

Metcash Site, Huntingwood West
Traffic Impact Assessment

8 September 2010

Prepared for
Metcash

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This report has been issued and amended as follows:

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1 Introduction

1.1 *Director Generals Requirements*

The subject application for the Metcash Warehouse and Distribution Project Centre Project has been issued with a list of Director General's Requirements (DGR's) for the project. This list of DGR's makes several references to traffic, access and transport issues as summarised below.

Transport Access & Parking	Key Issues	Addressed in
	Demonstration that the internal road layout is consistent with the internal road hierarchy proposed in the application for the Bungarribee Industrial estate Stage 1 – Infrastructure Project (08_0225)	Section 6.1
	An assessment of the impacts of this traffic on the safety capacity and efficiency of the surrounding road network, including modelling of key intersections which should include but not be limited to <ul style="list-style-type: none"> • Brabham Drive/Great Western Highway, • Huntingwood Drive /Great Western Highway Huntingwood Drive / Brabham Drive	Section 4
	Detailed plans of any proposed road upgrades	Section 6.1
	Access including detailed consideration of various access options & justification for the proposed location of the main access points	Section 6.1
	Details of the availability of non car travel modes and	Section 7
	Parking	Section 5

This table also makes reference to the sections of this report that address those specific issues.

1.2 Traffic Impact Assessment Report

This traffic impact assessment has been prepared by Halcrow to address the DGR's requirements. It has been prepared for first stage of development on the Huntingwood West Estate (formerly known as the Bungarribee Industrial Estate). This first stage will involve the construction of a Metcash distribution warehouse with associated offices. This report assesses the traffic implications of the proposed Metcash development.

This assessment study has been undertaken in accordance with standards and guidelines, which includes the RTA's Guide to Traffic Generating Developments.

This report has been set out as follows:

- Chapter 2 discusses the existing conditions;
- Chapter 3 details the planning history of the site and outlines the Metcash proposal;
- Chapter 4 assesses the traffic impact of the proposed development;
- Chapter 5 reviews the parking provision;
- Chapter 6 describes the access arrangement and assesses internal circulation;
- Chapter 7 discusses the availability of non car based modes of transport;
- Chapter 8 considers the provision of a workplace travel plan; and
- Chapter 9 provides the conclusion and summary of the traffic impact assessment.

2 Existing Conditions

2.1 *Existing Site*

The Huntingwood West Estate is bounded by the Great Western Highway to the north, Brabham drive to the east, Eastern Creek to the west and the M4 Motorway to the south.

The site is located to the west of the existing Huntingwood industrial precinct and opposite the proposed Bungarribee Precinct (*which will comprises residential and parkland development*) which will be located to the north of the Great Western Highway.

The site is currently vacant and is open grassland (See **Figure 2. 1**).

2.2 *Existing Roads*

The M4 motorway is a major east west road between Strathfield and Penrith and forms the key link between Sydney CBD and the western suburbs.

The Great Western Highway is a state road that also acts as link between the Sydney CBD and the Western Suburbs. Along the site frontage the road is posted with an 80km/hr speed limit.

Brabham Drive joins the Great Western Highway and runs along the eastern boundary of the Huntingwood West Estate.

Brabham Drive joins Huntingwood Road at a three leg roundabout which has two lanes on each approach. The roundabout has been designed to allow construction of a fourth arm which will provide access to the Huntingwood West estate.

3 Metcash Proposal

3.1 *Approval of Concept Plan*

This estate is a State Significant Site (SSS) that was rezoned as IN1 General Industrial under the Major Projects SEPP. A Part 3A Concept Plan was approved for the subdivision of the Industrial Estate into 47 lots for future employment usage. This was supported by a TMAP produced by Maunsell in 2006. A project application was subsequently submitted in June 2008 for the subdivision of the Industrial Estate into 6 super lots rather than the proposed 47 lots for employment usage. **Figure 3.1** shows the most recent 6 lot subdivision. Finally, a GHD traffic report was produced in November 2009 to support the Stage 1 Infrastructure Package.

3.2 *Proposed Roads*

The GHD traffic report stated that the Huntingwood west site would be primarily accessed by 2 intersections.

- A 4-way signalised intersection at the proposed access point off the Great Western Highway. The intersection has been approved to provide vehicular access for both the Bungarribee Industrial Estate and the proposed Bungarribee Precinct Parklands development north of the Great Western Highway. The proposed signalised intersection will be designed to permit all turning movements at the intersection.
- A second new vehicular access via a fourth leg off the existing Brabham Drive/Huntingwood Drive roundabout.

The report also notes that the other intersection which will experience significant increases in traffic – that is the Great Western Highway/Doonside Road/Brabham Drive intersection – is overcapacity (i.e. it is operating with LoS E and C during the AM and PM peak periods respectively).

SUBDIVISION PLAN OF 6 LOTS

PROPOSED BUNGARRIBEE INDUSTRIAL ESTATE-METCASH DISTRIBUTION CENTRE



The RTA has investigated options to improve the performance of the Great Western Highway/Doonside Road/Brabham Drive intersection. Local major developers have been and are being required to make a monetary contribution (*i.e. \$75,500 per developable hectare*) towards these required improvements or carry out part of the required improvements as works-in-kind, in-lieu of regional developer contributions.

The GHD report stated that “following discussion with the RTA, the Authority has agreed in-principle that part of the regional contribution from the Bungarribee Industrial Estate could be used to carry out work-in-kind on the section of the Great Western Highway. The two potential works-in-kind projects identified are:

- A third eastbound lane along the Great Western Highway, as a continuation of the third lane at the Great Western Highway/Brabham Drive intersection, to 100 metres west of the new signalised intersection into the development site.
- Construction of a second right turn bay for right turn movements from the Great Western Highway into Doonside Road.

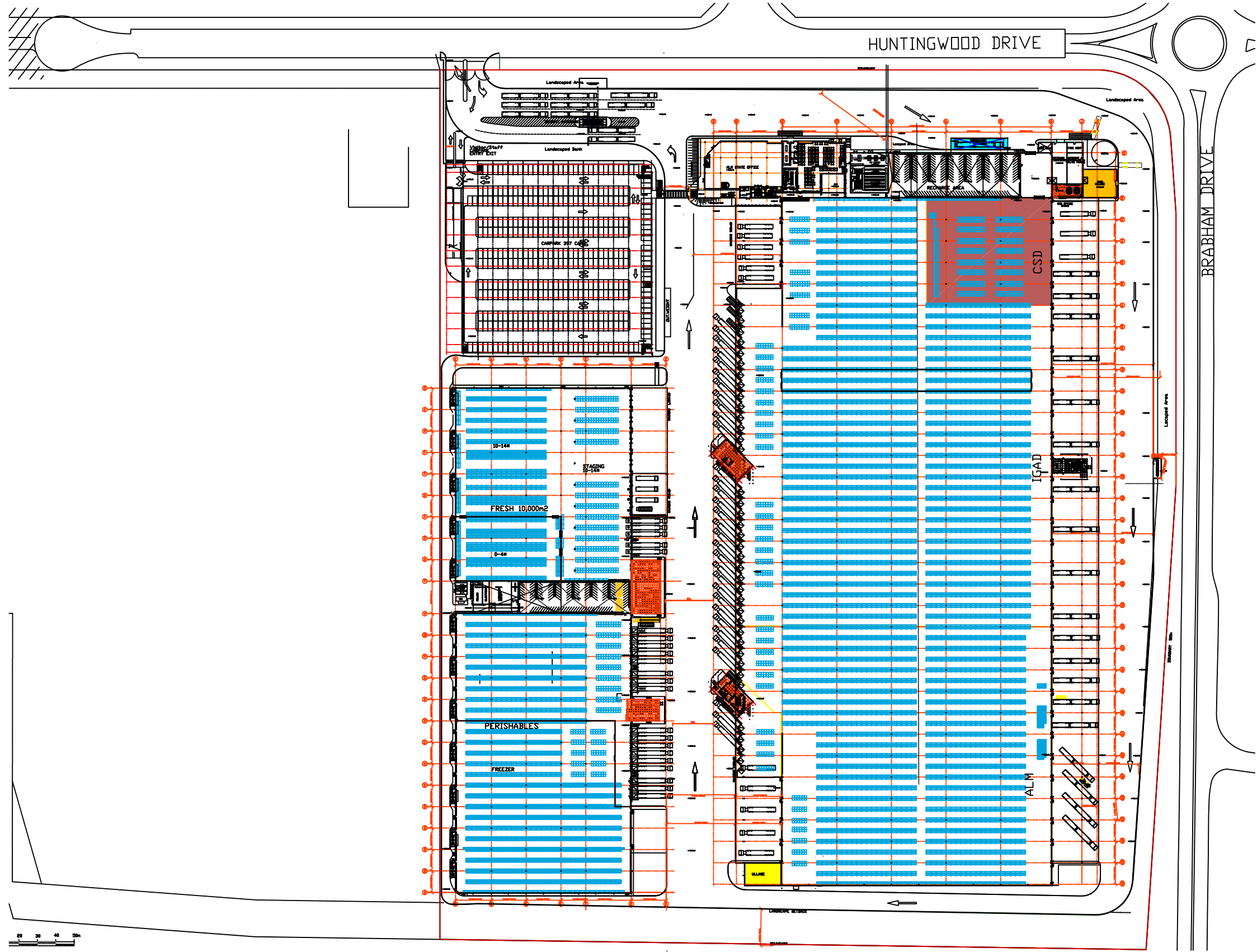
3.3 Metcash Proposal

Metcash is a company that deals with distributing food and other consumer goods. The Metcash Distribution Centre covers an area of 187,907m² within the Huntingwood West Estate. When compared to the original 6 lot plan, Metcash will cover the whole of Lot 3 and also a portion of Lot 2. This site will be primarily used as a distribution centre with associated offices. The proposed layout is shown at **Figure 3.2**

It is proposed to consolidate four existing facilities into a single site which should minimise travel for the company in a holistic way.

