SECTION 5
PROJECT DESCRIPTION

The following section provides a description of the proposed RDC including construction and operational aspects of the development. It describes the various components of the RDC and the activities to be undertaken on site including operation of the Concrete Batching Plant.

5.1 THE PROPOSED DEVELOPMENT

Readymix proposes to construct and operate the RDC at Kellogg Road, Rooty Hill. The RDC would be a key component of the Readymix rail based strategy for supply of construction materials throughout the Sydney region. The proposed development site is strategically located at the intersection of the Main Western Rail Line and M7 Motorway in an established and growing Industrial Zone.

Construction materials would be transported by rail to Rooty Hill from quarries outside of the Sydney Basin. The proposed RDC would be capable of receiving and distributing up to 4 Mtpa of product. It would commence operation handling approximately 2 to 2.5 Mtpa, increasing to a projected full capacity of approximately 4 Mtpa over time. The products to be received and distributed are typically single size crushed aggregate, blended crushed aggregates, and natural/manufactured sand. The individual product sizes that would normally be stored are 20 mm, 14 mm, 10 mm, 7 mm, 5 mm and Natural/Manufactured Sands (less than 5 mm) or blends of these. At times the need may arise to receive and distribute product sizes other than these, as required by the market.

These materials would be blended as required by equipment in the RDC to meet customer specifications and then distributed by road to the Sydney market. The materials are typically used for manufacture of concrete and asphalt. However they also have a variety of other uses in the civil construction industries.

The RDC would include the following specific elements:

- Rail siding;
- Rail unloading station;
- Level crossing;
- Rail cross-overs;
- Rail/road bridge;
- Realignment of existing North Parade and creation of New North Parade;
- Noise barriers;
- Landscaping;
- Transfer conveyors;
- Road/conveyor bridge;
- Radial stacker;
- Storage bins;

- Reclaim hopper;
- Raw material load out;
- Blending Plant/Pug Mill;
- On ground storage;
- Workshop and store;
- RDC control room and office;
- Truck wash bay;
- Truck refuelling area;
- Truck parking;
- Car parking;
- Driver’s amenities/lunch room/site training and transport area office;
- Regional office and laboratory;
- Concrete Batching Plant;
- Site fencing;
- Weighbridges;
- Transformer switch rooms;
- Dust control devices;
- Stormwater drainage system;
- Retaining walls;
- Site access and internal roadworks; and
- Site night lighting.

Figure 5.1 shows the site development plan. The regional office and materials testing laboratory would be constructed on the south western corner of the Humes site adjacent to Kellogg Road.

The rail unloading facilities and associated infrastructure would be located to the south of Angus Creek adjacent to the Main Western Railway line. The remainder of the operations are located to the north of Angus Creek where materials storage and handling would take place prior to distribution from the site by truck. The Concrete Batching Plant would be located on the western boundary of the site adjacent to OneSteel and to the north of Angus Creek.

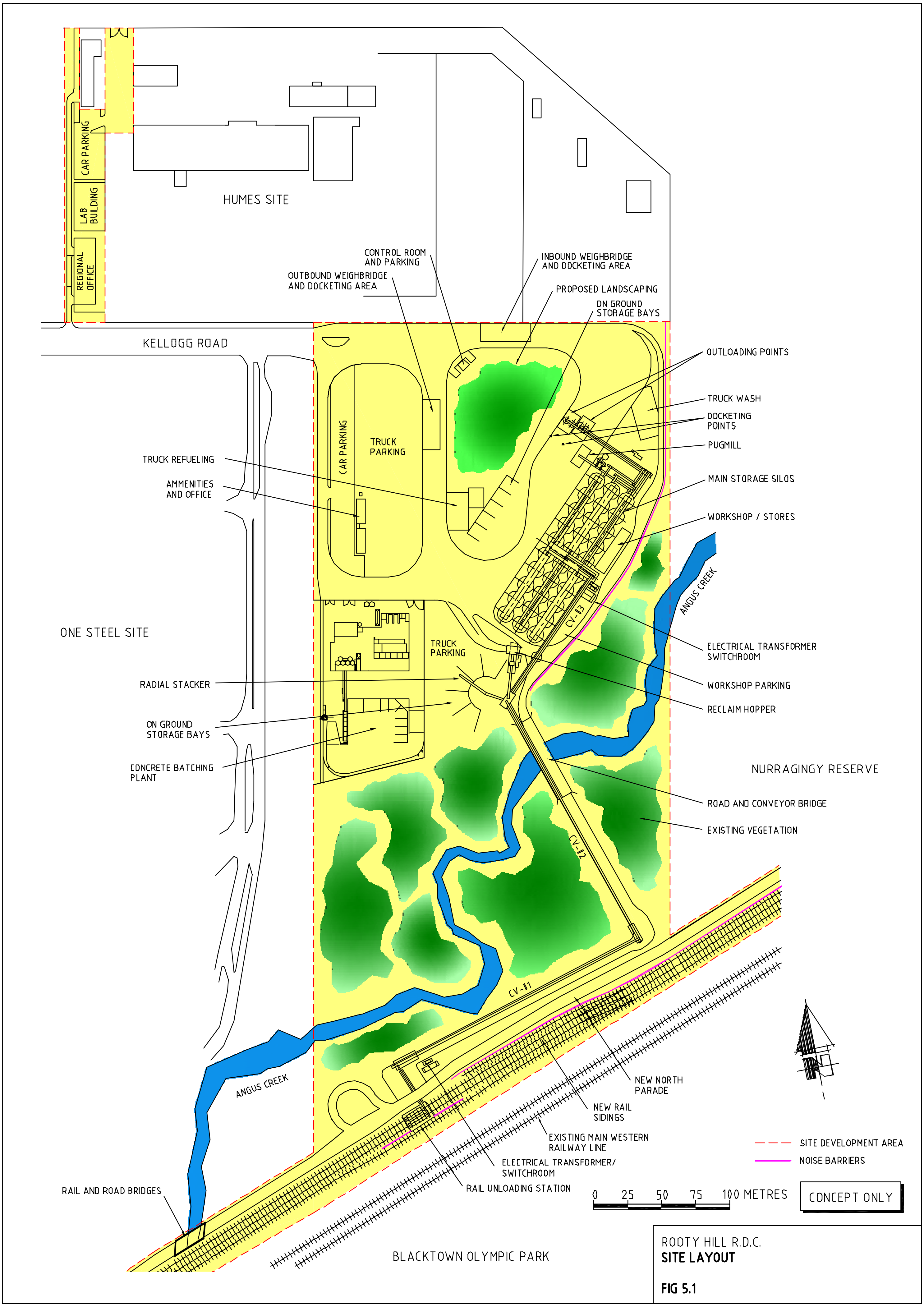
A bridge is to be constructed across Angus Creek to provide access to the southern section of the site. A conveyor system would be used to move materials from the rail unloading station to the storage area on the northern section of the site.

- Reclaim hopper;
- Raw material load out;
- Blending Plant/Pug Mill;
- On ground storage;
- Workshop and store;
- RDC control room and office;
- Truck wash bay;
- Truck refuelling area;
- Truck parking;
- Car parking;
- Driver’s amenities/lunch room/site training and transport area office;
- Regional office and laboratory;
- Concrete Batching Plant;
- Site fencing;
- Weighbridges;
- Transformer switch rooms;
- Dust control devices;
- Stormwater drainage system;
- Retaining walls;
- Site access and internal roadworks; and
- Site night lighting.

Figure 5.1 shows the site development plan. The regional office and materials testing laboratory would be constructed on the south western corner of the Humes site adjacent to Kellogg Road.

