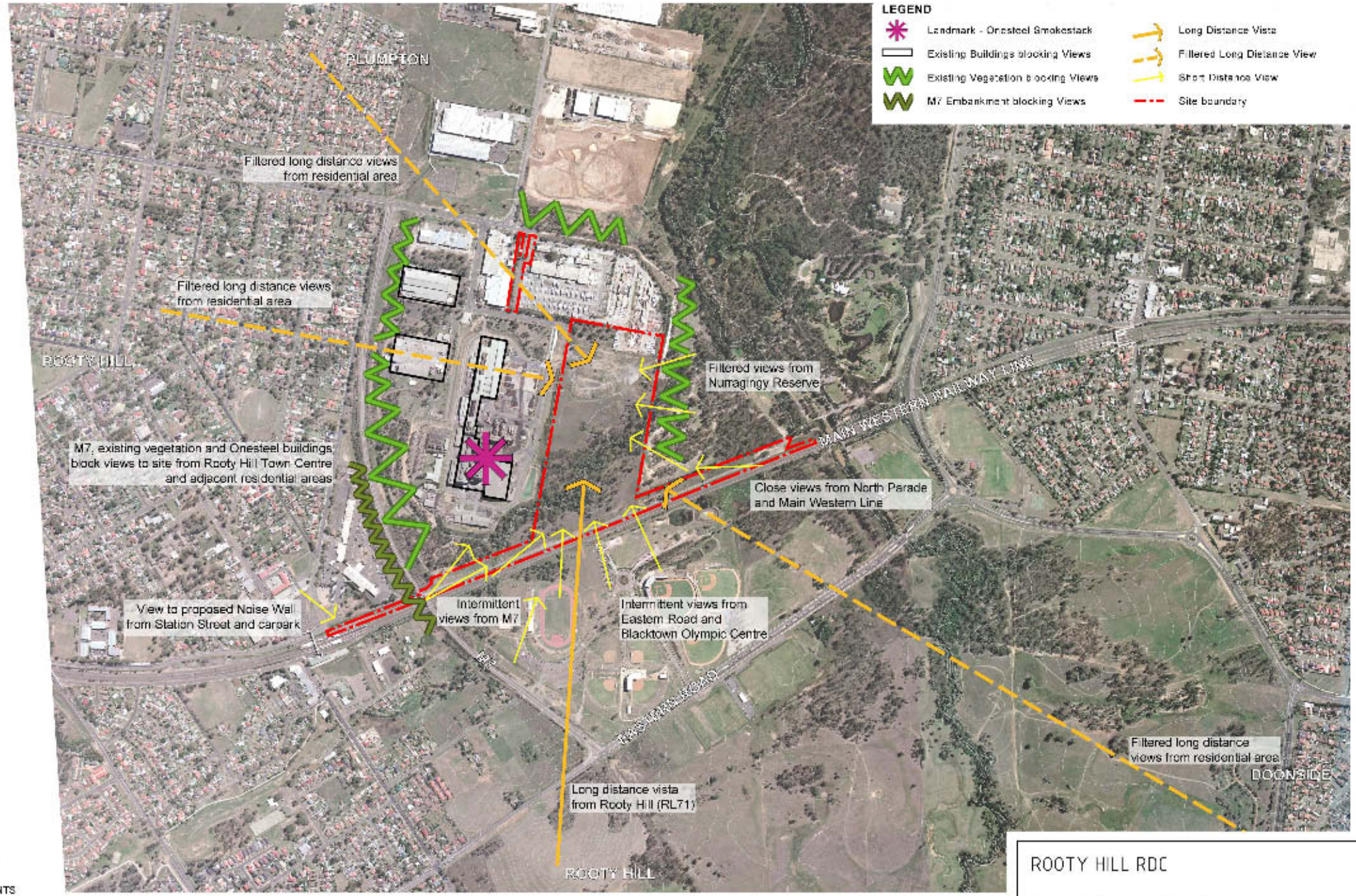
7.9.3 Visual Elements of Proposal

The proposed RDC includes the following major elements:

- Regional office building which incorporates a quarry materials and concrete testing laboratory;
- Rail siding and rail unloading facility;
- Noise walls alongside the railway siding, adjacent to the storage bins and associated plant, Nurragingy Reserve and the Rooty Hill railway station;
- Storage bin area and load out facilities (up to 33.5 m high);
- Ground storage and reclaim facilities;
- Blending plant;
- Conveyor system linking the unloading station to the storage and truck load out facilities;
- Workshop, stores and amenities facilities, truck wash-down facilities, truck refuelling, weighbridges, truck and car parking;
- Concrete batching plant (including silos up to 23.5 m high);
- Bridges at two locations over Angus Creek; and
- Realignment of North Parade.

7.9.4 Mitigation Measures

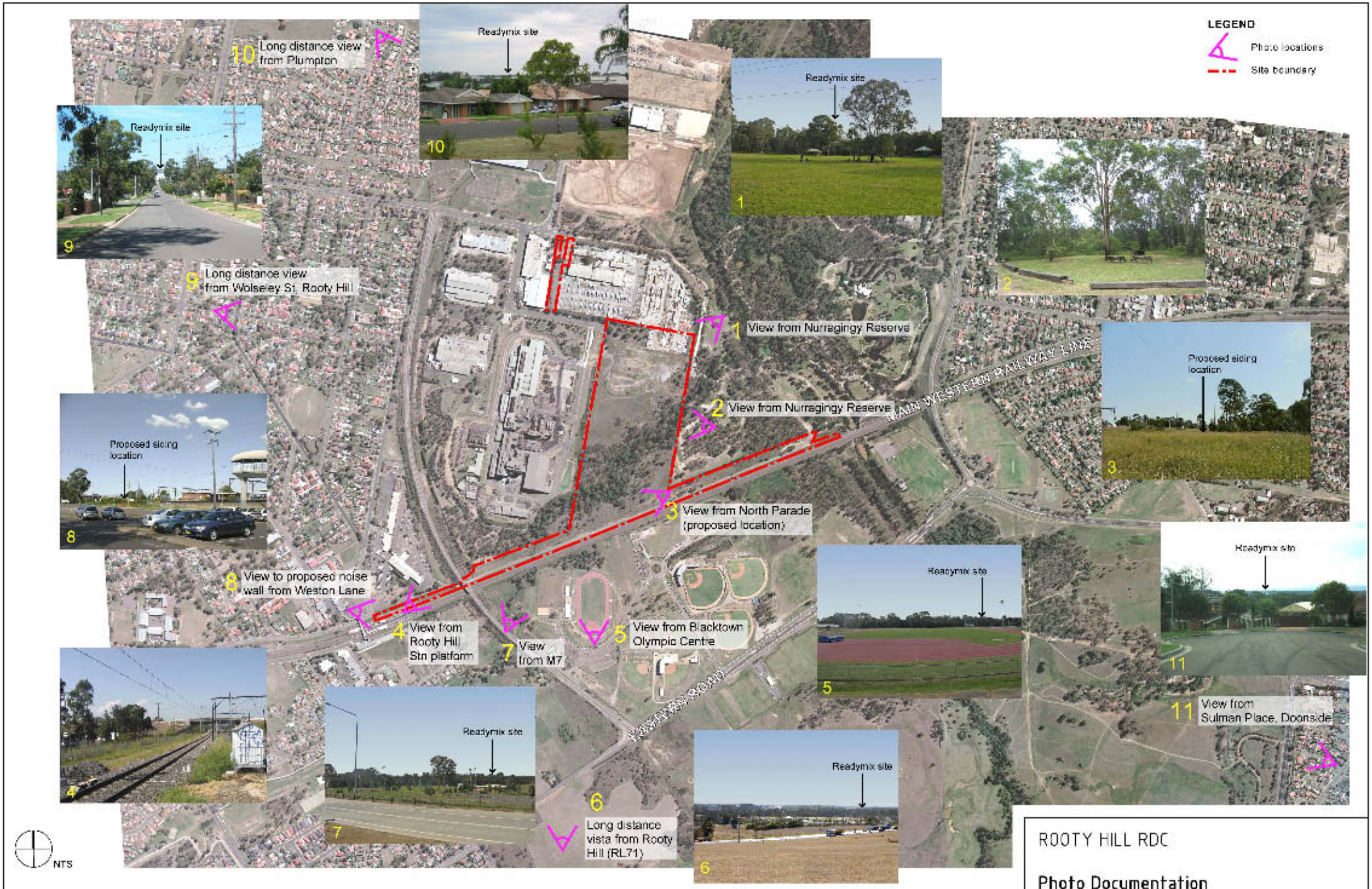
The following mitigation measures were recommended as part of the visual assessment and have been adopted in the design of the proposed RDC (refer Figure 7.19):