PROPOSED METCASH LAYOUT

METCASH DISTRIBUTION CENTRE



Scale: NTS



Filename: CTRLRCda07

Figure 3.2

Date: 08 September 2010

4 Traffic Impact

4.1 *Traffic Generation of Masterplan*

The intersection traffic models contained within the 2009 GHD report show that the volumes of traffic that would be generated by the whole site and the distribution of this traffic onto the road network. This is shown in **Figure 4.1**. The figure shows that the estimated development traffic totals 881 of which 331 were expected to use Huntingwood Drive access into the site.

The SIDRA program used in their analysis usually allows an extra 5% traffic in the model to model the “peak within the peak”. Assuming this to be the case, the actual development traffic generation will therefore be 837 of which **314** leaves via Huntingwood Drive.

This 837 figure accords with the 840 contained with the Maunsell TMAP dated 2006 but is slightly higher than the development traffic estimate of 813 in the AM peak set out in the traffic report.

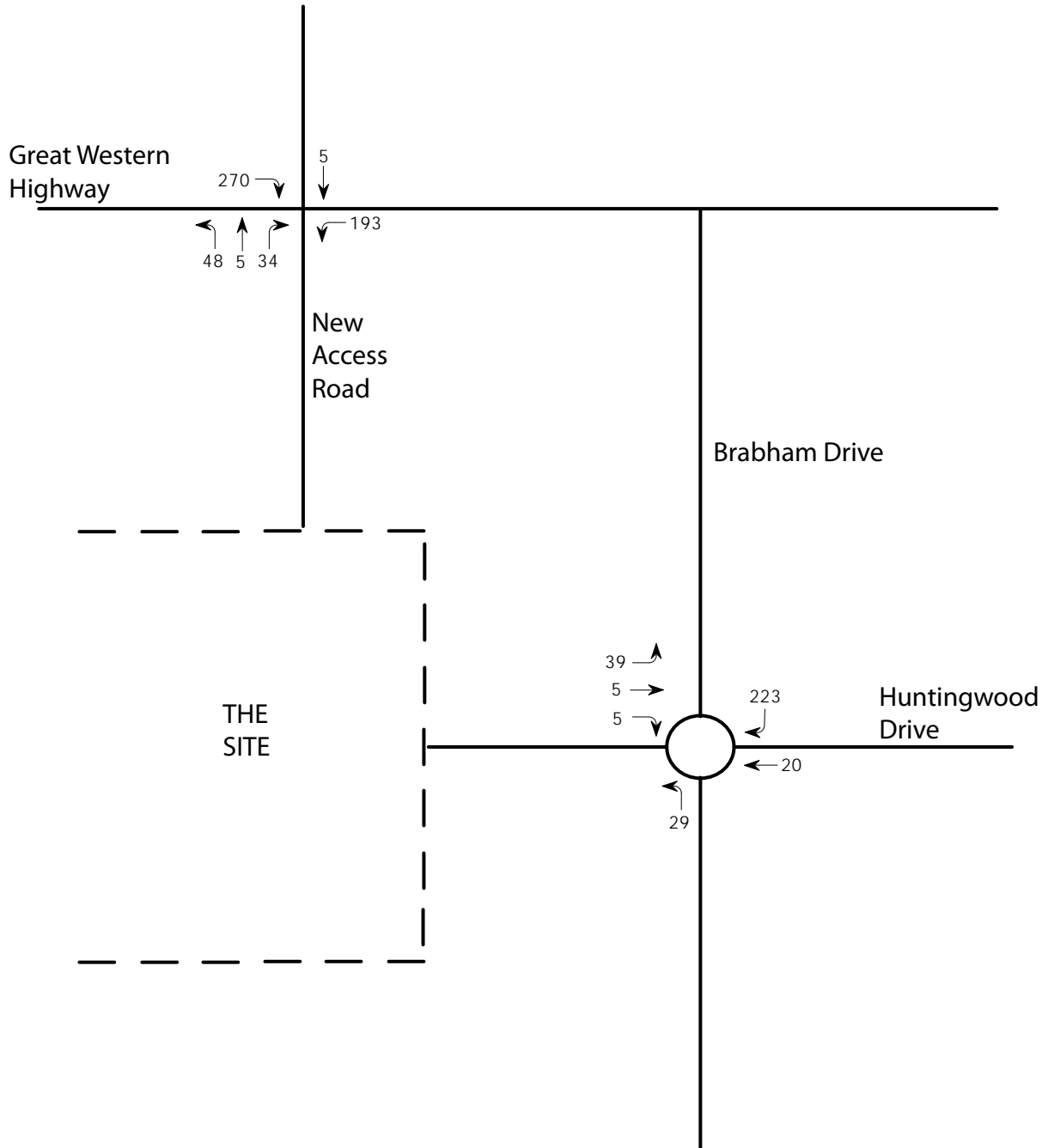
Furthermore, the current Metcash proposal of 187,907m² has a site area which represents some 37.7% of the total masterplan area of 498,599m². On a simple pro-rata basis, the Metcash site could be expected to generate around **306** of the 813 AM peak hour trips anticipated from the whole site.

4.2 *Traffic Generation of Subject Site*

The proposed Metcash site has particular traffic generation characteristics so to ensure an accurate representation of the likely traffic conditions, a traffic count was organised at their Crestmead site at Logan near Brisbane which has many similar characteristics - see **Figure 4.2**. The layout and operation of this site was used as the basis of the Huntingwood site.

ESTIMATED TRAFFIC DISTRIBUTION FROM HUNTINGWOOD WEST ESTATE

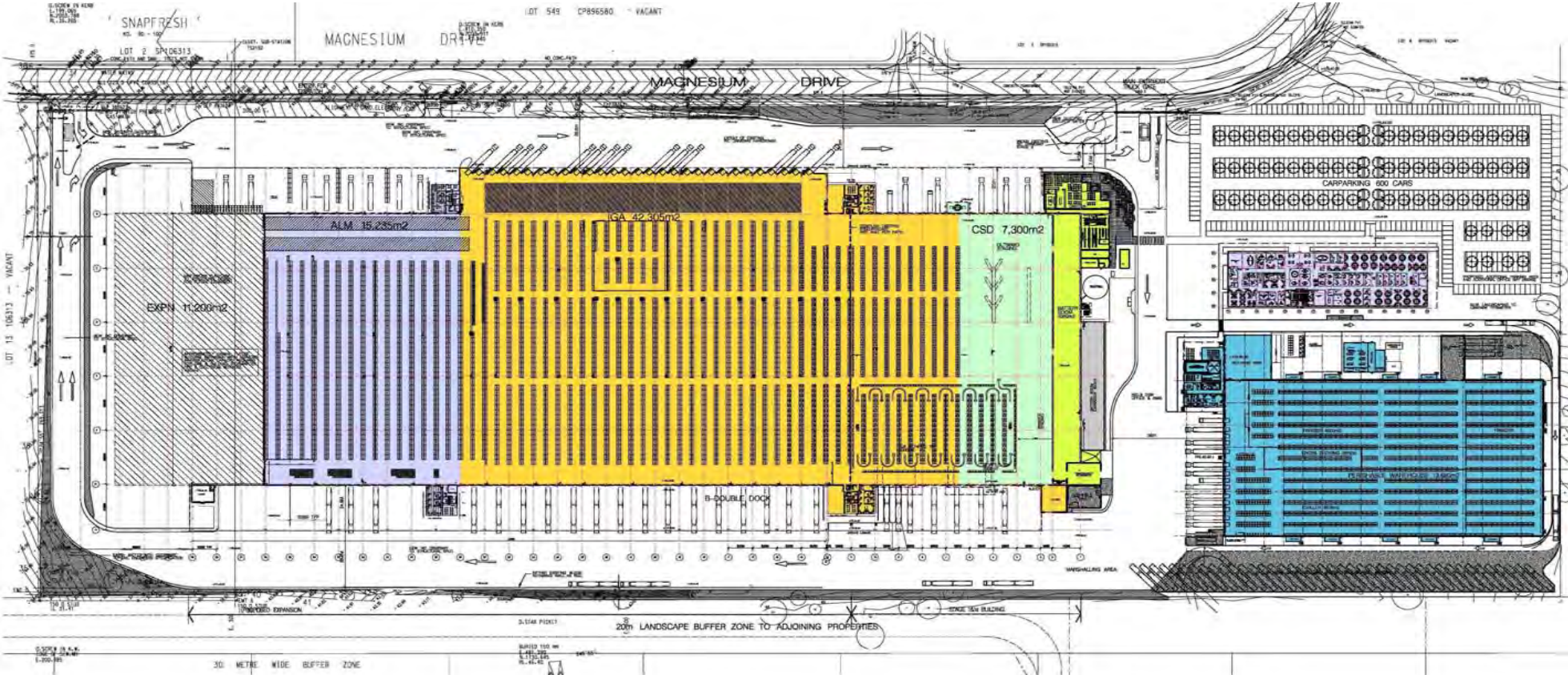
PROPOSED BUNGARRIBEE INDUSTRIAL ESTATE-METCASH DISTRIBUTION CENTRE



AM PEAK
2016

CRESTMead SITE LAYOUT

PROPOSED BUNGARRIBEE INDUSTRIAL ESTATE-METCASH DISTRIBUTION CENTRE



TOTAL SITE AREA LOTS 7-11 : nom 183,360 m² 18,336Ha (lot 12 -22.6Ha)
 TOTAL BUILDINGS AREA : nom 93,414 m²

OFFICE BUILDING
 ALM OFFICE AREA : 600 m²
 IGA OFFICE AREA : 2000 m²
 COMMS AMEN : 300 m²
 TOTAL : 2900 m²

ALM
 WAREHOUSE AREA : 15,530 m²
 OFFICE AREA : 490m²
 PLANT : 150m²
 TOTAL : 17,170 m²

SERVICE & AMENITIES
 BATTERY RECHARGE: 2910 m²
 PLANT : 215 m²
 COMMS /AMB: 100 m²
 CANTEN/KITCHEN: 500 m²
 AMENITIES: 200 m²
 TOTAL AREA : 3975 m²

PERISHABLE AREAS
 WAREHOUSE AREA : 13,850 m²
 OFFICE AREA : 263 m²
 AMENITIES : 316 m²
 SERVICES & PLANT : 1,325 m²
 TOTAL : 15,850 m²

IGA WAREHOUSE
 WAREHOUSE AREA : 45,680 m²
 OFFICE AREA : 1,476 m²
 TOTAL : 46,566 m²

CSD WAREHOUSE
 WAREHOUSE AREA : 7,257 m²
 OFFICE AREA : 86 m²
 ULLAGE : 190 m²
 TOTAL : 7,533 m²

Figure 4.2

4.2.1 Crestmead Site

The Crestmead site has 3 operational accesses:

- Car park access for staff (*Gate 3 in the traffic count*)
- Truck access / egress (*Gate 1 in the traffic count*)
- Truck egress only (*Gate 2 in the traffic count*)



Another access which appears to be located mid way between gates 1 and 2 is actually permanently gated.