The rail unloading facilities and associated infrastructure would be located to the south of Angus Creek adjacent to the Main Western Railway line. The remainder of the operations are located to the north of Angus Creek where materials storage and handling would take place prior to distribution from the site by truck. The Concrete Batching Plant would be located on the western boundary of the site adjacent to OneSteel and to the north of Angus Creek.

A bridge is to be constructed across Angus Creek to provide access to the southern section of the site. A conveyor system would be used to move materials from the rail unloading station to the storage area on the northern section of the site.



ROOTY HILL R.D.C.

SITE LAYOUT

FIG 5.1

Trucks would enter the site via Kellogg Road, proceed via the inbound weighbridge area to be directed to the relevant loading station. After loading, vehicles would proceed via the outbound weighbridge near the exit and depart the site via Kellogg Road.

The proposed RDC would operate 24 hours per day, seven days a week. Because it is listed as a *scheduled activity* in Schedule 1 of the *POEO Act* the proposed development must have an Environment Protection Licence (EPL) to be issued by the DEC.

The following sections describe the key components of the RDC.

5.2 RAIL SIDING AND UNLOADING STATION

The proposed rail siding would be constructed adjacent and parallel to the Main Western Railway Line. The proposed layout of the siding is shown in Figure 5.2. The siding would provide access to and from the proposed RDC site to the existing rail network. RailCorp has confirmed the concept design of the proposed rail siding meets their operational requirements. The proposed rail siding would be constructed by either RailCorp or Readymix. Access to the Main Western Railway Line would be controlled by RailCorp.

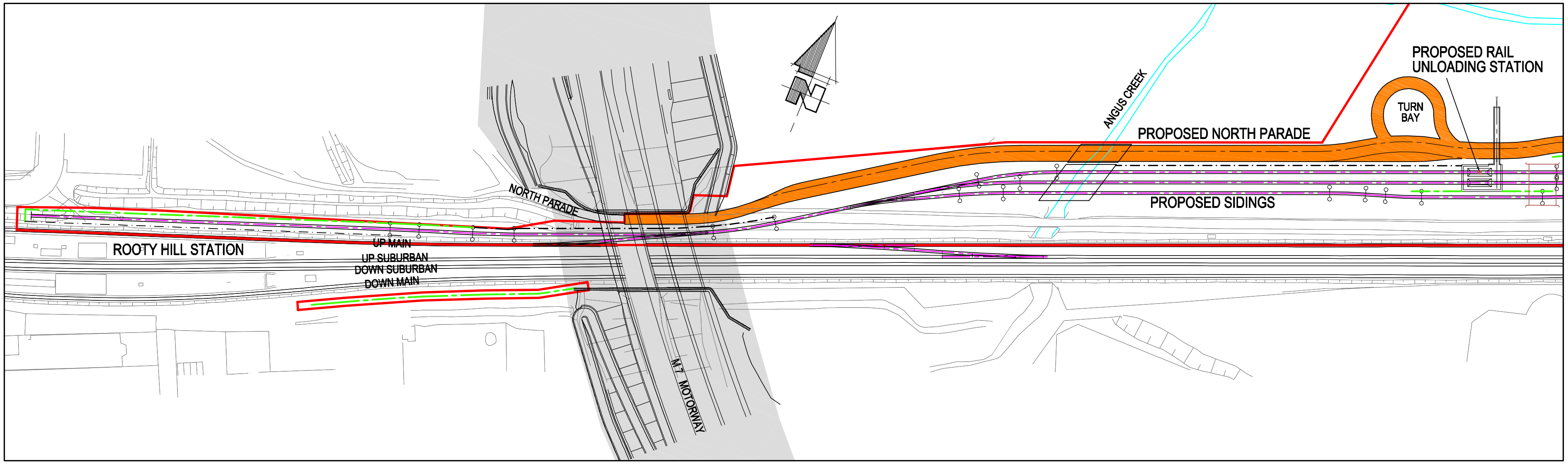
5.2.1 General Layout

The siding layout would allow trains to arrive at the development site either from the west or from the east, with trains from the east coming from either south or north of Sydney. The siding arrangement would connect to the existing RailCorp Railway system in two locations one just to the west of the Eastern Creek crossing, at the eastern end of the siding and the other between the M7 overpass and Rooty Hill Station at the western end of the siding. The overall RDC siding would be approximately 1500 m in length.

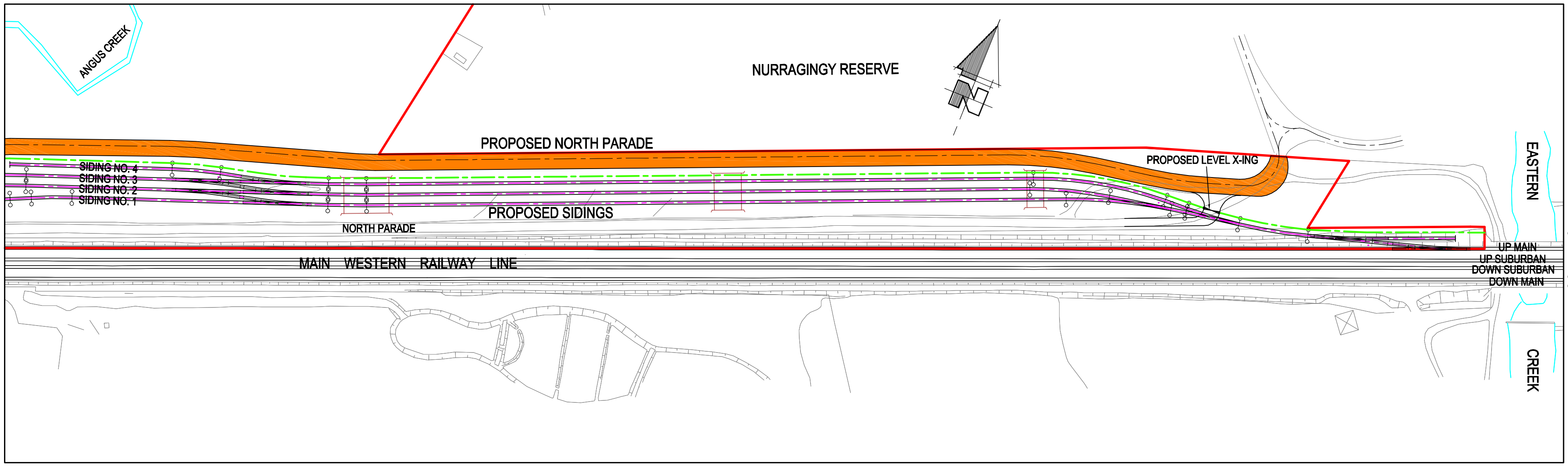
Three parallel sidings would be constructed, to optimise the maximum length available within the site constraints for trains. The sidings can accept and operate up to 2 trains of approximately 805m in length at any one time, with trains arriving either from the east or the west. Trains would normally comprise 3 to 4 locomotives and 42 to 50 wagons, carrying between 3150 and 3750 t of product. The train size would vary depending on the rail operator and the requirements of the NSW rail system.

Spacing between adjacent sidings has been set to the minimum RailCorp standard for adjacent sidings where inspection of wagons is undertaken. The connection to the main line would comprise turnouts to enable trains to exit from and re-enter the main line. These main line turnouts would be fully signalled by RailCorp signalling. Protection for the RailCorp main lines would be provided by signalling of the adjacent sections of the RDC sidings which would be fully integrated with the RailCorp network, together with run-away turnout protection at both ends of the complex. At the Eastern Creek end, the runaway turnout would have standing room for two wagons prior to a buffer stop, and at the Rooty Hill end, the turnout to the shunting siding would provide protection for the main line. The turnouts to the RDC siding would not be wired for electric rail traction.