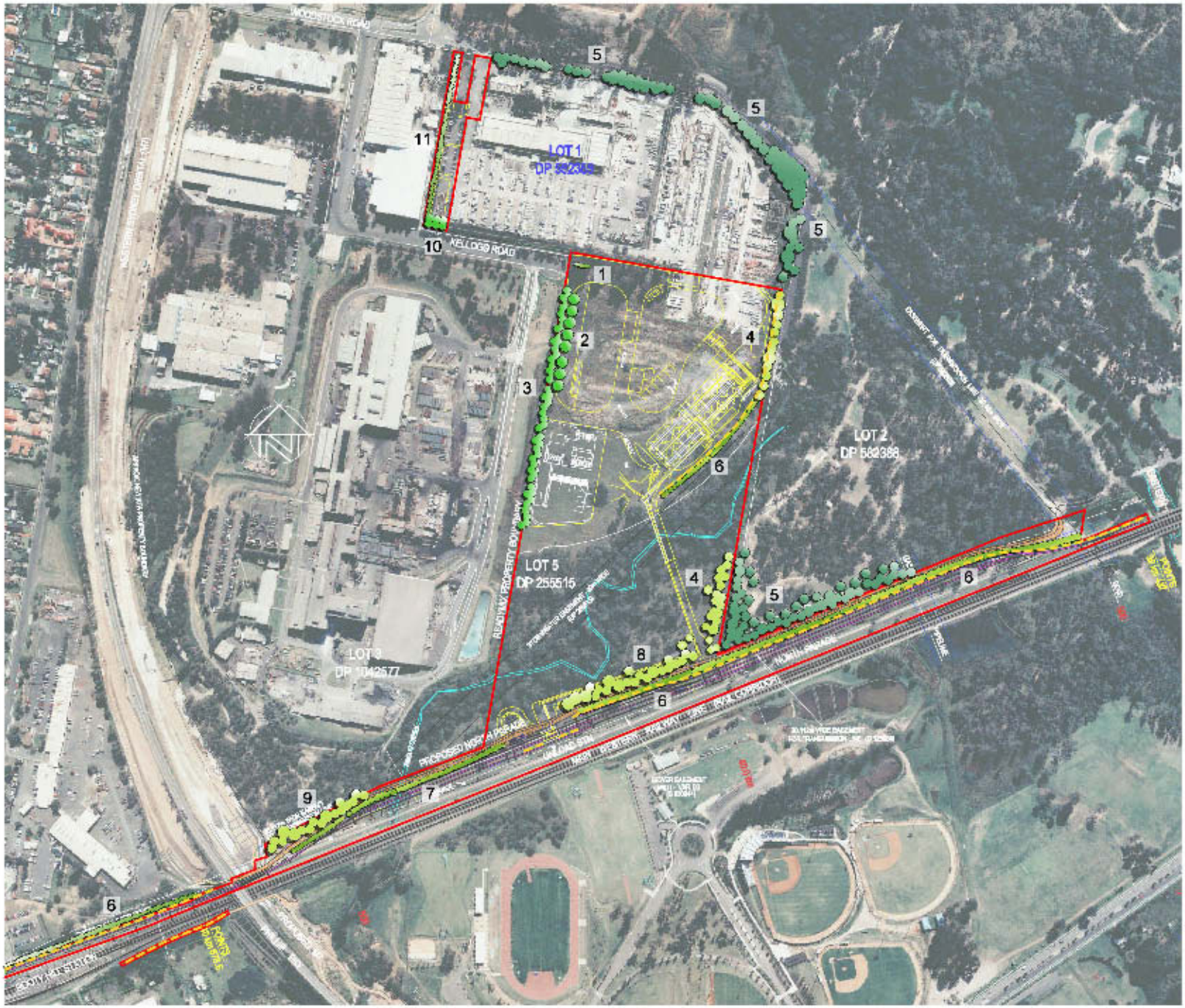


ROOTY HILL RDC

View Catchment Analysis

FIG 7.17


LEGEND
Photo locations
Site boundary
10 Long distance view from Plumpton
Readymix site
10
Readymix site
9
9 Long distance view from Wolseley St, Rooty Hill
Readymix site
1
1 View from Nurragingy Reserve
2
2 View from Nurragingy Reserve
MAIN WESTERN RAILWAY LINE
Proposed siding location
3
3 View from North Parade (proposed location)
Proposed siding location
8
8 View to proposed noise wall from Weston Lane
4 View from Rooty Hill Stn platform
7 View from M7
5 View from Blacktown Olympic Centre
Readymix site
5
Readymix site
11
11 View from Sulman Place, Doonside
WESTERN ROAD
4
Readymix site
7
6 Long distance vista from Rooty Hill (RL71)
Readymix site
6
NTS
ROOTY HILL RDC
Photo Documentation
FIG 7.18



LEGEND

- Sydney Coastal River Flat / Cumberland Plain Woodland species
- Sydney Coastal River Flat / Cumberland Plain Woodland species (outside of site area)
- Ornamental trees
- Ornamental native shrub planting
- Site boundary
- Noise Wall

1. Site entry feature planting
2. Ornamental tree planting in proposed car park
3. Ornamental tree and shrub boundary screen planting within the Readymix site to supplement existing boundary planting in the OneSteel site
4. Tree and shrub boundary screen planting within the Readymix site to supplement existing boundary planting in Nurragingy Reserve
5. Potential tree and shrub screen planting to supplement existing screen planting outside of the site area
6. Ornamental shrub and climber screen planting to noise walls
7. Ornamental shrub and climber screen planting between new North Parade and railway siding
8. Ornamental tree and shrub planting between new North Parade and conveyor belt
9. Tree and shrub planting to reinforce existing vegetation edge
10. Ornamental tree and shrub planting at frontage of proposed office building
11. Ornamental shrub planting along site boundary

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ROOTY HILL RDC

Landscape Principles

FIG 7.19

- Boundary planting

  The density of boundary screen plantings would be increased within the site and potentially in Nurragingy Reserve.

- Industrial plant colour selection

  The bulk storage bins, silos, unloading station and other bulky elements, would be painted in a colour sympathetic to the native vegetation on the site.

- Lighting design

  The 24/7 day nature of the operations means that the lighting would be required in the site throughout the night. It is proposed that the lighting design avoid highlighting prominent industrial plant such as the bulk storage bins and silos and minimise the spill of light into surrounding sites. The lighting would be to the appropriate Australian Standard.

During the construction phase measures to reduce visual impacts relate primarily to maintenance of the construction site in a neat and orderly state.

Measures adopted during the operational phases relate primarily to maintenance of the tree and shrub plantings on the site and of the vegetation along the Angus Creek corridor and keeping of the site in a clean and orderly state. Any graffiti found on noise barrier walls and other structures would be removed by Readymix in accordance with Blacktown City Council's Graffiti Removal Programme facilitated by the Blacktown City Council Community Pride Movement.

7.9.5 Impacts

The mitigation measures would be implemented to reduce the visual impact of the proposed RDC. The impacts are identified in terms of potential viewing locations:

Rooty Hill Reserve

The top section of the storage bins and silos would be the main element of the proposed RDC visible from Rooty Hill Reserve, protruding above the vegetation along the Angus Creek corridor. While these elements would be clearly visible, their colour and the presence of other industrial buildings and plant including the OneSteel buildings effectively reduce the visual impact of the development (refer Figure 7.20). The impact would also be further reduced by the colour of the bins and silos which would be in a colour sympathetic to the surrounding native vegetation.

Eastern Road

Intermittent views of the top sections of the storage bins would be possible along this route. Vegetation planted within the M7 corridor and the existing vegetation on the proposed development site would limit the views. The distance of views and existing views on the OneSteel plant and Blacktown Olympic Centre would reduce the impact.

Residential Areas

Views to the site from surrounding residential areas are obscured by existing houses, fences, vegetation and in some areas by existing buildings and plant in the industrial corridor. This intermittent screening and distance from the proposed site restrict views to the proposed RDC site.

At the residential areas of Rooty Hill, Plumpton and Doonside occasional views of the top section of the storage bins and silos would be available. However the distance of the views and the visual distractions such as existing buildings and vegetation and in the case of Doonside, the Blue Mountains, would reduce the visual impact.

ROOTY HILL RDC

Proposed View from Rooty Hill Reserve

FIG 7.20

Rooty Hill Town Centre

The closest element of the proposed RDC to the Rooty Hill Town centre is the section of the siding to the west of the M7. This section of the siding would include a noise barrier and landscape plantings.

Views of the section of the rail siding to the west of the M7 would be available from sections of the shopping centre however the views would be restricted by the noise wall and associated screen planting of shrubs and ground covers.

North Parade

North Parade would be relocated a small distance further to the north as part of the RDC proposal. Views along North Parade to the east of the unloading station would be restricted by a 3 m high noise wall and associated ornamental shrub plantings (refer Figure 7.21). To the west of the unloading station close range views of the tracks would be available. The conveyor belt, unloading facilities and associated plant would be visible from North Parade however tree and shrub plantings would lessen the impact of these elements. Users of North Parade would also have sporadic views of operational activities predominantly train unloading and vehicular movements.

Nurragingy Reserve

Filtered views of the proposed development site would be available from some locations along the western boundary of Nurragingy Reserve (refer Figure 7.22). Existing plantings would screen the majority of the proposed RDC site. Proposed tree and shrub plantings would further reduce the visual impacts. In addition to the proposed landscape planting on the RDC site as part of this proposal Readymix has submitted a proposal to Blacktown City Council to undertake additional plantings in the Nurragingy Reserve.