The Crestmead site has a total buildings area (GFA) of 93,984m². This comprises:-

- 87,109 m² warehouse
- 2,900 m² office
- 3,975 m² amenities
- 600 car parking spaces (assumed to be 215 staff and 385 warehouse)*

*based upon pro rata of staff / warehouse workers

The site employs around 660 warehouse workers and 370 staff.

The site currently operates 3 warehouse shifts and the summary below summarises the percentage of staff working in each shift:

- 5am-2pm 40%
- 8:30am – 6pm 42%
- 2pm-11pm 18%

All staff work from 8:30am to 6pm.

4.2.2 *Proposed Huntingwood site*

The proposed site has a GFA of 103,087m². This site comprises:

- 91,067m² warehouse
- 12,020m² office
- 4,168m² amenities (included within office & warehouse figures)
- 790 parking spaces (assumed 407 staff / 383 warehouse)*

*based upon pro rata of staff / warehouse workers

The site should employ around 675 warehouse workers and 720 staff.

4.2.3 *Comparison of sites*

The warehouse and amenities areas on both sites are broadly the same. The major differences are:

- The increase in office area by 9,120m²
- Additional number of staff – that is 350
- Increase in car parking spaces by 190.
- Increase in warehousing of 3,958 m²

Traffic Count at Crestmead Site

A traffic count at the site was undertaken by SKY HIGH traffic on Tuesday 27th July 2010. Traffic counters were located at each of the 3 accesses over the period 0700-1900 on Tuesday 27th July 2010. In addition, the car park utilisation was measured at the start and end of the day and by recording in and out traffic movements a detailed profile of car park use could be built up throughout the day. The traffic count is contained in **Appendix A**.

	East Car Park Access	Central Truck Entry/Exit	West Truck Exit	TOTAL
AM Peak	89	20	58	167
PM Peak	112	9	24	145

As stated above, the warehouse staff at the proposed site will only be 15 more than at the existing site but the number of office staff, and associated staff car parking spaces, provided primarily for this increase in office staff, will increase more significantly.

- Number of staff parking spaces at Huntingwood will be 88% greater
- Number of staff at Huntingwood will be 95% greater

The increase in warehouse area of 4.5% would only result in a small number of additional trips (i.e. probably in the order of 3 to 4 trips in the peak hour).

Consequently, in order to estimate the level of traffic at the proposed site, we have simply increased the office traffic by 100%.

At the existing Crestmead site,

- In the AM peak, all of the office staff should arrive (i.e. 370 staff) and those shift staff who work the 8:30am to 6PM shift (i.e. 42% of 660 – i.e. 277 staff) – therefore the office staff comprise 57% of car park use. Therefore of the 89 people using the staff car park in the AM peak, 51 will be staff. We will therefore increase the staff numbers by 100% (i.e. by another 51) to replicate the likely situation at Huntingwood.

- In the PM peak, office staff will leave as will those people who work the 8.30am to 6PM shift. Again office staff will comprise around 57% of people who will be using the car park. Therefore of the 112 people using the staff car park, 64 will be staff. We will therefore increase the staff numbers by 100% (i.e. by another 64) to replicate the likely situation at Huntingwood.

Table 4.2 - Estimated Traffic from Proposed Huntingwood West Estate

	Trucks	Car Park	TOTAL
AM Peak	78	140	218
PM Peak	33	176	209

Even allowing for a handful of trips resulting from the increase in additional warehousing trips, it is clear that the estimated traffic from the proposed site is significantly less than the 306 or 314 thresholds described in Section 4.1.

It can therefore be concluded that:

- The volume of traffic generated by the proposed Metcash site which will use the Huntingwood Drive roundabout is below the volume anticipated by the approved masterplan traffic impact assessment
- The roundabout, which was modelled in the GHD report with the higher figures and operated with a Level of Service A. The capacity of the roundabout will not therefore be an issue and has not therefore been modelled.

4.3 Construction Traffic Volumes

The volume of traffic likely to be generated by the proposed site will be examined in detail in a Construction Traffic Management Plan which is likely to be a condition of any development approval.

5 Proposed Car Parking Levels

Based upon the warehouse/office development proposed, the Blacktown Council Development Control Plan (DCP) specifies the following requirements:

- Warehouse - 1 space per 200 m²
- Commercial/Office – 1 space per 40 m²

Appendix B shows Blacktown Councils Development Control Plan (2006), stating the car parking requirements for Huntingwood Industrial Estate.

The Warehouse area for Metcash Huntingwood development is 91,067 m² and the area for offices is 12,020 m². From these areas, we can obtain the Blacktown Council parking space requirements for this development, which is shown below:

- Warehouse – 456 spaces
- Offices – 301 spaces

The sum of these spaces is 757 in total for the Metcash development.

It can be seen therefore that the proposed 790 spaces is slightly more than the 757 spaces required by the Blacktown Council DCP.

It is considered therefore that the proposed 790 parking spaces will be adequate.

6 Access and Internal Circulation

6.1 Access

All vehicles will access the site via Huntingwood Drive, west of Brabham Drive.

The proposed access to the Metcash site has changed since the approval of the Stage 1 project. Figure 3.1 of this report shows that access into Lot 3 was to be provided directly opposite the access into Lots 4 – 6 and the intersection was proposed in the form of a roundabout.

However, as the Metcash site covers both Lot 3 and some of the Lot 2, the building configuration is such that the access is proposed at the western end of the Metcash site. Consequently, as the accesses are not opposite each other, a roundabout is not required and priority intersections serving each of the site areas are considered adequate.

Light vehicles including staff, visitor and taxis would only use the car park access located just south of the Huntingwood Drive access and would not circulate around the site to avoid potential conflict with the truck manoeuvring. It is proposed to provide signposts to direct all visitors and taxis to the upper level of the car park which would allow them to cross the footbridge to enter the office building.

All trucks would circulate clockwise around the site to access the loading areas. The sizes of trucks likely to access the site are as follows:

- 19m semi-trailers;
- 26m B-Double trucks; and
- 12.4m “aerial” NSW fire truck.

It is also proposed to construct the entire length of Huntingwood Drive under the Infrastructure Application and turning head at the western end of the development site would be built to service the truck turning requirement.

6.2 *Internal Circulation*

A number of swept paths manoeuvres have been undertaken to demonstrate that the layout will suitably accommodate the type of vehicles likely to use the site. The following figures are included in **Appendix C**.

Figure 1 - Semi Trailer accessing the 90 degree spaces along the main access road

Figure 2 – Semi Trailer accessing angled bays along the main access road

Figure 3 - B-Double truck negotiating a right turn at the north of the access road

Figure 4 - B-Double truck entering the vehicle wash area

Figure 5 - B-Double truck leaving the truck wash area

Figure 6 - ‘Aerial’ NSW fire engine traversing the road behind the western building

Figure 7 - ‘Aerial’ NSW fire engine traversing the road behind the western building at larger scale (there is a minor conflict here between the fire engine and the air conditioning but this can be resolved at detailed design stage).

Figure 10 – ‘Aerial’ Fire truck manoeuvring to the sprinkler positions

Figure 11 – B Double passing the parked fire trucks from Figure 10.

Plans contained at **Appendix D** show how the Stage 1 development will be served when only certain of the access roads are provided. At this stage of construction, the main access road separating the two main warehouse buildings will operate as a two way road and will necessitate the provision of temporary turning heads at the end of the road.

Figure 8 – Semi Trailer accessing the 90 degree spaces along the main access road

Figure 9 – Provision of turning head to facilitate semi trailer entering angled spaces

7 Non Car Based Modes of Transport

7.1 *Estate Works*

The proposed estate works include a number of specific measures to promote cycling and walking. This includes

- Provision of a pedestrian cycleway along the full extent of the western boundary
- Provision of a pedestrian / cycleway along the full length of the central estate road on the southern side.
- Provision of a pedestrian / cycleway linkage into the site as far as the bike racks.

7.2 *Walking*

The approved traffic report also suggested that as part of the proposed new signalised intersection on the Great Western Highway, that a shared pedestrian and cycle path be constructed along the northern side of the Highway as part of the regional contribution works.

As the proposed traffic signal is not proposed as part of the Metcash site, it is not proposed that this shared use footpath be provided at this stage.

7.3 *Cycles*

There is easy access to cycle routes in the vicinity of the proposed site that provides a connection to the surrounding local area. An existing cycle way is located along the M4 Motorway, which borders the site to the south. There are also proposed cycle ways that have been planned for the West Link M7 and also for Prospect Highway.

The cycle ways along these key main roads will allow safe and easy access to the site for cyclists. Adequate provision for cyclists will be provided on the Metcash site.

Blacktown Council's DCP encourages developments to provide for cyclists:-

- To ensure opportunities for cycling to work are realised by encouraging the provision of bicycle parking areas and associated facilities within the workplace
- Council wishes to encourage the use of bicycles as a means of transportation to the workplace. Applicants are encouraged to incorporate in the design of their buildings safe storage/parking areas for bicycles, with adequate showering and changing facilities for staff located in close proximity

The construction of the cycle paths proposed for the whole of the estate is not included as part of this application but would be constructed as part of the Infrastructure Packing/Application which has been lodged separately. The cycle paths/links proposed within the subject site boundary would be provided under this application.

The subject site is providing about 8 bicycle racks which could accommodate about 16 bicycle parking spaces. These would be located within the north-eastern corner of the car park and would be under the cover of the car park deck. It is also proposed facilities on site which will allow cyclist to change and shower.

7.4 Public Transport

The GHD report for the site details a short term public transport improvement. As the Metcash site is the first phase of development, it is proposed that this short term measure is implemented as part of the current scheme.