A single rail unloading station comprising two bins with capacity to hold a minimum of two wagons each (150 – 200 t) would be built to span below both the unloading tracks, one bin per track, as shown on Figure 5.2. The unloading station would be enclosed on three sides and have curtains at either end which would fit around the rail wagons. It would have a “louvre” system to minimise the escape of air from the unloading hopper during wagon discharge and ensure the efficient operation of the dust control system fitted in the station. The automated unloading system would run on an indexing system (stop - start due to each train carrying a number of different products), and is designed to operate at a nominal 2,500 tonnes per hour, unloading a train in approximately two to three hours depending on the number of different products on a given train. The controls for the unloading system would be housed in the unloading station complex. Details of the unloading station can be found on Figure 5.3.



SITE LAYOUT



SITE LAYOUT

LEGEND:-

SITE DEVELOPMENT AREA

PROPOSED RAIL SIDING

PROPOSED NOISE WALL

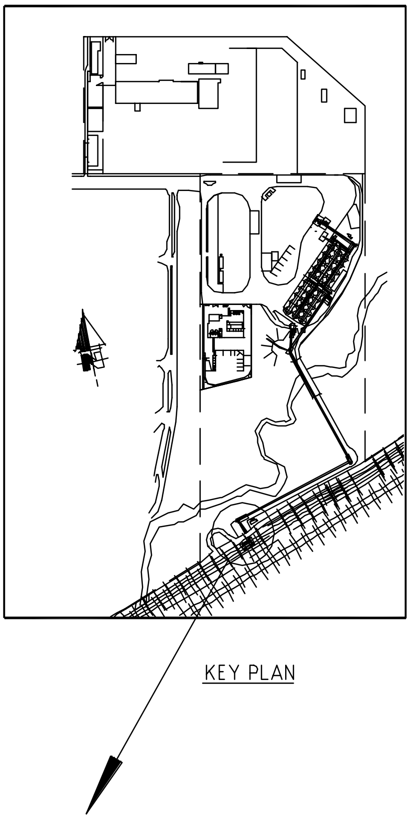
CONCEPT ONLY

ROOTY HILL R.D.C.

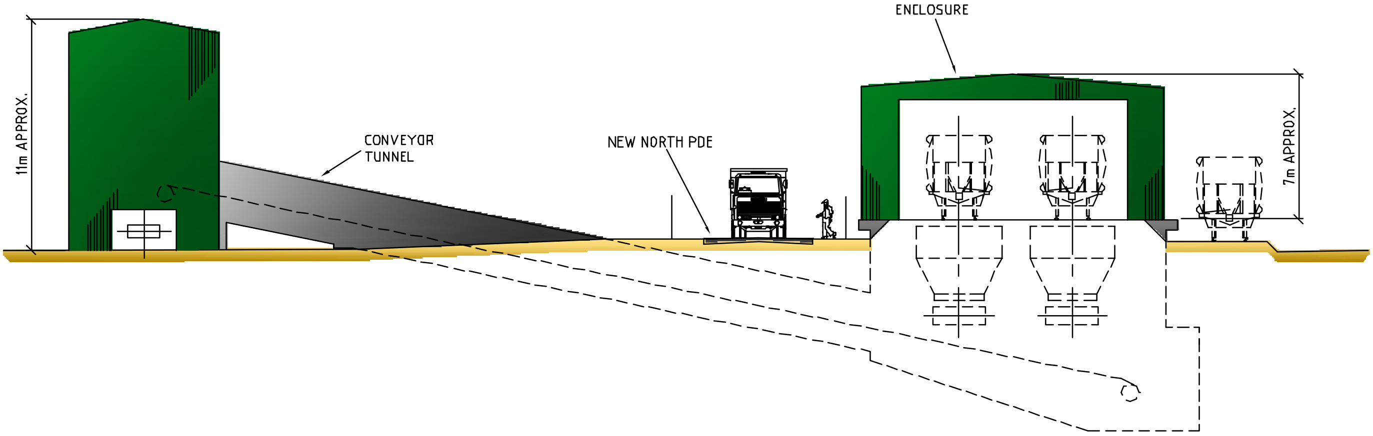
RAIL SIDING & NORTH PARADE LAYOUT

FIG. 5.2

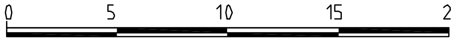
PLOT DATE: 22.6.05



KEY PLAN



ELEVATION



CONCEPT ONLY

ROOTY HILL R.D.C.
RAIL UNLOADING STATION ELEVATION

FIG 5.3

The third parallel siding to the south would allow locomotives to be transferred from one end of the train to the other without having to enter the existing RailCorp network. Siding operations would not require locomotives or wagons to enter the existing RailCorp network until the trains are ready to depart.

A short fourth siding would connect to the northern siding adjacent to the unloading station. This short siding would be used as a holding area for locomotives and to temporarily stow one or more wagons for minor maintenance. Only minor maintenance would be undertaken on site. This may involve for the wagons adjustment to door opening mechanisms, replacement of brake shoes, tightening of fittings, repairs to brake handle spindles and minor repairs to the pneumatics for the doors. For locomotives it would involve minor electrical repairs and the supply of sand, water and possibly top-up engine oil. There would be no refuelling, oil cleaning or emptying of the retention tanks. Wagons or locomotives requiring more extensive work would be taken to other rolling stock maintenance facilities.

At the western end of the RDC siding, a shunting siding would extend towards Rooty Hill station within the rail corridor. This siding has sufficient length to enable all of the wagons in the proposed trains to be unloaded without the need to break trains into shorter lengths.

This shunting siding would have an appropriate buffer stop at the western end to provide safety protection at the dead end of the siding. The siding would have an uphill grade to the dead end that would ensure that wagons are always tending to push towards the unloading station under gravity. This arrangement would help reduce shunting noise, as the wagons couplings would be in “compression” and tightly coupled to the next wagons.

The proposed sidings would have rail heights and grades generally similar to the existing RailCorp main line rail. Three sets of crossovers would be constructed between the three sidings. These crossovers would allow for re-marshalling of wagons should this be required at the RDC site.

As the natural ground surface is below the rail heights of the main lines between Eastern Creek and the M7 overbridges, the sidings would be constructed on an embankment. The embankment would have three sets of 600 mm diameter cross drainage pipes and one set of 900 mm diameter cross drainage pipes to minimise flood impacts during peak floods events. These pipes would drain from the southern side to the northern side of the sidings. Flood protection would be incorporated in the embankment to prevent erosion of the embankment (refer Technical Report No 2).

A level crossing would be constructed across the RDC sidings towards the Eastern Creek end of the siding to allow for access to the railway main lines and sidings as well as services between the sidings and the main lines. Access to the level crossing would be controlled to prevent unauthorised use and to provide for safe crossings of the sidings.

A new rail and road bridge would be constructed across Angus Creek for the proposed sidings and for the new road alignment of North Parade.

As the sidings would cross a gas line and several sewer and drainage lines in the area, these services would be protected to the standards of the responsible agencies.

The construction of the sidings would require the minor relocation/alteration to some RailCorp power lines and poles that traverse this area. This would be undertaken to the design standards and satisfaction of RailCorp.

The existing North Parade would be retained for restricted maintenance related access (as previously mentioned) and a new North Parade roadway and cycle way would be constructed to the north of the sidings. This relocation would avoid any crossing of the RDC siding by pedestrians, cyclists and other users of this section of North Parade.

Noise barriers would be constructed along sections of the rail siding. Landscaping would be in accordance with the Site Landscape Plan (refer Section 7.9). Fencing would be installed to provide appropriate levels of security.

5.2.2 Rail Operations within the Readymix Complex

There are a number of alternative methods of rail operation available for the unloading of trains within the sidings. The final method of operation would be selected when Readymix contracts an accredited Rail Operator to commence rail transport operations.