The southern boundary of the reserve would also have filtered views into the RDC site, primarily the new North Parade and rail siding. The proposed noise wall and native tree and shrub plantings would reduce the visual impact at these locations. Views of the proposed rail siding would be obstructed by the proposed noise wall and landscaping.

Main Western Railway Line

To the east of the M7 travellers on the Main Western Line would receive close range views of the rail unloading facilities, the noise wall and tree/shrub plantings. The proposed plantings would lessen the impacts of the views of the proposed RDC.

To the west of the M7 the tracks and platforms would provide views of the proposed rail siding and noise wall.

Blacktown Olympic Centre

The top of the bulk storage bins and silos would be visible at Blacktown Olympic Centre, extending above the tree line (refer Figure 7.23). This impact is reduced by the dominance of foreground vegetation. The unloading facilities would be visible from certain vantage points however impacts would be reduced by the proposed noise wall and native tree/shrub plantings.

7.9.6 Landscape Master Plan

A Landscape Master Plan has been prepared for the RDC (refer Figures 7.24 and 7.25). Key elements include:

- Ornamental groundcover planting to Kellogg Road entrance;

ROOTY HILL RDC

Proposed View from North Parade

FIG 7.21

ROOTY HILL RDC

Proposed View from Nurragingy Reserve

FIG 7.22

ROOTY HILL RDC

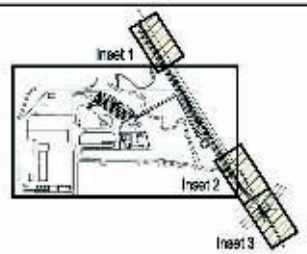
Proposed view from Blacktown Olympic Park

FIG 7.23

ROOTY HILL RDC

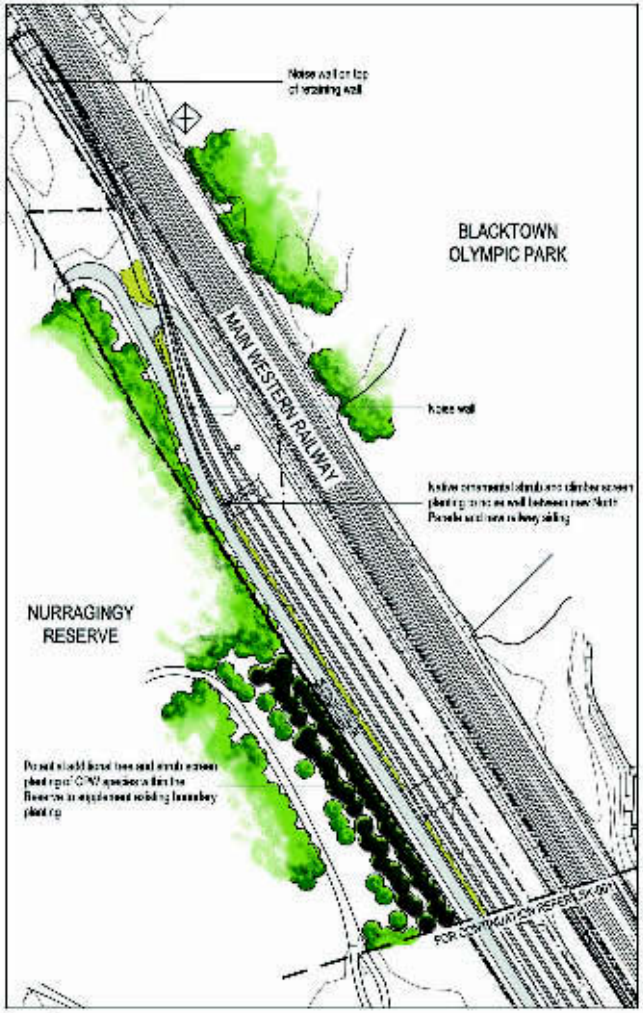
Landscape Master Plan (Sheet 1 of 2)

FIG 7.24



Key Plan

LEGEND



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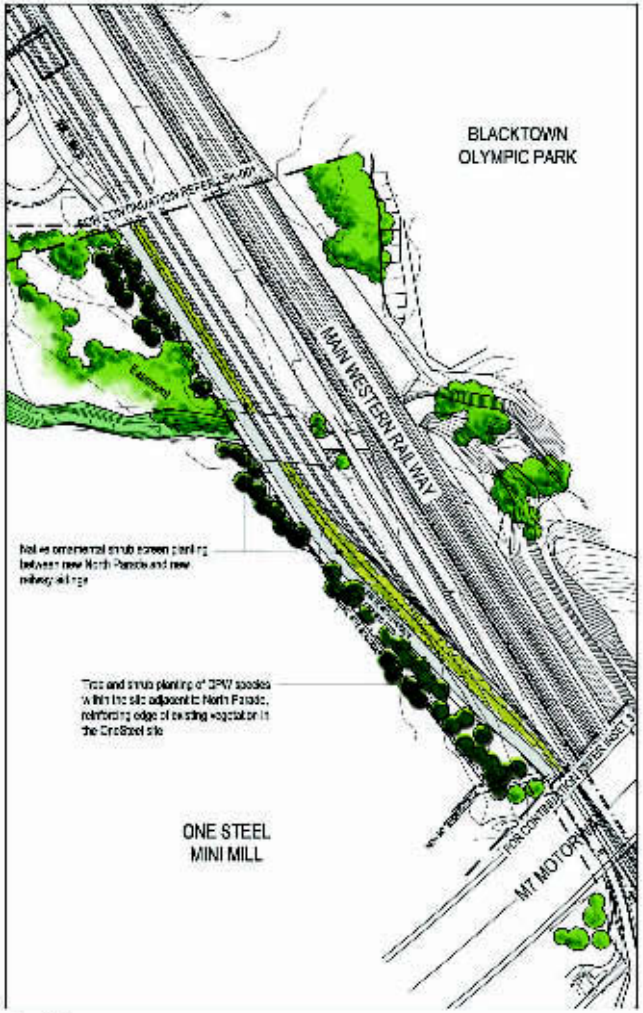

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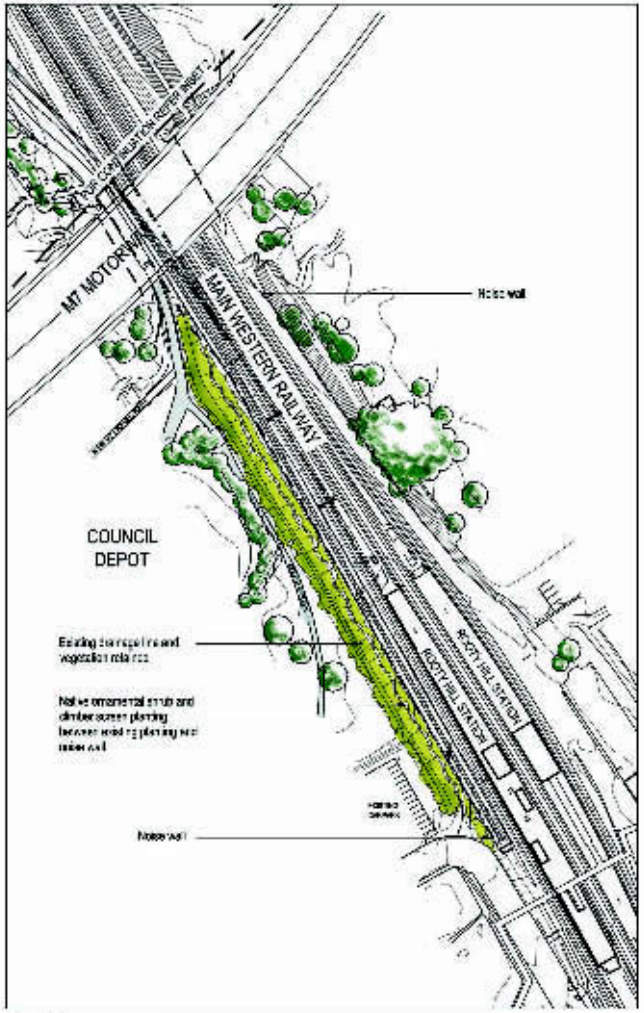

Inset 3

NOTE:
Refer Visual Impact Assessment Report Section 8.0 for suggested species lists for native ornamental and Sydney Coastal River Flat Forest (SCRFF) and Cumberland Plain Woodland (CPW) plantings.

North

0 15 30 100m

ROOTY HILL RDC

Landscape Master Plan (Sheet 2 of 2)

FIG 7.25

- Small native ornamental planting in the proposed car park in the proposed development site;

- Native ornamental tree and shrub planting within the proposed development site along the western boundary, supplementing existing boundary planting within the OneSteel site;

- Native ornamental shrub and groundcover screen planting along the noise wall adjacent to the storage bin facilities;

- Grassed drainage basins between the Angus Creek Corridor and the infrastructure associated with the proposed RDC;

- Tree and shrub plantings of Cumberland Plain Woodland and Sydney Coastal River-flat Forest species within the proposed development site along the eastern boundary, supplementing existing boundary planting within the Nurragingy Reserve;

- Native ornamental shrub and climber screen planting between the new North Parade and the new rail siding, including the noise wall;

- Tree planting of Cumberland Plain Woodland species and ornamental native shrub planting between the new North Parade and the conveyor system;

- Tree and shrub planting within the site between North Parade and the OneSteel site, reinforcing the edge of the existing vegetation in the OneSteel site;

- Native ornamental shrub and climber screen planting to the noise wall adjacent to Rooty Hill Station;

- Native ornamental tree and shrub planting at frontage of the proposed office and laboratory building within the Humes site; and

- Native ornamental and shrub and climber planting along the boundary of the Humes site adjacent to the proposed office and laboratory buildings.