This involves the provision of a bus stop for the existing 724 bus service. This service operates with a 30 minute service frequency from Blacktown Rail station near the Brabham Drive/Huntingwood Drive roundabout. The provision of this stop would serve the proposed development.

8 Workplace Travel Plan

The key aim of a Workplace Travel Plan for a development site is to discourage use of the private car and to encourage greater use of more sustainable modes such as walking, cycling and public transport.

The Huntingwood West TMAP prepared as part of the Part 3A concept plan outlined a package of measures to reduce traffic growth and to help achieve a target 10% increase in the public transport use to/from the development site. The package of measures included a Workplace Transport Plan which would propose measures to reduce car travel.

Car sharing is encouraged where it is unlikely that sustainable modes will be attractive. It will enable all employees and visitors to have a greater choice and flexibility in how they travel to the site each day and how they travel during the day.

As the site will be occupied by more than one company, individual employers can develop in-house measures (in particular marketing, and travel reduction) and facilities such as cycle parking and showers specific to their operation.

As Metcash are proposing the first site occupation, the framework for Workplace travel plan needs to be set out. This will involve:

- An appointment of a travel plan co-ordinator – this will not be a full time position but will become a responsibility for a designated member of staff
- Provision of secure cycle parking and shower facilities in the development layout so that cycle users have the benefit of facilities from day one.
- Investigation into potential car pooling – this will not realistically be possible until the site is occupied and the whereabouts of staff and workers is fully understood.
- Provision of a Transport access guide which shows all of the available means of transport which can be used to reach the site.
- Investigation into discounts / interest free loans to cyclists to purchase cycle
- Investigation into provision of discounted public transport tickets

As not all of the initiatives can be implemented prior to the occupation of the office, it is proposed that 2 additional milestones are set:

- Within three months of the first occupation of site, a travel survey should be conducted. The results of the travel survey will be analysed and used to determine if measures are required to cater for existing demand and also encourage modal shift away from the private car. The measures will be dependent on the needs of the employees, that is, their journey to work.
- Within six months of occupation the full travel plan must be developed and include;
 - o Results of the Staff Travel Survey;
 - o Recommended travel plan measures including how they will be adopted;
 - o Agreed procedure and timescales for implementation; and
 - o Details of future TP monitoring and review.

Full implementation will then proceed. It is expected that the key to travel behaviour change, and therefore a decrease in vehicle trips, for the Huntingwood West site would be to initiate a car sharing scheme. In addition, the excellent cycle path network in the vicinity of the site should be promoted.

9 Summary & Conclusions

A traffic and transport report has been prepared for the Metcash site. This report confirms that

- The traffic likely to be generated by the site in the AM and PM peak will be lower than that which was anticipated in the GHD Traffic Report or the Maunsell TMAP.
- All of the traffic from the site will join the road network at the Huntingwood Drive roundabout whether a fourth arm will be created to access the site
- This roundabout has sufficient capacity to accommodate the volume of peak hour traffic expected from the development.
- The development will pay its contribution towards the improvement works towards the Great Western Highway/Doonside Road/Brabham Drive intersection improvements
- The new access onto Great Western Highway will NOT be provided as part of this development
- A new bus stop will be provided to accommodate the existing 724 bus service. The exact location of the stop will be agreed with the bus company.
- Cycling will be encouraged by the provision of cycle parking. Cyclists will also have access to changing and showering facilities that are provided at the site

In summary, the proposed Metcash development will, in traffic terms, be acceptable.

Appendix A Traffic Count of Crestmead Site

Client : Halcrow
 Location : Metcash (Logan)
 Date : Tue 27th July 2010
 Cars parked at Start = 290

Time Period	Gate 1						Gate 2						Gate 3						All Gates						Accumulation	
	In			Out			In			Out			In			Out			In			Out				
	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total		Car
7:00 to 7:15	2	9	11	2	2	4	0	1	1	0	2	2	16	0	16	5	0	5	18	10	28	7	4	11	307	
7:15 to 7:30	0	7	7	0	6	6	1	4	5	0	3	3	14	0	14	3	0	3	15	11	26	3	9	12	321	
7:30 to 7:45	1	5	6	1	8	9	0	3	3	0	2	2	15	0	15	0	0	0	16	8	24	1	10	11	334	
7:45 to 8:00	0	8	8	0	4	4	1	1	2	0	2	2	23	0	23	2	0	2	24	9	33	2	6	8	359	
8:00 to 8:15	1	6	7	1	8	9	0	3	3	0	2	2	20	0	20	2	0	2	21	9	30	3	10	13	376	
8:15 to 8:30	0	7	7	0	10	10	0	2	2	0	5	5	28	0	28	2	0	2	28	9	37	2	15	17	396	
8:30 to 8:45	1	7	8	0	4	4	0	1	1	0	0	0	18	0	18	2	0	2	19	8	27	2	4	6	417	
8:45 to 9:00	1	6	7	2	4	6	1	4	5	0	2	2	15	0	15	2	0	2	17	10	27	4	6	10	434	
9:00 to 9:15	0	3	3	0	3	3	1	3	4	0	4	4	4	0	4	3	0	3	5	6	11	3	7	10	435	
9:15 to 9:30	0	5	5	0	1	1	0	7	7	0	3	3	2	0	2	3	0	3	2	12	14	3	4	7	442	
9:30 to 9:45	1	6	7	0	4	4	0	5	5	0	3	3	5	0	5	1	0	1	6	11	17	1	7	8	451	
9:45 to 10:00	1	2	3	2	8	10	0	1	1	0	1	1	6	0	6	5	0	5	7	3	10	7	9	16	445	
10:00 to 10:15	1	3	4	2	9	11	0	5	5	0	2	2	7	0	7	4	0	4	8	8	16	6	11	17	444	
10:15 to 10:30	1	6	7	1	3	4	0	3	3	0	2	2	1	0	1	2	0	2	2	9	11	3	5	8	447	
10:30 to 10:45	0	5	5	1	4	5	0	5	5	0	6	6	5	0	5	13	0	13	5	10	15	14	10	24	438	
10:45 to 11:00	2	6	8	2	4	6	4	3	7	0	1	1	4	0	4	1	0	1	10	9	19	3	5	8	449	
11:00 to 11:15	0	2	2	1	4	5	0	5	5	0	4	4	3	0	3	5	0	5	3	7	10	6	8	14	445	
11:15 to 11:30	0	2	2	2	7	9	0	0	0	0	3	3	1	0	1	4	0	4	1	2	3	6	10	16	432	
11:30 to 11:45	1	5	6	1	6	7	0	3	3	0	2	2	2	0	2	4	0	4	3	8	11	5	8	13	430	
11:45 to 12:00	0	3	3	0	6	6	0	4	4	0	3	3	5	0	5	3	0	3	5	7	12	3	9	12	430	
12:00 to 12:15	1	2	3	1	8	9	1	5	6	0	3	3	5	0	5	7	0	7	7	7	14	8	11	19	425	
12:15 to 12:30	0	6	6	0	5	5	0	3	3	0	4	4	5	0	5	8	0	8	5	9	14	8	9	17	422	
12:30 to 12:45	1	3	4	1	3	4	0	0	0	0	4	4	3	0	3	7	0	7	4	3	7	8	7	15	414	
12:45 to 13:00	0	7	7	0	5	5	0	2	2	0	2	2	3	0	3	4	0	4	3	9	12	4	7	11	415	
13:00 to 13:15	0	3	3	0	4	4	1	4	5	0	2	2	6	0	6	7	0	7	7	7	14	7	6	13	416	
13:15 to 13:30	1	3	4	1	3	4	0	4	4	0	1	1	7	0	7	5	0	5	8	7	15	6	4	10	421	
13:30 to 13:45	1	2	3	3	1	4	0	7	7	0	3	3	18	0	18	20	0	20	19	9	28	23	4	27	422	
13:45 to 14:00	0	4	4	0	4	4	0	7	7	0	5	5	8	0	8	12	0	12	8	11	19	12	9	21	420	
14:00 to 14:15	1	3	4	1	5	6	0	4	4	0	1	1	1	0	1	77	0	77	2	7	9	78	6	84	345	
14:15 to 14:30	3	2	5	0	6	6	0	1	1	0	1	1	0	0	0	5	0	5	3	3	6	5	7	12	339	
14:30 to 14:45	1	3	4	1	3	4	0	6	6	0	2	2	1	0	1	31	0	31	2	9	11	32	5	37	313	
14:45 to 15:00	1	2	3	0	3	3	0	2	2	2	2	4	7	0	7	14	0	14	8	4	12	16	5	21	304	
15:00 to 15:15	2	1	3	3	1	4	0	6	6	0	1	1	2	0	2	37	0	37	4	7	11	40	2	42	273	
15:15 to 15:30	0	2	2	2	5	7	0	1	1	1	2	3	0	0	0	19	0	19	0	3	3	22	7	29	247	
15:30 to 15:45	0	3	3	0	9	9	0	4	4	0	2	2	0	0	0	15	0	15	0	7	7	15	11	26	228	
15:45 to 16:00	1	1	2	1	1	2	0	4	4	0	0	0	0	0	0	11	0	11	1	5	6	12	1	13	221	
16:00 to 16:15	3	0	3	4	2	6	0	2	2	0	1	1	1	0	1	33	0	33	4	2	6	37	3	40	187	
16:15 to 16:30	0	1	1	2	2	4	0	1	1	0	0	0	1	0	1	20	0	20	1	2	3	22	2	24	166	
16:30 to 16:45	0	1	1	1	5	6	0	1	1	0	1	1	5	0	5	29	0	29	5	2	7	30	6	36	137	
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17:00 to 17:15	0	2	2	0	2	2	0	1	1	0	0	0	3	0	3	26	0	26	3	3	6	26	2	28	102	
17:15 to 17:30	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	10	0	10	0	1	1	10	2	12	91	
17:30 to 17:45	0	2	2	2	3	5	0	0	0	0	0	0	0	0	0	6	0	6	0	2	2	8	3	11	82	
17:45 to 18:00	1	2	3	0	2	2	0	0	0	0	0	0	2	0	2	8	0	8	3	2	5	8	2	10	77	
18:00 to 18:15	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	2	2	6	0	6	73	
18:15 to 18:30	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	2	2	4	0	4	71	
18:30 to 18:45	0	3	3	1	5	6	0	0	0	0	0	0	0	0	0	0	0	0	3	3	1	5	6	6	68	
18:45 to 19:00	1	1	2	0	2	2	0	0	0	0	0	0	0	0	0	3	0	3	1	1	2	3	2	5	65	
Survey Total	31	168	199	42	198	240	10	131	141	3	89	92	276	0	276	509	0	509	317	299	616	554	287	841		