The RDC siding has been designed with the flexibility to accommodate a number of operating scenarios. The following provides a summary of options for the rail siding operations:

- Unit Train Operations

  In the unit train process, the main line locomotives would be used to unload the wagons they bring to Rooty Hill and then take away the same wagons when emptied;

- Rake Exchange Operations

  In the rake exchange process, the main line locomotives would bring one set of loaded wagons to Rooty Hill, where a shunting locomotive(s) would unload them. The main line locomotives would then attach to a second set of wagons, already unloaded, and take these wagons back to the point of supply.

A unit train unloading operation is shown diagrammatically in attached Rail Operations Diagram (Figure 5.4). If required the loaded train could be separated into 2 or more smaller sets prior to unloading each smaller set of wagons in turn. After all wagons are unloaded, the sets would be re-marshalled into one train ready for departure from the siding.

Trains arriving at the RDC may contain several products each within adjacent groups of wagons to meet operating demands.

The main line and shunting locomotives would be fuelled and serviced by the Rail Operator at other facilities. Locomotives would not operate on the shunting siding to the west of the M7 overbridge.

The rail wagons would be permanently coupled in groups of wagons of between 3 and 7 wagons (this practice is current in the rail industry for both coal and quarry products and for container traffic). The permanent coupling reduces the overall length of the train, and reduces the relative movement between adjacent wagons during shunting and unloading operations. Shunting noise levels would be minimised by this arrangement. The wagons that would be used would be open topped, with the upper section of the wagon body shaped in a way that minimises airflow over the material in the body. Such wagons have been used for bulk materials transport by rail for some time.

Unloading of rail wagons at the unloading station would involve wagons being placed sequentially in turn over the hopper for unloading. After one wagon is emptied, the unloading supervisor would ensure that the air operated doors are closed prior to signalling to the train crew to move the train forward by the length of one wagon to place the next wagon over the bin. The train would move forward by one wagon length and then stop for the next wagon to be unloaded.

The air operated doors on the wagon would then be opened to empty the wagon. When there is a change from one product to another on the train, the wagons would be held in place until the holding and conveying equipment is cleared of the first product before the second product is unloaded.

Noise barriers would be constructed along sections of the rail siding. Landscaping would be in accordance with the Site Landscape Plan (refer Section 7.9). Fencing would be installed to provide appropriate levels of security.

5.2.2 Rail Operations within the Readymix Complex

There are a number of alternative methods of rail operation available for the unloading of trains within the sidings. The final method of operation would be selected when Readymix contracts an accredited Rail Operator to commence rail transport operations.

The RDC siding has been designed with the flexibility to accommodate a number of operating scenarios. The following provides a summary of options for the rail siding operations:

- Unit Train Operations

  In the unit train process, the main line locomotives would be used to unload the wagons they bring to Rooty Hill and then take away the same wagons when emptied;

- Rake Exchange Operations

  In the rake exchange process, the main line locomotives would bring one set of loaded wagons to Rooty Hill, where a shunting locomotive(s) would unload them. The main line locomotives would then attach to a second set of wagons, already unloaded, and take these wagons back to the point of supply.

A unit train unloading operation is shown diagrammatically in attached Rail Operations Diagram (Figure 5.4). If required the loaded train could be separated into 2 or more smaller sets prior to unloading each smaller set of wagons in turn. After all wagons are unloaded, the sets would be re-marshalled into one train ready for departure from the siding.

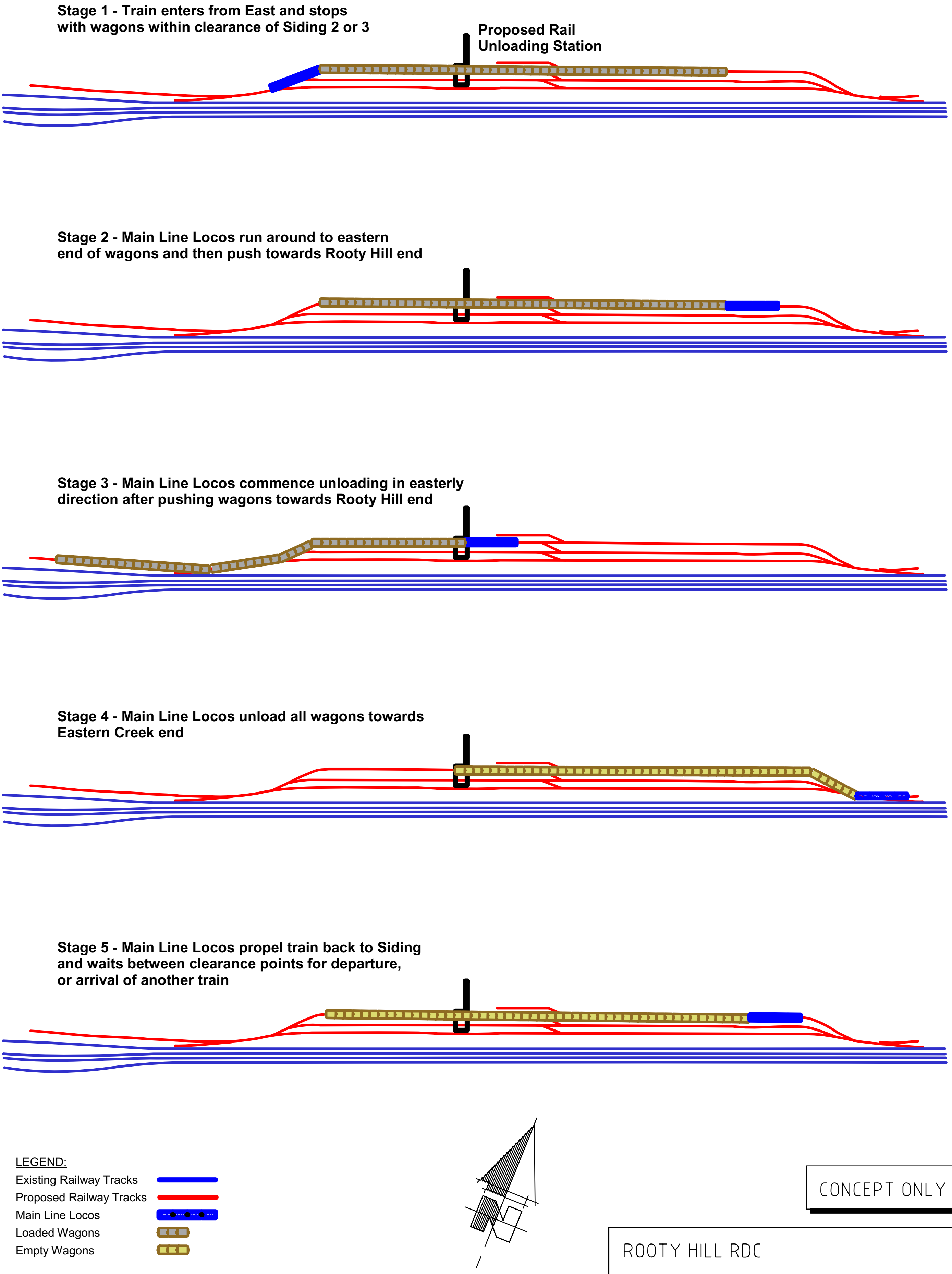
Trains arriving at the RDC may contain several products each within adjacent groups of wagons to meet operating demands.

The main line and shunting locomotives would be fuelled and serviced by the Rail Operator at other facilities. Locomotives would not operate on the shunting siding to the west of the M7 overbridge.

The rail wagons would be permanently coupled in groups of wagons of between 3 and 7 wagons (this practice is current in the rail industry for both coal and quarry products and for container traffic). The permanent coupling reduces the overall length of the train, and reduces the relative movement between adjacent wagons during shunting and unloading operations. Shunting noise levels would be minimised by this arrangement. The wagons that would be used would be open topped, with the upper section of the wagon body shaped in a way that minimises airflow over the material in the body. Such wagons have been used for bulk materials transport by rail for some time.