Proposed additional plantings not included within the Development Application and subject to discussions with Blacktown City Council Include:

- Additional tree and shrub boundary plantings of Cumberland Plain Woodland species along the western and southern boundary of the Nurragingy Reserve; and

- Additional tree and shrub planting of Cumberland Plain Woodland species in the road reserve adjacent to the northern boundary of the Hume site, supplementing existing plantings.

7.9.7 Conclusion

A degree of visual impacts would occur in Nurragingy Reserve, Blacktown Olympic Centre, Rooty Hill Reserve, Rooty Hill Town Centre and from North Parade, the M7 Motorway, the Main Western Railway Line and Eastern road. Lesser impacts would occur in the surrounding and more distant residential areas.

Mitigation measures to ameliorate the visual impacts include the provision of screen planting around the boundary of the proposed development site, painting components of the proposed RDC in a colour sympathetic to the surrounding native vegetation and limiting the spill of nightime lighting from the site.

The Landscape Master Plan addressed these recommendations by increasing the density of plantings around the boundaries of the site, both inside and potentially outside the site. The design also addresses the visual amenity within the site including provision for tree and shrub plantings and turfed areas.

7.10 TRAFFIC AND TRANSPORT

Traffic impact assessment of the proposed RDC has been carried out by Irwinconsult Pty Ltd. Traffic modelling was undertaken to assess the potential traffic impact of the RDC in both the construction and operational phases. The study was undertaken in accordance with the methodology outlined in the RTAs Guide to Traffic Generating Developments – Traffic Impact Studies. Construction and Operational Traffic Impact Studies have been prepared and are included in Technical Report No 8.

7.10.1 Existing Traffic Conditions

Site Access

The proposed development site is located along the south-eastern boundary of Kellogg Road, Rooty Hill. The primary access point to the development site located on Kellogg Road is approximately:

- 3.6 km north of the M4 motorway interchange;
- 600 m from the planned half diamond M7 Motorway interchange with Woodstock Ave (current Phillip Parkway / Woodstock Ave intersection); and
- 2 km south of the proposed half diamond M7 Motorway interchange with Power St.

Access to the development site is also available from North Parade however the Angus Creek traverses the southern section of the site restricting main access to the northern section of the proposed development site.

Road Network

The local roads that would be used by traffic associated with the proposed RDC include Phillip Parkway, Woodstock Ave, Glendenning Rd, Power St and Kellogg St (refer Figure 7.26). The M7 Motorway, which will incorporate sections of Phillip Parkway, is currently under construction and is due to be opened in 2006.

There are four intersections that would be affected by the proposal which are:

- Woodstock Avenue/Phillip Parkway (M7 Motorway);
- Woodstock Avenue/Kellogg Road;
- Woodstock Avenue/Glendenning Road; and
- Power Street/Glendenning Road.

Surveys were conducted at these intersections by Irwinconsult Pty Ltd in 2004. The surveys included assessment of characteristics of each intersection such as traffic control devices, layout, queue length and potential vehicle conflicts. Traffic counts were also conducted at these intersections.

ROOTY HILL RDC

FIG 7.26 Road Network

Current intersection performances were analysed using the intersection analysis software aaSIDRA Version 2. This examined the delay, queue length and degree of saturation of each intersection. The Level of Service (LOS) was also evaluated, based on the NSW RTA delay method. An A or B ranking is a 'Very Good' LOS while an E or F ranking denotes a 'Bad' LOS.

Intersections

Woodstock Ave/Phillip Parkway

Prior to the construction of the M7, this intersection was under give-way control, with priority given to Woodstock Ave. However, at the time of the 'existing' conditions surveys this intersection was beginning to be upgraded as part of the M7 interchange at Woodstock Ave, hence had become signalised. A significant amount of traffic was observed to pass between the Woodstock Ave (West) and Phillip Parkway during the AM peak period. This intersection also serves as a main link to Glendenning Road and to the Industrial developments along east of Woodstock Avenue. 'Through' traffic movements at the intersection consist of mainly cars and light vehicles and low percentages of heavy vehicles. Whilst the right turn movement from Phillip Parkway has relatively low traffic volumes it consists of 26% heavy vehicles. At the time of the proposed RDC completion this intersection would be fully grade separated and signalised as part of the M7 project.

Woodstock Ave/Kellogg Road

This is a traditional T-intersection under give-way control. Traffic levels at this intersection are mainly associated with industrial developments in Kellogg Road. The highest traffic volume occurs during the AM peak period. During the survey, it was observed that the intersection had a high percentage of heavy vehicles compared to the other intersections in this area, due to the existing industrial sites serviced by Kellogg Rd.

Woodstock Ave/Glendenning Road

This is a three-leg roundabout. The main traffic movements are those associated with travel between Phillip Parkway and Glendenning Road, ie. left turn from Woodstock Ave into Glendenning Rd and the right turn from Glendenning Rd into Woodstock Ave. The eastern intersection arm serves an Industrial development and now provides access to the Nurragingy Reserve.

Power Street/Glendenning Rd

This is a four-leg roundabout with two circulating lanes. The western leg of Power St has one approach lane, whilst all other approaches have two. This intersection provides for most of the industrial traffic movements in the area and will become increasingly important as the M7 interchange at Power St becomes operational.

Pedestrian

Paths for pedestrians exist on the southern side of Woodstock Ave near Kellogg Rd. Parts of Glendenning Rd also have pedestrian access paths. North Parade is used by local residents for pedestrian access between the Nurragingy Reserve/Doonside and Rooty Hill. Shared paths (walking/cycling) link North Parade to the M7 Motorway.

Cycle Facilities

Other than a shared path (walking/cycling) linking the M7 to Rooty Hill there are no current designated on-road cycle facilities in the area.

General Traffic Movement

Within the vicinity of the proposed development site, the most trafficked roads are currently Phillip Parkway and Woodstock Ave (west of Phillip Parkway), as vehicles utilise these routes to gain access to the wider arterial network of the area, such as the M4. This was identified in the high proportion of turning movements surveyed at the Phillip Parkway / Woodstock Ave intersection, particularly turning right into and left out-of the Phillip Parkway. It would be expected that the majority of the vehicles using this main route would be 'through' traffic, aiming to access other roads. However, traffic on Woodstock Ave (east of Phillip Parkway) and Glendenning Rd would be more 'localised', required to use these road sections to directly gain access from their origin or to their destination.

Traffic utilising Kellogg Rd is purpose-based, providing access to businesses on this road, with no 'through' traffic.

Access to the nearby Nurragingy Reserve can now be obtained (during daylight hours) from Woodstock Ave, east of the Glendenning Rd intersection and provides an alternative to the other access point on Knox Rd. Entry into the Reserve is restricted via a gate, opened approximately 8.00 am and closed around 4.30 – 6.00 pm, depending on the time and day of the year. This is expected to slightly increase traffic volumes along Woodstock Ave as visitors use this access point, however the impacts are expected to be minimal.

Public Transport

Two public transport (on-street buses) routes run along Woodstock Ave and Glendenning Rd, but is only provided outside of the assessed peak hour periods.

Bus stops associated with the M7 Motorway use shared paths with access to Mavis Street and North Parade.

Road Pavement Condition

Current pavement condition along Woodstock Ave, Kellogg Rd and Glendenning Rd is of an acceptable standard, with no obvious pot-holes or cracking. Kerbing is located on all sections of these roads within the vicinity of the site.

Total Traffic Volumes

Annual Average Daily Traffic (AADT) along Phillip Parkway was obtained from RTA permanent count site located near to the Rooty Hill train line for both 1999 and 2002. The two way traffic volumes are 12,565 and 13,708 respectively. This shows an annual growth of approximately 2.5%.

The two-way AADT along Woodstock Ave between Phillip Parkway and Kellogg Rd (obtained from RTA permanent count site 71.168) for 1999 and 2002 are 9,638 and 10,549 respectively. This shows an annual growth of around 3%.

During the week, Phillip Parkway traffic peaks between 6 am and 9 am in the morning and between 3 pm and 6 pm in the afternoon. During both these periods, two-way traffic volumes increase to over 1,100 vehicles per hour. During the weekend, traffic levels are lower with approximately 700 vehicles per hour (two-way) between 9 am and 7 pm.

Irwinconsult conducted a traffic survey of the development area on 1st December 2004, which was deemed to be a representative day. Total daily and hourly traffic volumes recorded along Woodstock Ave were similar to the published RTA counts data. The hourly traffic profiles of the area, supplied by RTA, indicated that the AM peak was the most severe (ie. largest hourly traffic volume). Additionally, as the proposed RDC would create more vehicular activity during the morning peak hour, this period was deemed the most critical.