Time Period	Gate 1						Gate 2						Gate 3						All Gates							
	In			Out			In			Out			In			Out			In			Out				
	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck	Total	Car	Truck
7:00 to 8:00	3	29	32	3	20	23	2	9	11	0	9	9	68	0	68	10	0	10	73	38	111	13	29	42		
8:00 to 9:00	3	26	29	3	26	29	1	10	11	0	9	9	81	0	81	8	0	8	85	36	121	11	35	46		
9:00 to 10:00	2	16	18	2	16	18	1	16	17	0	11	11	17	0	17	12	0	12	20	32	52	14	27	41		
10:00 to 11:00	4	20	24	6	20	26	4	16	20	0	11	11	17	0	17	20	0	20	25	36	61	26	31	57		
11:00 to 12:00	1	12	13	4	23	27	0	12	12	0	12	12	11	0	11	16	0	16	12	24	36	20	35	55		
12:00 to 13:00	2	18	20	2	21	23	1	10	11	0	13	13	16	0	16	26	0	26	19	28	47	28	34	62		
13:00 to 14:00	2	12	14	4	12	16	1	22	23	0	11	11	39	0	39	44	0	44	42	34	76	48	23	71		
14:00 to 15:00	6	10	16	2	17	19	0	13	13	2	6	8	9	0	9	127	0	127	15	23	38	131	23	154		
15:00 to 16:00	3	7	10	6	16	22	0	15	15	1	5	6	2	0	2	82	0	82	5	22	27	89	21	110		
16:00 to 17:00	3	3	6	7	11	18	0	7	7	0	2	2	11	0	11	101	0	101	14	10	24	108	13	121		
17:00 to 18:00	1	7	8	2	9	11	0	1	1	0	0	0	5	0	5	50	0	50	6	8	14	52	9	61		
18:00 to 19:00	1	8	9	1	7	8	0	0	0	0	0	0	0	0	0	13	0	13	1	8	9	14	7	21		
Survey Total	31	168	199	42	198	240	10	131	141	3	89	92	276	0	276	509	0	509	317	299	616	554	287	841		

Appendix B Car Parking Requirements

All parking areas and access roadways must be provided with a drainage system comprising surface inlet pits. Details of pipe sizes (with calculations) and drainage layouts (including discharge points) must be submitted for separate approval of Council.

3.9 Car Parking

3.9.1 Objectives

- (a) To ensure adequate provision is made for on-site car parking for employees' and visitors' vehicles;
- (b) To ensure car parking areas are attractive by requiring landscaping of all car parking areas;
- (c) To ensure traffic circulation arrangements within the site are compatible with the local road system by implementing appropriate controls on ingress/egress to sites; and
- (d) To ensure opportunities for cycling to work are realised by encouraging the provision of bicycle parking areas and associated facilities within the workplace.

Section 5 of Part A (Introduction and General Guidelines) of the DCP details the general principles and specific land use requirements for car parking within the City of Blacktown. Table 5.1 of section 5 (refer pages 20 to 22 of Part A) documents Council's car parking standards for specific types of development.

SPECIFIC LAND USE	CAR PARKING REQUIREMENTS
Factory, Warehouse and Bulk Storage	Buildings 7,500 sqm or less - 1 space per 75sqm GFA. Buildings greater than 7,500 sqm – GFA 1 space per 200 sqm GFA only for the area in excess of 7,500sqm where there is a specific end user which would not demand a higher rate and where employee parking is adequately catered for
Commercial/Office Component	1 space per 40 sq.m. GFA

**Table 3.2
Car Parking Requirements for Huntingwood Industrial Estate**

The car parking standards relevant to development within the 4(d) Huntingwood Industrial zone are reproduced below. However, reference should always be made to Council's complete guide to car parking standards and guidelines within section 5 of Part A, as Table 3.2 is only an extract from Part A.

Other land uses not specifically mentioned in Table 3.2 or in Part A will be determined on the merits of the particular application.