Unloading of rail wagons at the unloading station would involve wagons being placed sequentially in turn over the hopper for unloading. After one wagon is emptied, the unloading supervisor would ensure that the air operated doors are closed prior to signalling to the train crew to move the train forward by the length of one wagon to place the next wagon over the bin. The train would move forward by one wagon length and then stop for the next wagon to be unloaded.

The air operated doors on the wagon would then be opened to empty the wagon. When there is a change from one product to another on the train, the wagons would be held in place until the holding and conveying equipment is cleared of the first product before the second product is unloaded.



CONCEPT ONLY

ROOTY HILL RDC

TYPICAL OPERATING DIAGRAM

FIG. 5.4

While the train is being moved within the RDC, it would be necessary for all shunting movements to be strictly in accordance with the RailCorp Safety Interface Agreement for this facility. When all of the wagons are emptied, the train crew would examine the train, checking that the doors are all closed and secured, and that the brakes and other components of the train are in a suitable condition for main line operations, and would prepare the train to depart from the siding.

5.2.3 Proposed Additions to the RailCorp Network

Two new crossovers would be installed within the RailCorp network to enable trains to enter and leave the RDC sidings with minimal interference to other RailCorp train services. On the Sydney side of Blacktown a new crossover would be installed. RDC trains arriving from Parramatta would cross the other main lines via the elevated Richmond Line flyover near Seven Hills. Depending on the current situation at Blacktown station, this new crossover would allow the RDC trains to transit through Blacktown Station before proceeding to the RDC site. The new crossover at Blacktown would be wired for electric rail traction, both as a safety measure and to allow electric passenger trains to utilise this new route within Blacktown yard.

A second new crossover would be installed adjacent to the M7 overbridges at Rooty Hill. This new crossover would be fully integrated into the RailCorp network and allow Sydney-bound passenger trains to move on the suburban line while RDC trains are travelling from Blacktown to the proposed development site.

Installation of the new crossover at Rooty Hill would avoid delays to trains in this area.

It is proposed that RailCorp introduce bi-directional signalling between Blacktown and St Marys to allow for trains to enter and leave the RDC site. Loaded trains arriving from Parramatta would travel between Blacktown and the proposed development site under the new bi-directional signalling. Train movements would be fully protected by the standard RailCorp signalling associated with bi-directional train working.

This current RailCorp configuration was developed in conjunction with a multi-disciplinary team of RailCorp personnel and provides the best solution that minimises impacts on RailCorp passenger services. The new routes allow for trains to access the RDC sidings without having to cross all four RailCorp tracks.

5.2.4 Proposed Rail Routes and Pathing

It is expected an average of four trains per day, would be required to deliver 4 Mtpa of product to the RDC (depending on the train size and consist). The pathing (timing) of these trains cannot be accurately predicted and would vary depending on rail network availability. Therefore rail-unloading operations would need to be able to occur on a 24 hour, 7 day a week basis.

Access to the RailCorp network in the Metropolitan area is restricted to passenger trains within the morning and afternoon peak periods, and in shoulder periods, to avoid interference with passenger train timetables. Rail access to and from the RDC sidings would be timetabled to arrive and depart outside of these “peak periods”.

Trains from the south would normally be scheduled to run on the Main South Line to Cabramatta, then on the Old South Line to Granville where they would join the Main Western Line via the Granville “Y” Link. At Seven Hills, loaded trains would cross from the southern side of the rail corridor to the northern side via the Richmond Line flyover, and then proceed to the RDC Sidings.
If necessary, the loaded freight trains may be required to stand for a short time on the Ingleburn-Glenfield Crossing Loop, or on the “Y” link, to allow other trains to pass. Empty trains returning to the south would normally take the same route to Blacktown, then to Granville, Cabramatta, and then continue on the Main South Line.

Several alternative routes are available within the Metropolitan area if the normal route to and from Rooty Hill is unavailable. Loaded trains could be diverted at Cabramatta to travel to Sefton, and then either via Regents Park and Lidcombe to the Main West Line from where they would travel via Seven Hills - Blacktown to Rooty Hill, or, alternatively, via Chullora and Lidcombe to the Main West. On these routes, the loaded train may be required to stand for a short time in a siding at Leightonfield or on the Goods Line between Chullora and Lidcombe.

Empty trains could also be diverted via Lidcombe, and then either via Regents Park or via Chullora to Sefton before proceeding to Cabramatta and then continuing on the Main South Line.

Loaded trains from the west would proceed to Rooty Hill via the Up Main West line and then enter the RDC sidings. Empty trains departing to the west would proceed via the Up Main West Line to St Marys where they would cross to the Down Main West line for the remainder of their journey.

All routes to and from the proposed RDC in the Sydney metropolitan area would be controlled by RailCorp.

5.2.5 Rail Safety

The RDC rail sidings would be required to operate in accordance with the *Rail Safety Act* and complying Safety Interface Agreements, which would control rail operations both within the RDC and access to and from the RailCorp network.

The Safety Interface Agreements would cover all aspects of rail operations on the complex, ensuring that all rail operations are undertaken to meet the rail safety requirements of the *Rail Safety Act* and other relevant Acts. Documented procedures, notices, signs, signalling, maintenance, and training of staff would be in compliance with the Safety Interface Agreement and other statutory documentation.

5.2.6 Emergency Transport

Given the number of alternative rail transport routes to the proposed RDC it is unlikely that there would be significant interruptions to rail delivery of materials to the site. In the event that material cannot be delivered to the RDC by rail, Readymix would deliver materials to the RDC by road transport with the approval of the Director General of DOP. In the event that transport by road is approved by the Director General such transport movement would not exceed the level of service for intersections upon which the traffic impact assessment for this EAR is based.