As a result traffic counts were conducted between 7.00 am - 9.00 am and the AM peak hour was found to be between 7.30 am – 8.30 am.

Road Accidents

Irwinconsult has reviewed the last five years accident data for Woodstock Ave between Phillip Parkway and Glendenning Road. The latest statistics on reported accidents were obtained from RTA's Crash Analysis Department for a five-year period from March 1999 to March 2004.

Over the last five years, 33 accidents occurred in the immediate vicinity of the Phillip Parkway / Woodstock Ave intersection. During this period, 17 involved property damage only, 16 involved an injury and none resulted in a fatality. 18% of the accidents included one or more heavy vehicles. The analysis shows that 80% of the accidents took place on weekdays, with 33% of the total accidents occurring during the weekday peak periods (between 6am – 9am and 3pm - 6pm). With the imminent completion of the M7 motorway and subsequent grade-separated interchange at this location (including signalisation), the risk of accidents will be greatly diminished.

The intersection of Kellogg Rd with Woodstock Ave is currently utilised by local traffic not only for the existing developments in Kellogg Rd, but also industrial businesses on Glendenning Rd. During the last five years only 2 accidents have occurred at this intersection, both involving property damage only. One of the accidents involved a heavy vehicle, while the other included passenger cars only. Each of these incidents occurred in 2001 and 2002 respectively.

The intersection of Kellogg Rd / Glendenning Rd roundabout had 2 accidents recorded which resulted in property damage only, with no heavy vehicles involved. One of the incidents occurred in 1999, while the other was in 2001.

Even though there have been 37 accidents along this stretch of Woodstock Ave (between Phillip Parkway and Glendenning Rd) during the last five years, the accident rate is not considered 'critical'. There is no obvious pattern associated with the accident statistics in this area.

The Phillip Parkway / Woodstock Ave intersection has been the largest source of these accidents and its upgrading to a grade-separated signalised interchange for the M7 motorway project would reduce its accident rate and improve the overall road safety of the Woodstock Ave environment.

7.10.2 RDC Traffic Movements

Construction

In order to assess a 'worst case' scenario for both the intersections, the maximum expected peak hour traffic generation during the construction period was used. Table 7.20 defines the expected average daily and maximum AM peak hour heavy vehicle traffic movement into and out of the site.

Table 7.20
Expected Construction Traffic Generation for the Site

	No. of vehicles entering the site		No. of vehicles exiting the site	
	Average Daily	**Maximum AM Peak Hour**	**Average Daily**	**Maximum AM Peak Hour**
Via the Knox Rd / Reserve access point intersection	20	10	20	10
Via the Woodstock Ave / Kellogg Rd intersection	150	50	150	50
TOTAL	**170**	**60**	**170**	**60**

Operation

Traffic generation as a result of the operation of the proposed RDC has been assessed at the maximum operating capacity of 4 Mtpa. Table 7.21 provides a summary of average daily traffic associated with the operation of the proposed RDC.

Table 7.21
Traffic Generation at the Site (Average Daily) – During Maximum Operating Capacity

	Type of Vehicle	No. of vehicles entering site per day	No of vehicles exiting site per day
Staff	Car	185	185
Aggregate deliveries	Heavy vehicle	400	400
Concrete deliveries	Agitator	133	133
General deliveries	Car / Van	50	50
Special deliveries	Heavy vehicle	18	18

7.10.3 Predicted Impacts

Construction Traffic Impact

The construction of the proposed RDC, including earthworks would occur over a 2-year period. During this period access would be required to the site for both light and heavy vehicles.

The initial period of construction (the first 6 months) would involve the completion of the internal bridge over Angus Creek. In order for materials to be delivered to this site, limited heavy vehicular access would be required through parts of the Nurragingy Reserve via North Parade and Knox Rd. This would follow the same route used by Blacktown City Council, RailCorp and other service providers that require access to North Parade.

Upon completion of the Angus Creek road bridge all construction traffic would enter via Kellogg Rd and use the bridge to access the southern portion of the site, therefore eliminating the need to enter via Knox Rd.

The existing Woodstock Ave / Kellogg Rd give-way intersection would perform as the 'main' entry/exit point for heavy vehicles access to the site throughout the entire construction stage of development.

Construction staff over the course of the project is expected to peak at approximately 150 people for any one day. However, these people are expected to arrive on site prior to heavy vehicle deliveries (and therefore before the AM peak).

Intersection analysis identifies that the existing configuration for the Woodstock Ave / Kellogg Rd intersection is capable of accommodating the additional heavy vehicle traffic during the construction stages (ie. 150 trucks entering and exiting the site per average construction day). If the Concrete Batching Plant were to become operational during the construction phase of the proposed RDC the recommended roundabout at the intersection of Kellogg Road and Woodstock Avenue would be required.

The use of the Knox Rd / Nurragingy Reserve access point intersection during the initial stages of construction (first 6 months) would slightly decrease the overall performance of the intersection. However this impact would be minor as the RDC construction-related heavy vehicle traffic volumes would be very low during the AM peak hour. The major vehicle movements along Knox Rd (north

and southbound) are not expected to be impeded greatly by the additional turning movements expected at this intersection.

The right turn into the Reserve is the only movement that would worsen as a result of the RDC construction traffic, with an anticipated performance of LoS 'B' and additional delay of 5 seconds (total 17 seconds).

All other movements are expected to perform at existing condition levels.

Signage would be installed on the Knox Rd approaches to the intersection warning motorists of the possibility of construction traffic entering the roadway (eg. 'Construction traffic ahead', or 'Construction trucks entering').

This section of North Parade provides access to the Nurragingy Reserve and Knox Rd for the Council Depot. The main users of the roadway are vehicles associated with Blacktown City Council, service providers and some general public vehicles.

A condition survey of North Parade would be undertaken prior to, and upon completion of, RDC construction works to ensure that it remains at the same level of amenity following its limited use for construction access. It is proposed that this would be undertaken in conjunction with Blacktown City Council officers.

Even though the volumes of traffic using this road are very low, to further improve safety within the reserve, signage would be installed along North Parade (including the entry points and any areas where pedestrians may gather), outlining the presence of heavy vehicles to other motorist and pedestrians. A construction traffic speed limit of approximately 25km/hr would be imposed within the Nurragingy Reserve, with all construction related drivers notified of the speed restriction. Pedestrian access would be controlled and managed as discussed in Section 6.

Operation

This section examines the expected traffic impacts of the proposed Readymix Regional Distribution Centre upon the existing surrounding road network, in particular the intersections of Kellogg Rd / Woodstock Ave, Glendenning Rd / Woodstock Ave and Glendenning Rd / Power St.

The existing Woodstock Ave / Phillip Parkway intersection was not examined as it will be updated as part of the M7 project.

Aggregate distribution would be made from the site to the Sydney market by road via the M7 Motorway. All of these heavy vehicle distribution routes would utilise the M7 Motorway. Therefore the trucks would either access the southbound lanes of the motorway directly from Woodstock Ave, or travel via Glendenning Rd and Power St to access the northbound lanes. The opposite would occur for distribution trucks returning to the site.

The four most predominant vehicle movements at the site would be:

- Employee's cars;
- Laboratory and other deliveries (light vehicles);
- Concrete delivery trucks (agitators); and
- Trucks distributing aggregate to other Readymix sites and customers (heavy vehicle).

Traffic Generation in the AM peak hour

For this site the AM peak hour would be the most critical, as this would be the busiest time in terms of concrete and aggregate distribution and also exhibits the highest levels of background traffic throughout the day. As a result, more delivery trucks would leave and return to the RDC site in this period compared to the 'average hour' during the day.

RDC staff shifts would be staggered, with the first of the day shift employees arriving at approximately 5.00 am. The majority of the employees would be on-site prior to 7.00 am, therefore outside of the defined 'peak hour' for the surrounding network. As such, these staff vehicle movements have not been included in the AM peak analysis. However, some of the RDC staff are expected to arrive during this peak period (and park in either the Humes carpark or main site carpark via Kellogg Rd).

The critical extra traffic volumes are those associated with the heavy vehicles, as they exhibit much slower acceleration and deceleration characteristics than cars and their movements would correspond with the AM traffic peak in the area.

In order to assess a 'worst case' scenario for all intersections, the *maximum* peak hour vehicle output under maximum operating conditions was used.

Table 7.22 shows the estimated maximum vehicle trip generation to be produced in the defined AM Peak Hour by the proposed RDC.

Table 7.22
Traffic Generation at the Site (AM Peak Hour) – Maximum Output

	Type of Vehicle	No. of Vehicles Entering Site in AM Peak Hour	No of Vehicles Exiting Site in AM Peak Hour
Staff (into Humes carpark)	Car	**55** (all via Kellogg Rd)	**0**
Aggregate distribution	Heavy vehicle	**80**	**80**
Concrete deliveries	Agitator	**28**	**28**
Special products delivery	Heavy Vehicle	**2**	**2**
General deliveries	Car / Van	**10**	**10**

Performance analysis was then undertaken for the key intersections with the inclusion of the development traffic for the proposed RDC using aaSIDRA version 2. An assumed 2.5% per annum traffic growth factor was applied to the base (surveyed movements on Woodstock Ave and Glendenning Rd), so as to simulate estimated 2008 volumes.