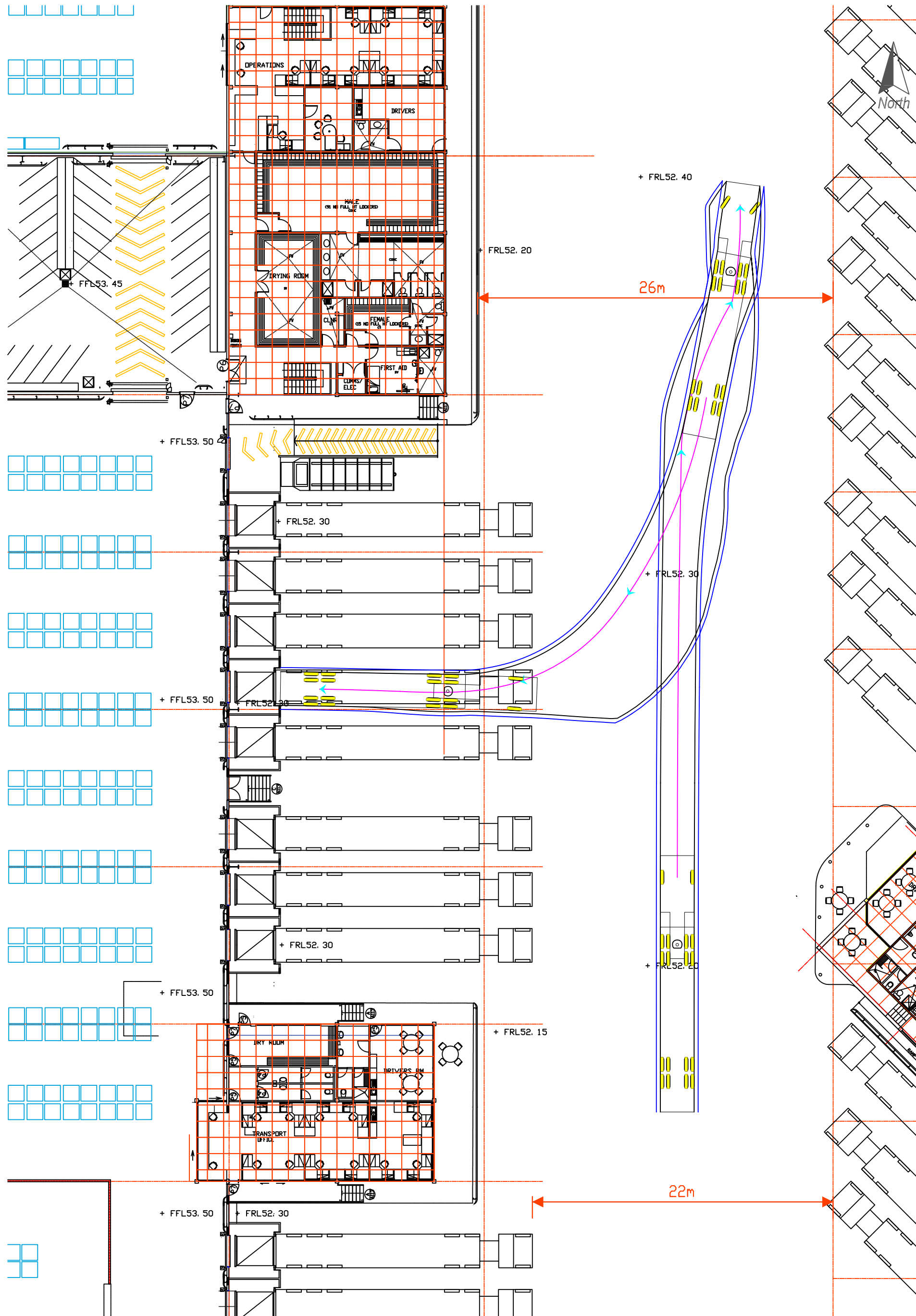
3

DESIGN
GUIDELINES

Appendix C Swept Paths for Final Layout

19m SEMI-TRAILER ACCESSING 90 DEGREE BAYS

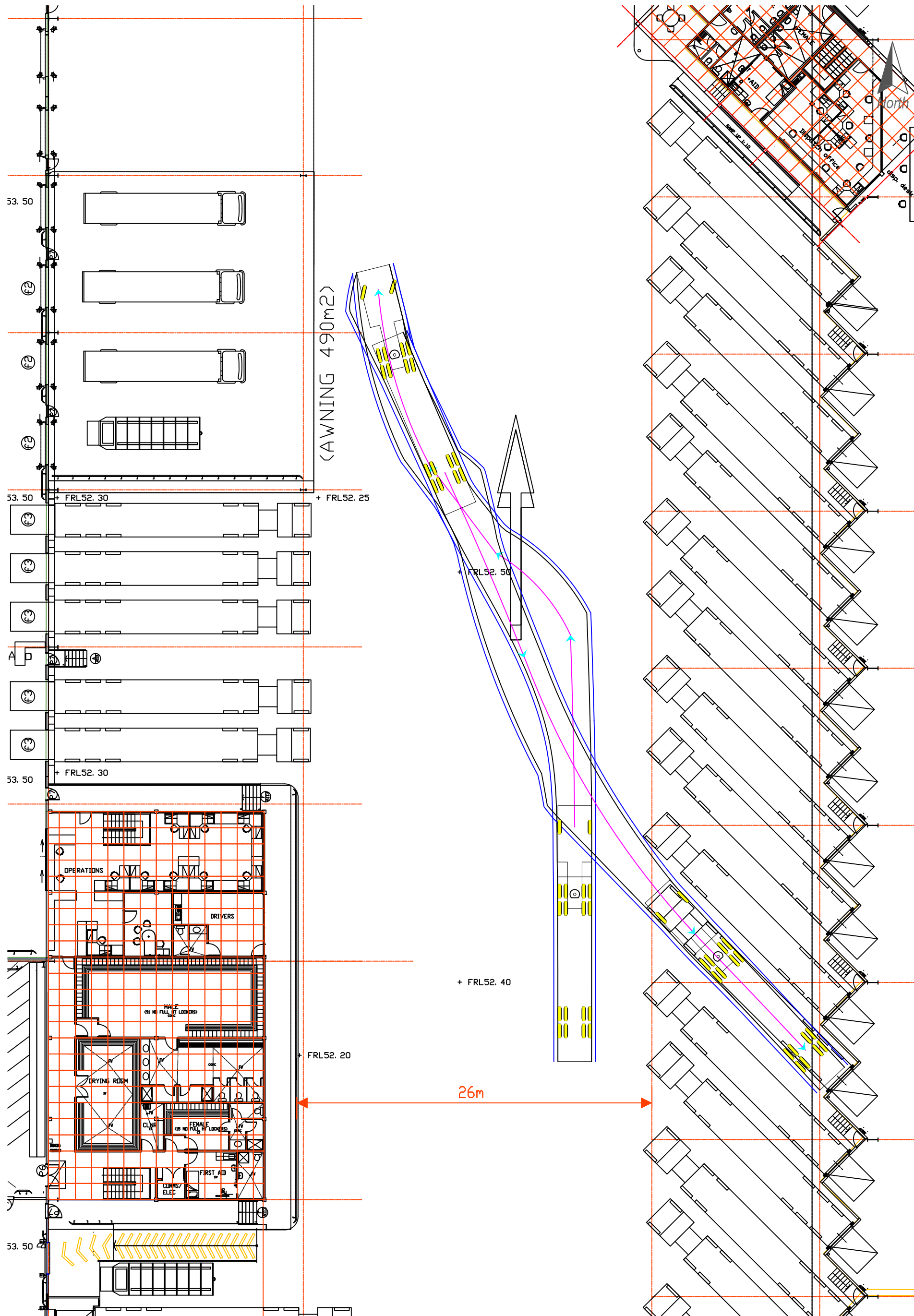
METCASH DISTRIBUTION CENTRE



Scale: 1:250@A3

19m SEMI-TRAILER ACCESSING ANGLED BAYS

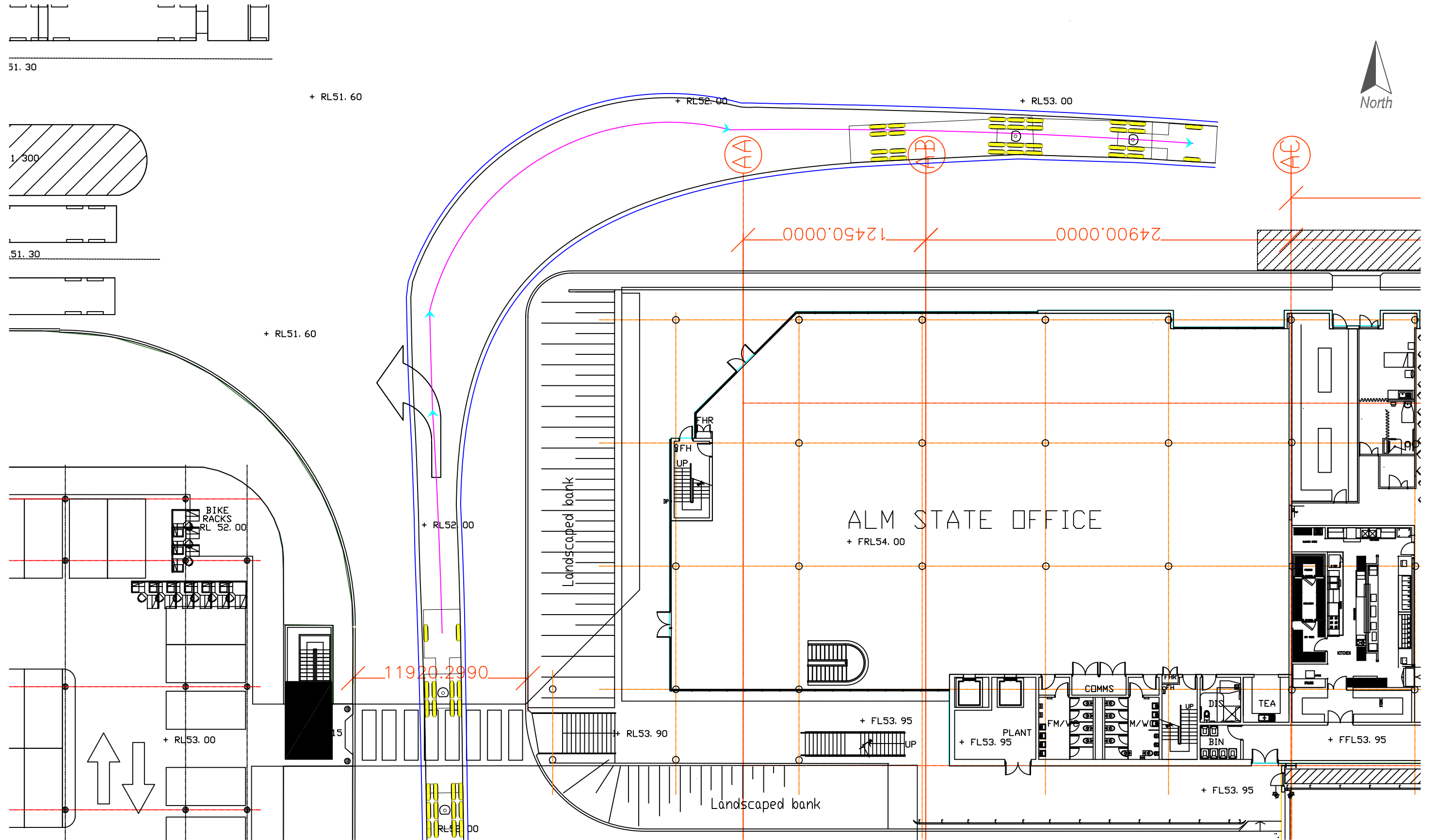
METCASH DISTRIBUTION CENTRE



Scale: 1:250@A3

26m B-DOUBLE RIGHT TURN ADJACENT TO OFFICE BUILDING

METCASH DISTRIBUTION CENTRE



Scale: 1:250@A3



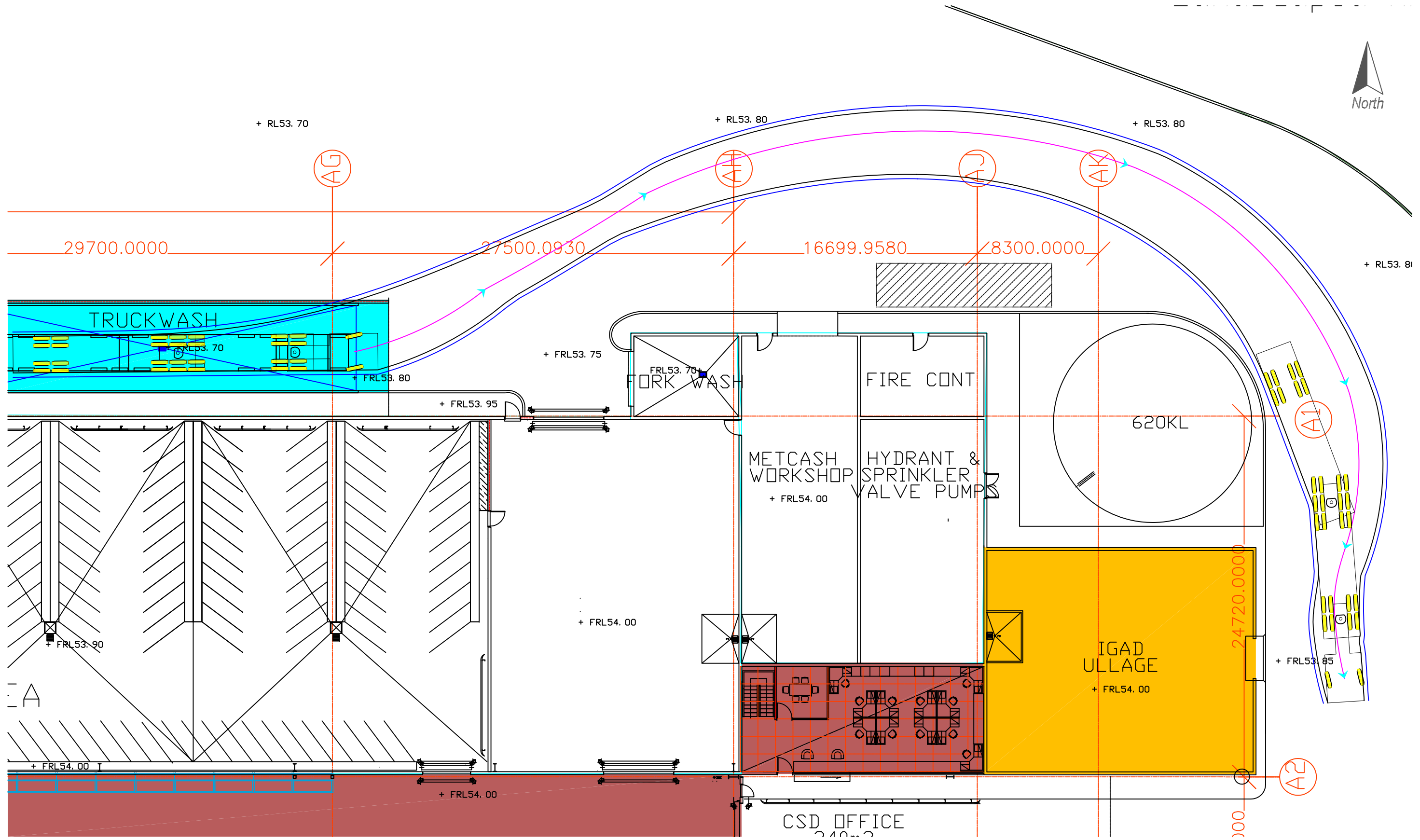
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Figure 3