5.3 AGGREGATE STORAGE AND OUTLOAD FACILITIES

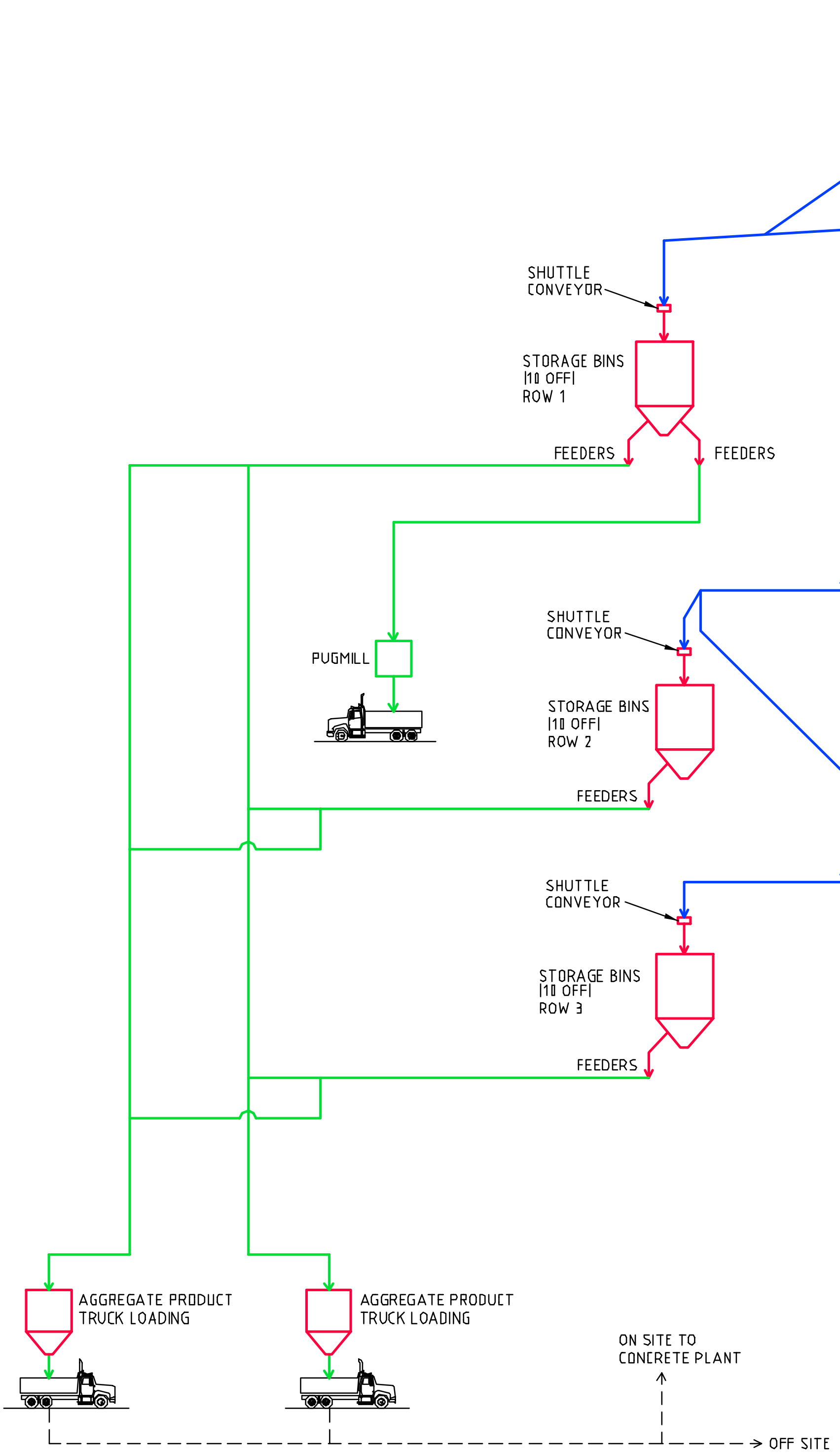
A schematic materials flow diagram of the RDC is shown on Figure 5.5.

5.3.1 Transfer Conveyors to Storage Bins

As shown in Figure 5.6 material is moved from the unloading station to the storage bins via a series of conveyors. The conveyor system does not start to rise more than approximately 2 m above ground level until it reaches the bridge across Angus Creek. The sections of conveyor close to ground are supported on steel columns to maintain a clear area under them that allows the passage of floodwaters.

Once at the storage bins the material would be deposited in the appropriate closed top storage bin by a shuttle (variable discharge position) conveyor. The automated train unloading system controls the positioning of this conveyor.

All conveyors outside a building or tunnel are covered or enclosed to eliminate the risk of dust emissions. All transfer points would be fully enclosed in buildings that would also have dust control

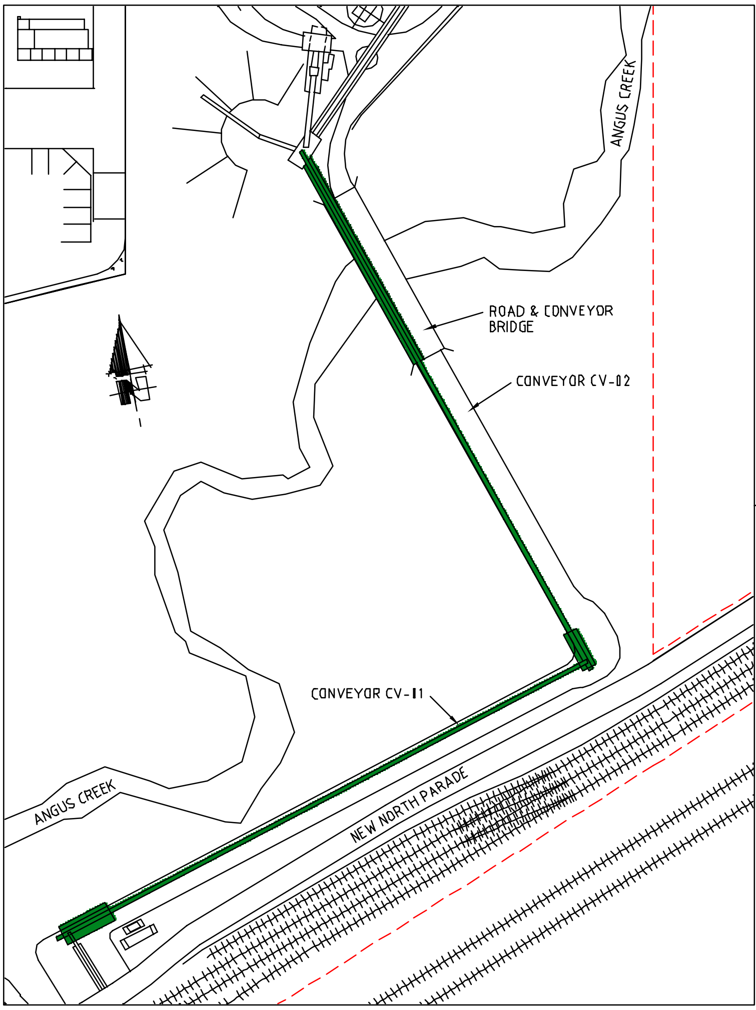


CONCEPT ONLY

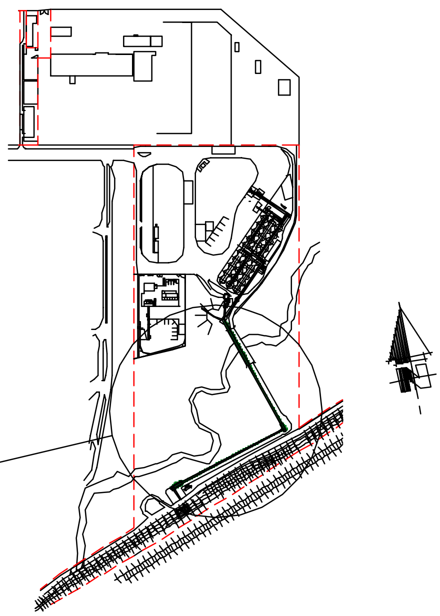
ROOTY HILL R.D.C.

PROCESS FLOW DIAGRAM

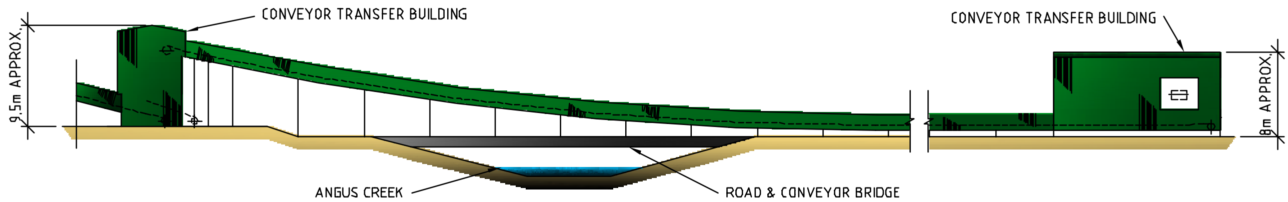
FIG 5.5



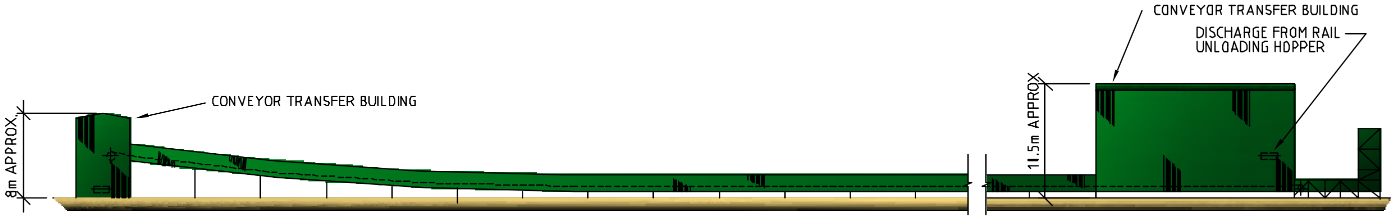
LOCATION PLAN



KEY PLAN



TRANSFER CONVEYOR CV-02 ELEVATION



TRANSFER CONVEYOR CV-01 ELEVATION

CONCEPT ONLY

ROOTY HILL R.D.C.