The analysis of the intersection of Woodstock Ave and Kellogg Rd showed that this intersection, under its existing configuration, would operate at an overall Level of Service 'B' in post-development conditions, with spare traffic carrying capacity. However, the right turn out of Kellogg Rd is expected to experience a delay of more than 4 minutes and a LoS of 'F', as a result of the high volume of opposing flow along Woodstock Ave. Additionally, the majority of these turning vehicles would be trucks and therefore, via their acceleration constraints, can increase the risk of accident to all vehicles at the intersection, particularly due to the need to cross two directions of traffic to complete the manoeuvre. In order to limit delays for all vehicle movements and reduce the need to cross two traffic directions whilst turning right out of Kellogg Rd, a two-lane roundabout configuration may be best suited for the intersection.

The implementation of a two-lane roundabout at the Kellogg Rd / Woodstock Ave intersection would dramatically improve the performance of the right turn out of Kellogg Rd, with a LoS of 'B' and an average delay of 18 seconds. The 'overall' intersection performance would also improve to LoS 'A'. Although a two-lane roundabout would improve the right turning movements in and out of Kellogg Rd, it would slightly worsen the performance of the through movements along Woodstock Ave, which are currently unrestrained and a priority movement. This however, is not expected to be a significant impact (queuing of around 13 metres on both approaches) considering the gain in amenity and safety overall for heavy and light vehicles entering and exiting Kellogg Rd.

For the intersection of Woodstock Ave and Glendenning Rd the aaSIDRA analysis showed that this intersection would be influenced little by the RDC's development. The only movements that are expected to be altered in the AM peak hour due to the new development are: those approaching from the west (through and left) and traffic turning out of Glendenning (right and left). All other movements are expected to remain unchanged from the existing conditions. During post development conditions it is anticipated that the majority of vehicles (heavy and light) wishing to head north of the site via the newly constructed M7 would utilise this intersection. All other movements are predicted to operate under similar conditions to the existing conditions, however the 'overall' intersection performance is predicted to operate at LoS 'A' during the AM peak hour.

The analysis of the intersection of Glendenning Rd and Power St showed that this intersection, under its existing configuration, would operate at an overall Level of Service 'B' in post-development conditions, with spare traffic carrying capacity. The development of the RDC would have the most influence on the Glendenning Rd north approach, with the queue for left turning vehicles expected to increase from 93 m to 137 m with a LoS 'C'. The right turning movement from this approach is also expected to operate at LoS 'C', compared to the LoS 'B' predicted for the scenario with general future background traffic only. Other movements at the intersection are only impacted marginally by the RDC related traffic.

The two M7 Motorway interchanges at Woodstock Ave and Power St were also assessed for their capacity and ability to accommodate the proposed RDC related traffic. The analysis suggests that the intersections would operate with an overall LoS 'B' or better, with or without the RDC operational.

Operation of Concrete Batching Plant during Construction

It is anticipated that the Concrete Batching Plant may become operational in approximately month 7 of the overall construction programme. While it is proposed that this plant would provide concrete for use in the construction of the RDC, concrete deliveries to other customers would also commence at that time. The Concrete Batching Plant would require aggregates and other materials for its operation. As the rail siding facility would not be completed and operational at that time, these would need to be delivered by road.

An assessment has been undertaken of the performance of the Kellogg Road/Woodstock Avenue intersection under these conditions. In its existing layout the aaSIDRA analysis undertaken shows that his intersection would operate at an overall Level of Service 'A'. However the right hand turn out of Kellogg Road would experience a delay of over 90 seconds with a Level of Service 'F'. The majority of these turning vehicles would be trucks with acceleration constraints.

Analysis undertaken of the intersection with the recommended two lane roundabout in place shows an improvement in intersection performance with a Level of Service "B" for the right hand turn lane out of Kellogg Road. This suggests that the intersection upgrade recommended for the operation of the full RDC should be undertaken prior to commencement of operation of the Concrete Batching Plant. Without this upgrade right turning vehicles out of Kellogg Road would be subject to unacceptable delays.

7.10.4 Recommendations

In order to facilitate the development of the site it is proposed that the following additional infrastructure improvements be undertaken:

- The realignment of North Parade (as proposed) should be of a sufficient standard to accommodate vehicles;
- Linemarking and signage within the RDC site should be clear and concise; and
- Centreline and parking linemarking should be implemented on Kellogg Rd.

The additional traffic generated by the proposed RDC would increase the traffic volumes in the area. However, it is not expected to have any substantial impact on accidents along Woodstock Ave or the intersections of Woodstock Ave / Kellogg Rd or Woodstock Ave / Glendenning Rd due to the recommended improvements to the surrounding road network. It is proposed that monitoring of road capacity and accidents statistics be undertaken to ensure that the extra traffic generated by the development does not unexpectedly affect the surrounding road network in an adverse manner.

7.10.5 Conclusions

This proposed development would involve the construction of a rail siding area, from which all construction materials would be delivered to the site. Concrete distribution would be via concrete agitators out of Kellogg St. Under normal operating conditions aggregates would be distributed from the site to the Sydney market via heavy vehicles.

This proposed RDC would generate traffic due to the employee movements and the distribution of aggregates and concrete from the site. All heavy vehicle access to the facility would be via Kellogg Road.

With the exception of concrete agitators servicing local customers and employee vehicles, all RDC traffic would be restricted to roads through the industrial area only in accessing the M7 Motorway. The existing pavement design is considered adequate for this purpose. Pedestrian safety is not expected to be affected by traffic associated with the proposed development.

The AM peak was deemed the most critical as RTA counts in the area suggested this period was the most severe, and the RDC is expected to create more vehicular activity during this period than the afternoon peak.

The RDC would increase traffic circulating around the area, but analysis shows that the nearby intersections are expected to operate satisfactorily when the development becomes operational, however some upgrades may be required.

The Kellogg Rd / Woodstock Ave intersection is the critical junction in terms of traffic impact associated with the proposed RDC. A two-lane roundabout option is recommended to be constructed prior to the RDC becoming operational, as it would provide additional amenity and safety for all vehicles at the intersection. The implementation of a two-lane roundabout at this intersection would dramatically improve the performance of the right turn out of Kellogg Rd, with a LoS of ‘B’ and an average delay of 18 seconds. The ‘overall’ intersection performance would also improve to LoS ‘A’.

Subject to the installation of the recommended two lane roundabout, the analysis undertaken demonstrates that the road network could accommodate traffic generated by the proposed RDC and would not result in adverse traffic conditions from a safety or performance perspective.

7.11 SOCIO ECONOMICS

7.11.1 Regional Setting

The proposed development site is located within the Blacktown LGA which is one of the 14 LGAs comprising the Greater Western Sydney Region within the Sydney Metropolitan Area. The Blacktown LGA is divided into a number of Wards. The suburbs of Rooty Hill, Doonside, Glendenning, Plumpton and Mt Druitt, which are in the vicinity of the development site, are located in Ward 4. The LGA covers an area of 246 square km including approximately 1200 ha of serviced industrial land in 12 industrial estates.

The LGA has two Sub-Regional Centres : Blacktown and Mt Druitt, five District Centres and a number of local centres including Rooty Hill and Doonside. There are approximately 800 parks and reserves in the LGA, two of which the Nurragingy Reserve and the Blacktown Olympic Centre are adjacent to the proposed development site.

7.11.2 Demographics

In 2001 the Blacktown LGA had a resident population of over 280,000 people. Since 2001 this has increased at a rate of about 5300 new residents per year. Within the LGA in 2001 there were approximately 52,500 occupied dwellings with a household occupancy rate of 3.1 dwellings with a household occupancy rate of 3.1 persons which is above the NSW State average of 2.6.

The Greater Western Sydney Region has a population of approximately 1.7 million and growth projections for the Region have been revised downwards since 1991 with estimates for the population reduced to 1.75 million by 2021 as a result of the impact of urban consolidation policies in Sydney's central and inner western suburbs (Refer Technical Report No 9).

The Blacktown LGA has a very low age dependency ratio when compared to the NSW state average as a consequence of a relatively low population of elderly people. There is also a relatively high percentage of couples with children compared to the state average. The percentage of people in one parent families is also higher than the State average (Coakes Consulting 2005).

7.11.3 Employment

In 2001, some 71,000 people worked in the Blacktown LGA of which 45% is comprised of local residents. Of the people who work in the LGA 69% of them work full time. This percentage is slightly higher than the fulltime employment figure for the Greater Western Sydney Region. Employment in manufacturing, wholesale trade, transport and storage and communications services is relatively high compared to the NSW state average.

The unemployment rate for the Blacktown LGA was 7.7% in 2001 compared to the State average of 7.2%. More recent data (refer Technical Report No 9) indicates that the trend in local unemployment has been one of consistent decline over recent years displaying a convergent trend with metropolitan Sydney unemployment levels.