Date: 08 September 2010

26m B-DOUBLE EXITING TRUCK WASH BAY

METCASH DISTRIBUTION CENTRE



Scale: 1:250@A3



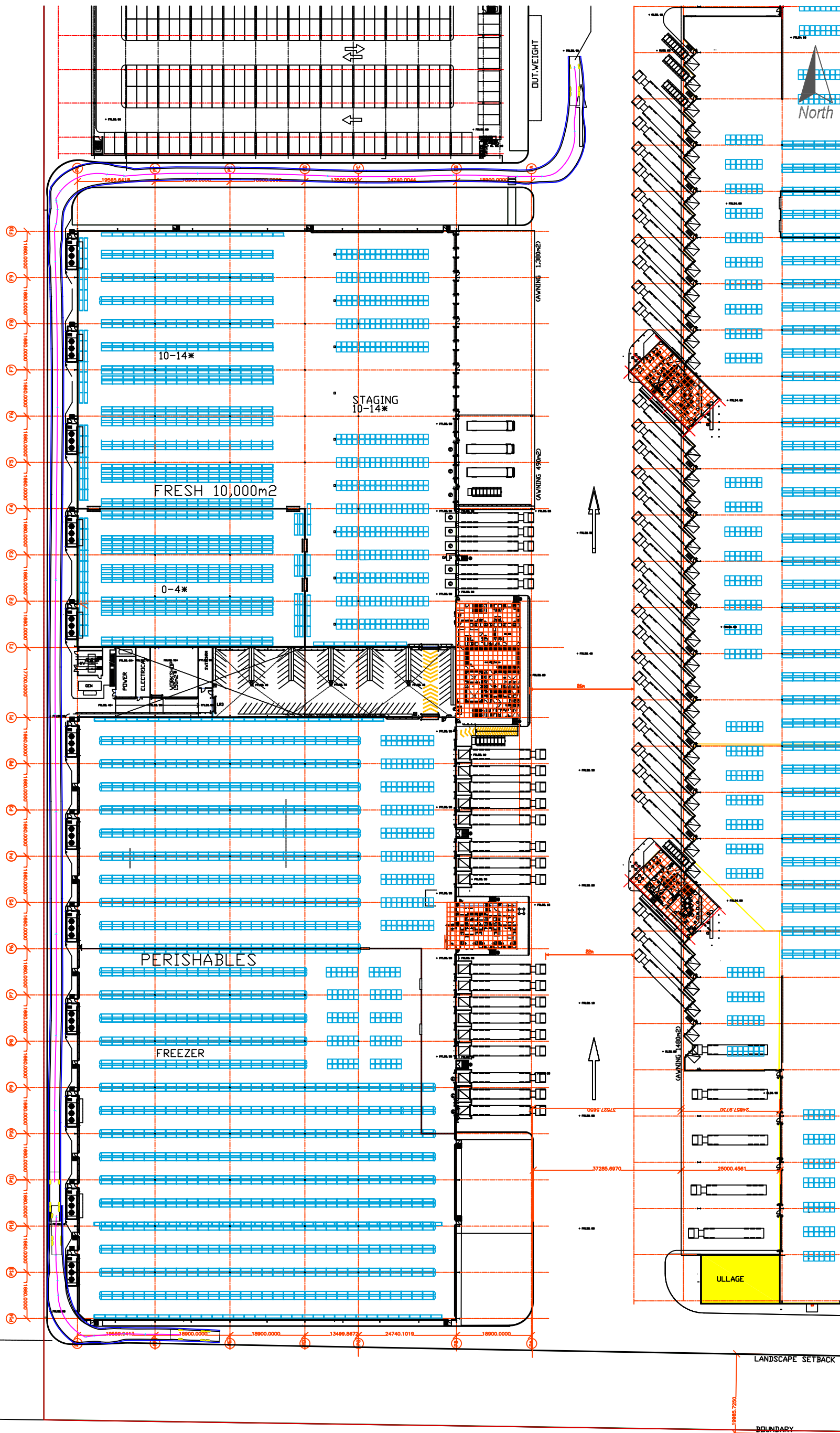
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Figure 5