SELECT CONVEYOR ELEVATIONS

FIG 5.6

systems installed. Each dust control system would collect any airborne dust and deposit it back onto the conveyor in a controlled manner to avoid the need for further collection / handling.

5.3.2 Radial Stacker

The radial stacker is located on the northern side of Angus Creek (refer Figure 5.7). A diverter gate would be installed to direct material to either the radial stacker or the main storage bins.

This is a fail safe mechanism to enable trains to be unloaded and return to the rail system if there is a malfunction with the operation of the main storage system, or a problem with contamination of materials at the unloading station. Material would be diverted to the radial stacker and placed on ground in dedicated bays separated by concrete walls. A water spray dust suppression system would be installed on these bins. The total storage provided would be matched to the train payload. A telescopic stacker capable of placing material in a way that minimises environmental impacts and assists in eliminating degradation of the aggregates. Material can be loaded out into road trucks for delivery from the stacker stockpiles or fed by truck or front-end loader back into the main storage silos via the Reclaim Hopper (refer Section 5.3.3).

The concrete radial stacker and materials storage pad would be constructed above the 1:100 year flood level plain to the south of this area.

Because the stacker is being installed as a means of managing unforseen malfunctions with the main storage bins it is not possible to accurately predict how frequently it would be used. In the worst case it may be used to unload up to 10% of all trains. The operation of the stacker would be controlled via either a PLC system from a remote location, with CCTV cameras installed to allow observation of the area or from a local control room.

5.3.3 Reclaim Hopper

The Reclaim Hopper is designed to enable material to be fed back into the main storage bins from the radial stacker stockpiles or provide capability for special / other products brought in by road to be held in the main storage system (refer Figure 5.7). The reclaim hopper is located adjacent to the radial stacker so material can be fed into it easily by front-end loader or truck when required. The hopper would be enclosed on three sides.

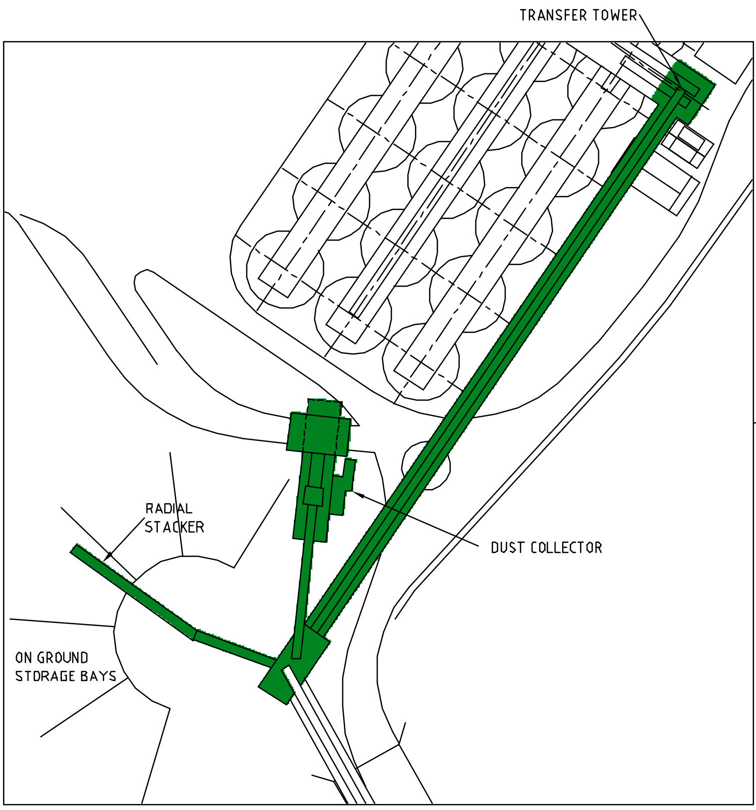
The special/other products include sands, exposed aggregates, or other specialty aggregates. These products are required at the RDC because it is the point of sale to customers within the Sydney area. Trucks delivering such products would leave the site loaded to ensure the holding of these products does not increase truck movements associated with the RDC.

5.3.4 Main Storage Bins

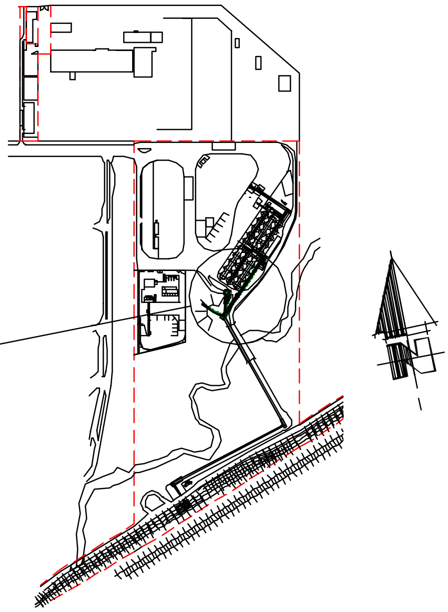
The storage capacity of the bins would be approximately 2 to 3 days sales for the Sydney Metropolitan area. Three rows of 10 bins are proposed with a capacity of approximately 60,000 t. This amount of storage would ensure that daily peaks in demand are adequately provided for. The system would also rely on the ability to bring materials in on weekends to ensure that bins are full for the start of the next working week.

Each bin would have approximately 2,000 to 2,200 t capacity depending on the material being stored. Some bins may have an internal dividing wall fitted to enable the storage of more than one product per bin. This is useful for special orders or periods of peak demand. The number of bins to have these walls fitted would depend on analysis of market requirements closer to the time of construction. Typical elevations of the main storage bins are shown on Figure 5.8.

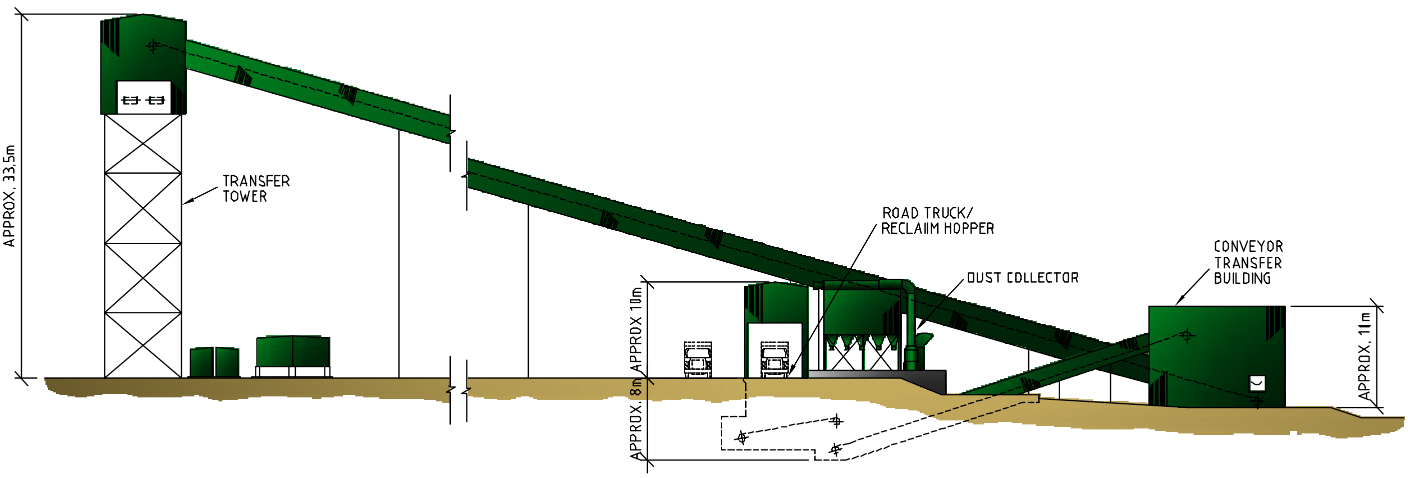
The storage bins would stand approximately 33.5 m high to the top of the main transfer tower that feeds the material to the bin system.