Workers between the ages of 25 - 34 and 35 – 44 represent the largest percentage of the workforce. Of Blacktown LGA employed residents the majority are employed as intermediate clerical and service workers. Compared to the Sydney region, Blacktown's individual and household income levels demonstrates that there are proportionally more residents in income ranges below $800 - $999 per week.

Further employment details are provided in Technical Report No 9.

7.11.4 Economic Base Employment Multiplier and Location Quotient

Technical Report No 9 also presents an economic analysis of the impact of the proposed RDC.

A statistical technique used in identifying competitive strengths in a region is the Location Quotient (LQ). An industry LQ equal to one (1) may be taken to indicate that the region is self sufficient in this particular activity. If the LQ for an industry is less than one the region may be assumed to be importing this good or service, that this activity represents a regional weakness. Conversely, a LQ greater than one suggests a regional strength, that the region is exporting this good or service.

The analysis presented in Technical Report No 9 indicates that Readymix plans to employ a total of approximately 230-270 workers at the proposed RDC, the LQ increases in size from 1.03 at present to 1.05. Given that the LQ increases due to the additional employment generated by the RDC this means that Blacktown's ability to export employment also increases.

Initially surplus or export employment in manufacturing industry was 534 given the existing LQ without the RDC. With the additional employment created by the RDC a new export employment figure of 687 is generated bringing about an additional net increase of approximately 153 to the export employment as a result of the RDC.

7.11.5 Employment Multiplier

The economic analysis presented in Technical Report No 9 takes into account the transfer of Readymix employees from the PLDC and other Readymix sites to the RDC. The transfer of these positions would have no net impact in terms of employment generation in the Greater Western Sydney Region. The transfers would primarily benefit the Blacktown LGA and adjoining areas.

The analysis undertaken derives an employment multiplier of 3.4 meaning that in terms of net jobs for every one person at the RDC an additional 2.4 jobs are created in the economy. On the basis of 230-270 positions established when the RDC is in full operation and taking into account the transfer of positions from elsewhere to the RDC, the analysis found that based on an estimated 60 new positions, an additional 220 jobs would be created within the Greater Western Sydney Region. In addition the transfer of employees from the PLDC, as operations there wind down, to the proposed RDC would retain this employment in the Greater Western Sydney Region.

During the construction phase approximately 220 persons would be employed over the life of the construction period peaking at approximately 150 at any one time. Because the construction workforce would be drawn from all over the Sydney Region it is not possible to assign local and regional multipliers to this figure.

7.11.6 Expenditure Multiplier

To estimate the multiplier effect of the construction phase on the Greater Western Sydney Region economy, the analysis described in Technical Report No 9 assumed that approximately $35 million of the total capital cost of the proposed RDC would be paid in wages. On this basis it was calculated that this would generate additional income of approximately $9 million for Blacktown and a further approximately $10.5 million within the broader Greater Western Sydney Region.

During the operation of the proposed RDC, the analysis assumed that Readymix annual wages for RDC employees would be $3.6 million. On this basis it was concluded that these employees would spend approximately $1.3 million annually in the regional economy.

7.11.7 Social and Community Impacts

The proposed RDC development would have a range of social impacts affecting the local and regional communities. Social impacts are likely to be related primarily to changes in amenity and changes to income and employment.

The income and employment changes are documented in Technical Report No 9 and in this section of the EAR. Most of the impacts potentially affecting amenity would involve a number of the issues addressed elsewhere in Section 7 of the EAR. Those would include flooding, water and air quality, noise, visual character and quality and traffic.

The results of the technical investigations described previously in this section of the EAR indicate that there would be no adverse impacts resulting from the proposed development on the surrounding community. In general terms, the community living in the area in proximity to the development site would experience no noticeable change in environmental characteristics and quality resulting from the construction and operation of the proposed RDC.

As described in Section 7.11.6, the local community within the Blacktown LGA and the broader community within the Greater Western Sydney Region would experience employment and economic benefits, including the retention of jobs currently associated with Readymix operations at the PLDC and the creation of additional employment at the RDC.

In the context of the DEC goals and criteria, noise and dust impacts would be confined to areas in close proximity to the development site due to the controls incorporated in the design of the RDC and the measures described in Section 6. Water quality impacts would be controlled by the measures incorporated in the design of the RDC and the measures described in Section 6.

There would be no noticeable alteration to Angus Creek flooding levels outside the development site as a result of the construction of the RDC.

The visual character and quality would be altered due to the structures associated with the RDC but would be ameliorated by the proposed landscape works, the other measures described in Section 6 and the landscape plantings in the Nurragingy Reserve subject to consultation with Blacktown City Council.

The location of the development site in relation to the Main Western Railway Line and the Sydney Motorway Network and the recommended upgrade of the Kellogg Road/ Woodstock Avenue intersection means that apart from some local concrete deliveries local residential communities would not experience any traffic impacts from construction and operation of the RDC.

The proposed development would impact on the amenity of some portions of the adjoining Nurragingy Reserve. Members of the community who use the western and south western portions of the Reserve would observe a change in visual character of the adjoining area from undeveloped land to an industrial development. This effect would be ameliorated by the proposed landscape plantings and other visual mitigation measures described in Section 6. While parts of the Reserve are currently impacted by rail noise from the Main Western Railway Line operations, areas in proximity to the boundary of the Reserve would at times experience noise levels above those currently experienced. Dust levels at times would be above current levels but based on the assessment described in Technical Report No 5 and Section 7 would be well below the levels of concern in relation to human health. Truck movements along North Parade through the Reserve associated with the construction period for a period of approximately six months may result in disturbance to other road users and those using adjacent areas of the Reserve.

To further ameliorate the impacts and improve the amenity of the western and south western portions of the Reserve, Readymix has sought to consult with Blacktown City Council in relation to additional landscape plantings and other works within the Reserve which would complement the works proposed within the development site.

7.11.8 Cost Benefit Analysis

Technical Report No 9 includes an assessment of the economic impacts of the proposed RDC on the regional economy using a Benefit Cost Approach.

The regional economic benefits are described in Sections 7.11.5 and 7.11.6 above. The assessment found that the local environmental costs associated with the proposed development would be adequately ameliorated by the mitigation measures proposed. At a regional and State level there would be economic and environmental benefits arising from the use of rail to transport the bulk construction materials from their source to the proposed RDC compared to the use of road transport from quarries to the Sydney market.

7.12 HERITAGE

7.12.1 Indigenous Heritage

Archaeological Context

The Sydney Basin, where the proposed development site is regionally located, has been the focus of extensive archaeological research. This has resulted in the discovery of many Aboriginal sites including open artefact scatters, isolated finds, middens and evidence of rock shelter occupation. The research database generated by such findings has been used to put forward various models of Aboriginal site locations in relation to regional occupation sequences, exploitation patterns, regional characteristics in site context and site location parameters.

Aboriginal presence in the Sydney Basin has been dated to 20 000 years ago with a small number of Late Pleistocene occupation sites identified at Shaws Creek, the Blue Mountains foothills and Mangrove Creek. The majority of sites within the Basin date to within the last 3 000 years. It has been proposed that the Aboriginal occupation in the late Pleistocene was sporadic and characterised by a small population. The stabilisation of sea levels and the development of coastal estuaries during the last 5 000 years was likely to have led to increased resources and potential productivity of the coastal environment for the Aboriginal people, thus resulting in a population increase.

Tribal boundaries that existed at the time of European occupation are difficult to reconstruct as clan estate boundaries were often fluid in nature and European documentation of Aboriginal movements is often limited and unreliable. It has been estimated that the Tharawal tribe was located in the area south from Botany Bay and Port Hacking to the Shoalhaven River and inland to Campbelltown, Picton and Camden. The Gandangara tribe was likely to have existed to the west of the Tharawal people while the Daruk occupied the land to the north.

Within a short time after European occupation, the local Aboriginal population was severely decreased due to illness and conflicts over resource competition, for example the Aboriginal use of Hawkesbury River banks for yam harvesting being replaced by European cultivation practices.

The proposed development site is located on the western Cumberland Plain within the Sydney Basin. There have been several large–scale archaeological projects undertaken on the Cumberland Plain and predictive models have been created from these findings to determine other Aboriginal sites within the Plain. It has been suggested that sites are likely to be located near watercourses such as creeks and high ground near water. Proximity to food and lithic materials are other factors likely to influence Aboriginal site locations.

There have been eighty six Aboriginal sites recorded within an area of 35 km² around the proposed development site. The findings consisted of artefact scatters and isolated finds, with two discoveries being located near Eastern Creek, to the east of the proposed development site. No sites have been previously recorded within the proposed development site.

It was predicted that the most likely site type within the site would be artefact scatters and isolated finds. Stone artefacts may be present at low densities and in a disturbed context. The proximity of water would influence site complexity, with larger sites likely to be located adjacent to permanent

water sources. Undisturbed artefactual material may exist subsurface while scarred trees may occur in surviving old-growth tree areas.

The proposed development site currently lies within the boundaries of the Deerubbin Local Aboriginal Land Council, the Darug Tribal Aboriginal Corporation and the Darug Custodians Aboriginal Corporation.