Date: 08 September 2010

12.4m FIRE TRUCK (AERIAL) TURN PATH

METCASH DISTRIBUTION CENTRE



Scale: 1:1000@A3



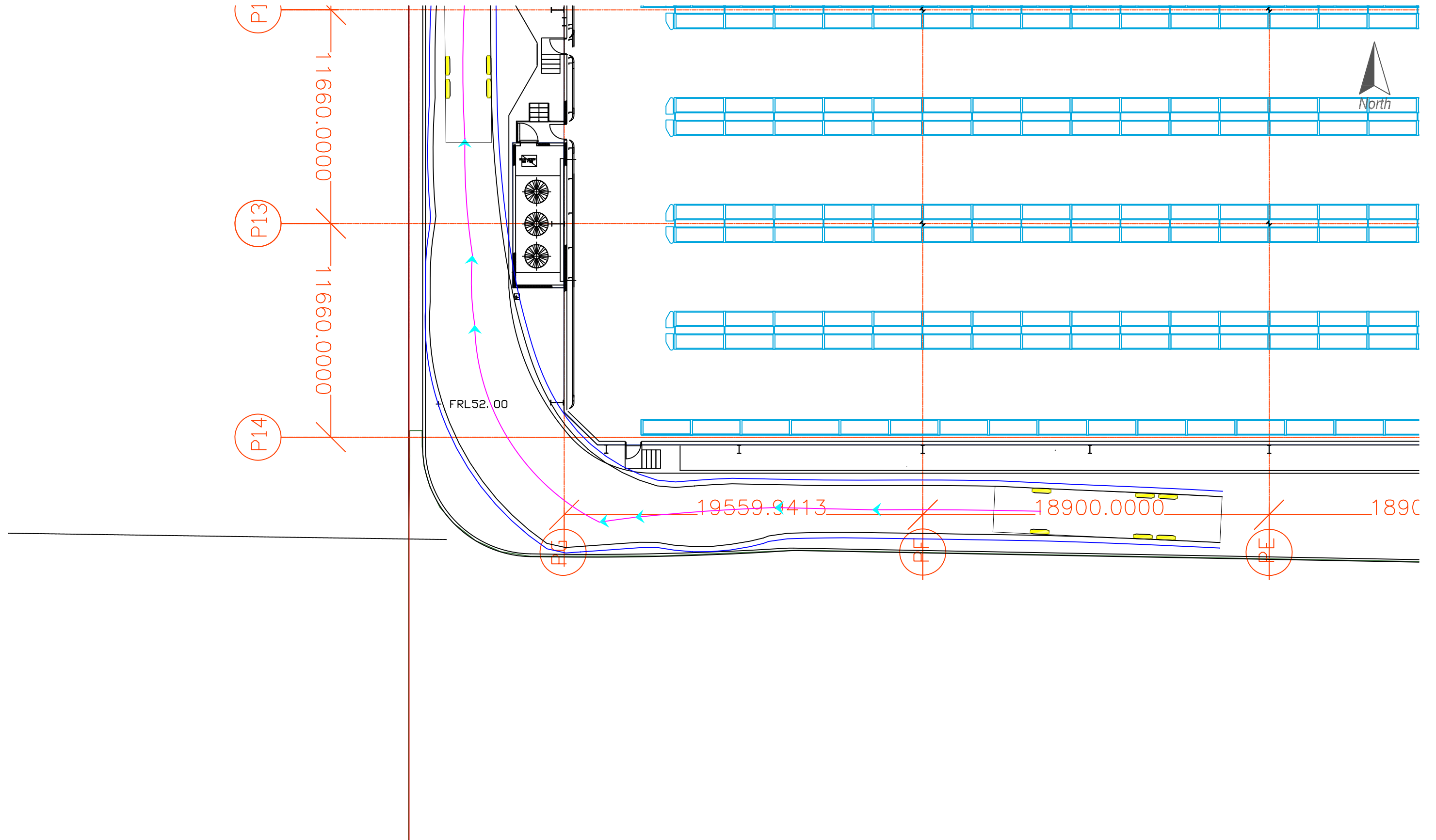
Filename: CTRLCda07

Figure 6

Date: 08 September 2010

12.4m FIRE TRUCK (AERIAL) TURN PATH

METCASH DISTRIBUTION CENTRE



Scale: 1:200@A3



Filename: CTRLRCda07

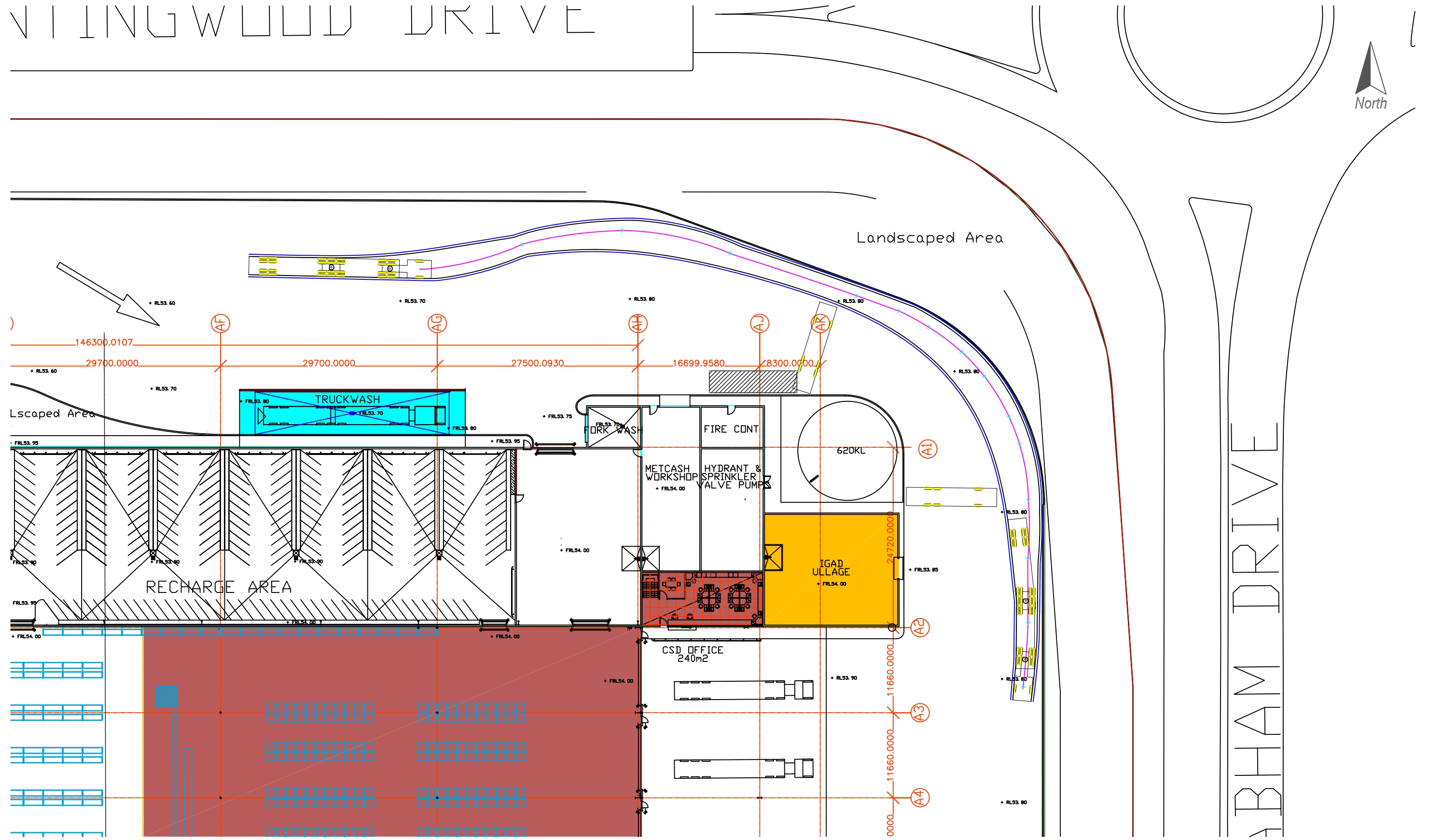
Figure 7

Date: 08 September 2010

26m B-DOUBLE TRUCK PASSING FIRE TRUCKS

METCASH DISTRIBUTION CENTRE

VINGWOOD DRIVE



Scale: 1:500@A3



Filename: CTRLRCda07

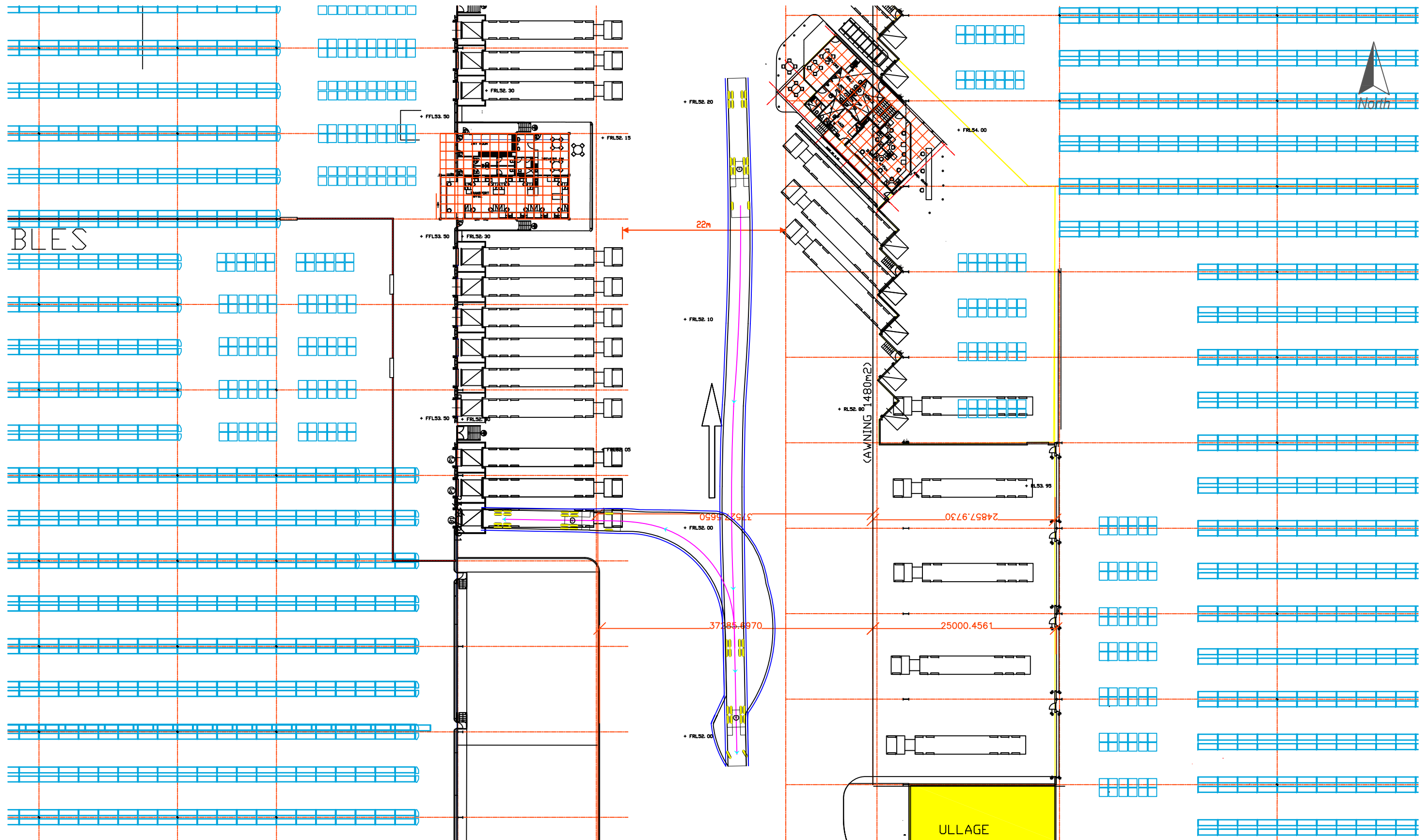
Figure 11

Date: 08 September 2010

Appendix D Swept Paths for Stage 1 Layout

19m AV TRUCK TURN PATH - 1

METCASH DISTRIBUTION CENTRE



Scale: 1:500@A3



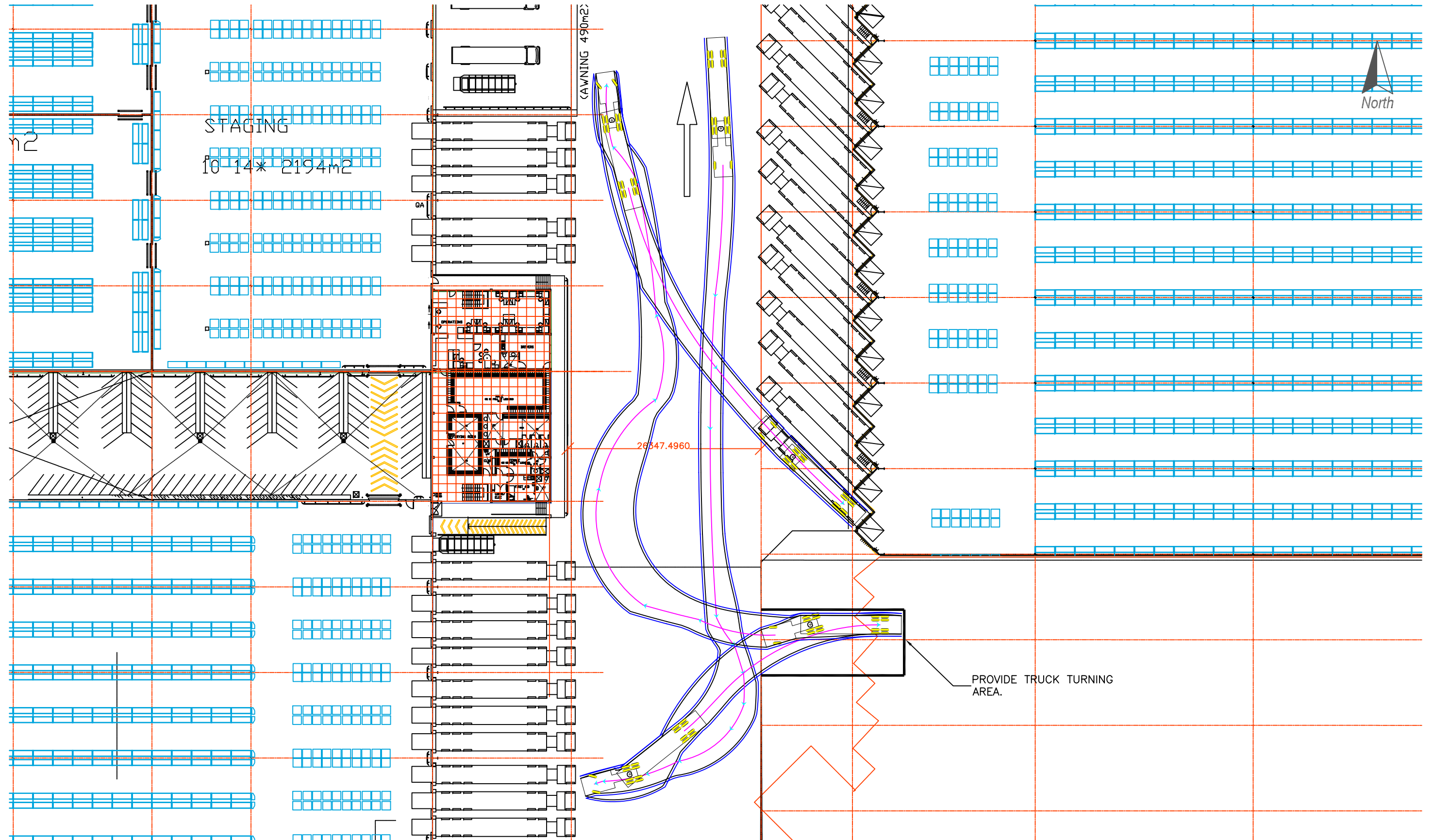
Filename: CTRLRCda07

Figure 8

Date: 08 September 2010

19m AV TRUCK TURN PATH - 2

METCASH DISTRIBUTION CENTRE



Scale: 1:500@A3



Filename: CTLRLCdd07

Figure 9

Date: 08 September 2010