Study Methodology

Three archaeological surveys were carried out during 2002, 2004 and 2005 consisting of two field site surveys and one desktop assessment. Background literature research was undertaken to determine if known Aboriginal sites were located within the proposed development site. This research included use of literature sources such as the NSW NPWS Register of Aboriginal Sites, associated files and catalogues of archaeological reports and academic theses. Field survey methods included systematic and opportunistic survey traverses with all areas of ground disturbance and surface visibility being inspected. Angus Creek was systematically surveyed and old growth eucalypt trees were inspected for the possible presence of Aboriginal scars. A member of the Darug Custodians Aboriginal Corporation and a member of the Darug Tribal Aboriginal Corporation accompanied the field team during the course of the fieldwork. The Deerubbin Local Aboriginal Land Council visited the site in June 2005 and no further sites were located.

Study Results

No Aboriginal sites have previously been recorded within the proposed development site and Aboriginal sites, relics or areas of potential archaeological deposits were not located during the field surveys. The archaeological sensitivity of the site was considered low, based on the level of disturbance that currently exists within the site and the results of previous archaeological surveys in the local area.

An unrecorded site may have existed on the creek margins close to the western boundary of the site. This site was not relocated during the study.

Conclusions and Recommendations

There are no Aboriginal archaeological constraints on the proposed development site due to the lack of Aboriginal sites located within the site. It is proposed that during the construction phase if any Aboriginal sites or relics are uncovered the NSW NPWS would be informed. Work in the area of such a find would cease until it is assessed for significance and an appropriate management strategy is devised if necessary.

7.12.2 Non-Indigenous Heritage

A desktop search of the NSW Heritage Office – State Inventory and the Blacktown City Council LEP was undertaken. There have been no items of Non Indigenous heritage value located on or near the RDC site.

7.12.3 Impact Assessment

As no items of archaeological significance were found on the RDC site there are no archaeological constraints associated with the construction or operation of the RDC.

7.13 POTENTIAL HAZARDS

Potentially hazardous materials would be stored in three separate locations on the proposed development site. Section 5.3.8 and Table 5.1 describe those materials stored in the workshop and store. Gases stored comprise oxygen, nitrogen and argon which are in Class 2.2 of the

Australian Dangerous Goods Code. These are excluded from risk screening under SEPP No 33 as they are considered not potentially hazardous with respect to offsite risk. Acetylene and LPG are in Class 2.1 and are assessed separately in the screening process. The thresholds for these under SEPP No 33 are 4 cubic metres and 16 cubic metres respectively. The amount proposed to be stored is less than the threshold.

The oils and grease stored are in Class C2 are not classified under the Code and are treated as Class 3PGIII for assessment under SEPP No 33 as they are stored with other flammable materials. The paints and associated materials are also in Class 3PGIII. The total quantity triggers the risk assessment threshold if the distance of the workshop and store are closer than 9 metres from the site boundary. The workshop/store is located in excess of 9 m from the boundary and the threshold is not triggered and the storage is not potentially hazardous.

Materials stored at the Concrete Batching Plant would include concrete constituents, admixtures, lubricants and cleaning agents.

The constituents include aggregate, cement, flyash, silica fume, recycled water and smaller quantities of other additives. None of the materials are classified under the Dangerous Goods Code. This component is not potentially hazardous.

Admixtures are liquid additives to the concrete. All have flashpoints above 93 ^{o}C and are classified as C1 – combustible liquids with some above 150 ^{o}C (3C2). The admixtures are stored at the rear of the batch house in bunded tanks. The nearest tank is about 20 m from the property boundary. A maximum of 35 cubic metres of material would be stored on site at any one time. The grouping of materials results in a classification of 3PGIII and this component does not trigger the SEPP No 33 threshold is not potentially hazardous.

In terms of fuels and lubricants, no fuels would be stored at the Concrete Batching Plant. Grease and hydraulic oil would be stored in the oil/acid store on the eastern side of the plant. No more than four cartons of grease and 500 L of oil would be stored with a classification under the Dangerous Goods Code of C2. They are the only flammable liquids present in the store and are consequently not considered potentially hazardous.

Cleaning agents include detergents and truck acid. Truck acid storage would comprise 1000 litre within the oil/acid store. It is classified as a Class 8 – Corrosive Substance under the Australian Dangerous Goods Code. The 1000 L (1 cubic metre) storage size does not trigger the threshold as being potentially hazardous under SEPP No. 33. The contribution of oil/grease/truck acid in the quantities stored does not affect the classification.

Diesel fuel would also be stored on the RDC development site as described in Section 5.4.2. The storage would be bunded and roofed in accordance with NSW DEC Guidelines. The refuelling area is located away from the Concrete Batching Plant storage area and the RDC workshop and store as shown in Figure 5.11. For the purpose of SEPP No 33 it is assessed separately. Diesel fuel is classified as C1 and as it is stored separately in a bunded area is not considered to be potentially hazardous.

On the basis of the assessment described above, the proposed development would not result in a significant off-site risk and is not potentially hazardous. As such SEPP 33 does not apply and a Preliminary Hazard Analysis is not required.

In order to determine whether the proposed development is potentially offensive development under SEPP No 33 it is necessary to determine if the proposal would emit a polluting discharge which would cause a significant level of offence.

The environmental assessment described elsewhere in this Section indicates that there would be the potential to emit polluting discharges from the proposed RDC in terms of water, air and noise emissions. The assessment described in Sections 7.1 to 7.3 shows that the measures proposed to

be incorporated in the design of the RDC would ensure that there would not be polluted water discharged from the development site during either the construction or operation phases of the proposed development. The assessment in Section 7.6 and Technical Report No 5 demonstrates that there is the potential for dust emissions from the RDC operations which could impact on adjacent areas. The design of the RDC and the mitigation measures described in Section 6 would control dust emissions from the site so as to minimise the impact on adjacent areas. The dispersion modelling demonstrates that the DEC air quality goals would be met on these areas. The assessment by Associate Professor McKenzie described in Section 7.6 and Technical Report No 5 found that at the predicted emission levels there would be no adverse effects on the health of people using these areas including the Nurragingy Reserve and Blacktown Olympic Centre.

Section 7.7 and Technical Report No 6 present the results of noise modelling prediction for the construction and operational phases of the proposed RDC. The assessment undertaken concludes that noise levels in areas adjacent to the development site and within the local area would be within the goals adopted by the DEC. In addition rail and road traffic noise associated with the operation of the proposed RDC were found to be within the DEC criteria.

On the basis of the assessments undertaken it is considered that having regard to the sensitivity of the receiving environment the proposed development is not a potentially offensive industry and as such SEPP No 33 does not apply.

7.14 CUMULATIVE IMPACTS

Cumulative impacts can result from the interaction between impacts arising from activities associated with other projects or developments with impacts resulting from the construction and operation of the proposed RDC. The impacts are both time and location dependent, i.e the timing of the impacts must be such that they are cumulative and the area on which they impact must be such that they are cumulative.

In terms of current activities, the impacts resulting from other projects and developments in the vicinity of the proposed development site have in most instances been incorporated in the environmental investigations undertaken in the definition of existing and baseline conditions. This has been done in the flooding, air quality, noise, traffic and visual impact studies as described in the relevant Technical Reports. In addition the Angus Creek water quality monitoring provides an assessment of the current conditions of the Creek catchment in terms of water pollution and erosion/sediment movement.

Consequently the cumulative impacts of the proposed RDC and current activities are incorporated in the assessment presented in this section of the EAR and the Technical Reports. In terms of future developments, with the exception of traffic and noise there are no known proposed activities which would impact on the same areas on which RDC impacts are predicted.

In the case of traffic, the completion of construction of the M7 Motorway and the subsequent operation of the Motorway will result in changes to local and regional traffic movements. The predicted changes have been incorporated in the traffic study in Technical Report No 8.

The operation of the proposed RDC would commence after opening of the M7 Motorway. The removal of motorway construction activities and traffic and the impact of the Motorway on local traffic patterns have been incorporated into the traffic analysis. The assessment indicates that the recommended roundabout should be in place prior to operation of the Concrete Batching Plant in association with construction of the RDC.

Similarly the noise assessment undertaken (refer Technical Report No 6) incorporates the noise impacts associated with operation of the Motorway including the acoustic barriers to be erected on the Motorway and approach ramps.

Current and proposed developments in the Greater Western Sydney Region are impacting upon the remnant areas of native vegetation on the Cumberland Plain. The proposed RDC has been designed to minimise impact on the native vegetation on and adjacent to the site. The vegetation management plan to be incorporated in the Site EMP would include measures to protect and restore the woodland vegetation on the site and as a result to facilitate maintenance of the community within the adjacent Nurragingy Reserve.

Readymix is aware of the proposed future development in the Blacktown Olympic Centre and of proposals to upgrade the Rooty Hill Commercial Precinct. The environmental controls proposed for the RDC would ensure there is no impact from the RDC on these areas. The proposed acoustic screening at the rail siding and associated landscaping has been designed to minimise noise and visual impacts on these areas.

The relocation of North Parade would include provision for a bike path consistent with proposals to establish a regional cycle way.