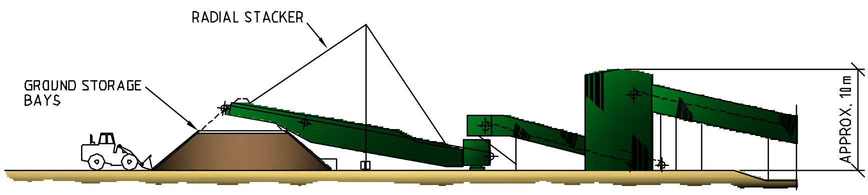
LOCATION PLAN



KEY PLAN



RECLAIM HOPPER AND TRANSFER CONVEYORS



ELEVATION ON RADIAL STACKER

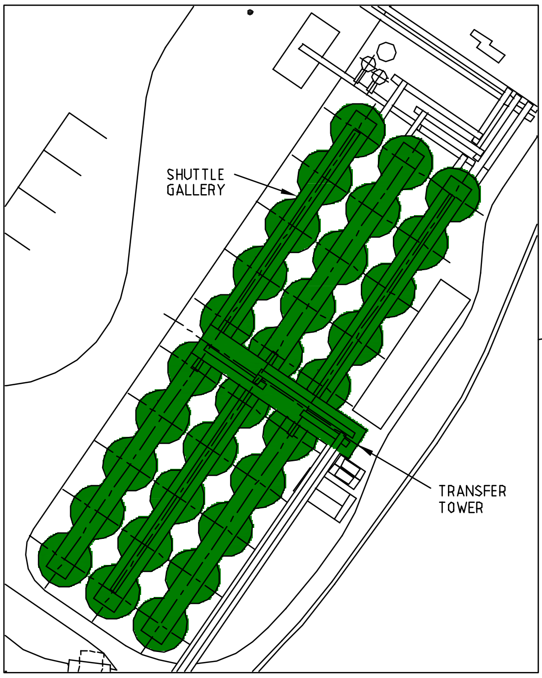
CONCEPT ONLY

0 5 10 15 20 METRES

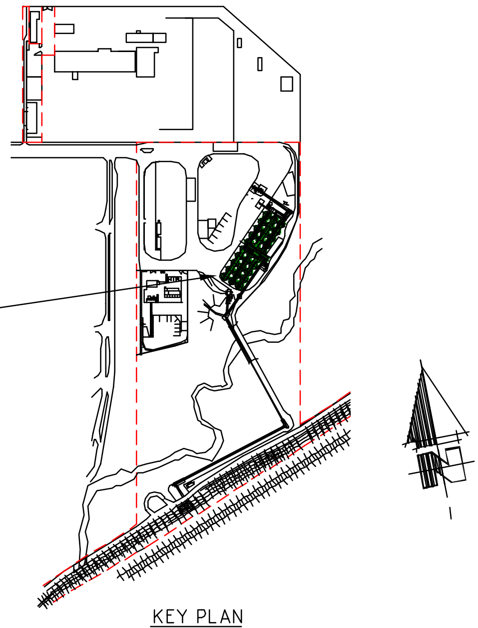
ROOTY HILL R.D.C.

RADIAL STACKER AND RECLAIM HOPPER

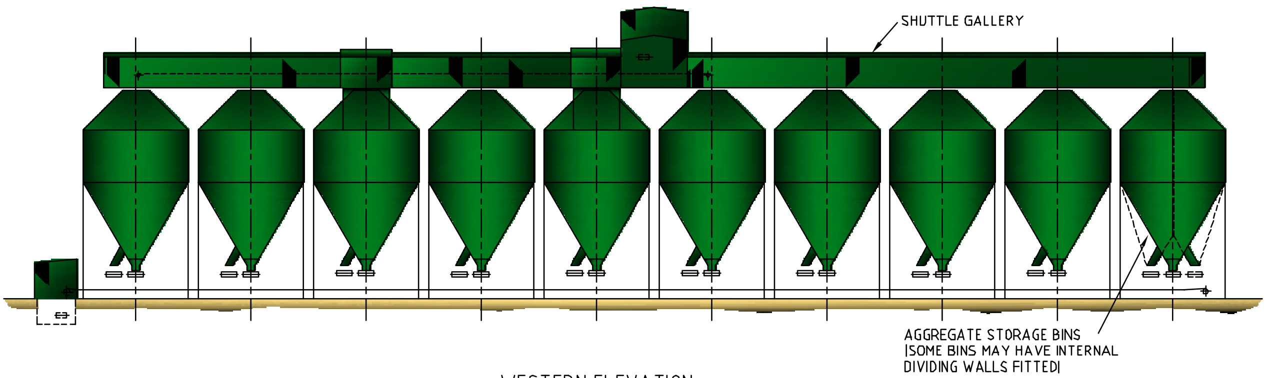
FIG 5.7



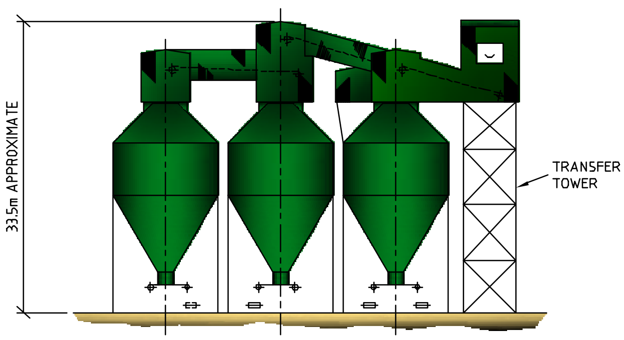
LOCATION PLAN



KEY PLAN



WESTERN ELEVATION



SOUTHERN ELEVATION
THROUGH CENTRE OF BIN ARRANGEMENT

CONCEPT ONLY

ROOTY HILL R.D.C.
MAIN STORAGE SILOS

FIG 5.8

Reclaiming materials from the storage bins would be via a series of high capacity weigh feeders and conveyors (approximately 2,000 tph) under each row of bins. These conveyors and a series of transfer conveyors would be used to deliver the material to the truck loading points. A second, lower capacity feeder and conveyor (approximately 400 tph) under one of the rows of bins would supply material to the Pug Mill/Blending Plant for blending.

Blending of the single size products to meet internal and external customer requirements would be achieved via the main discharge feeders, with product weighed individually from each bin onto the main conveyor to the truck loading stations.

An automated system would be used to manage the reclaim of materials from the bins. This system would be programmed to ensure the levels in each bin did not drop below 10% to minimise maintenance requirements. In addition potential noise impact from filling the bins would be mitigated by lining the cone sections of the bins used to store aggregates. The conveyors and transfer points on top of the bins would also be enclosed to manage noise, dust and visual impacts.

A dust control system along with openings as small as practical at the tops of each bin would be used to control dust in this area. The airborne dust collected would be discharged into a manufactured sand bin to avoid the need for further collection/handling.

There would be a skid steer loader on site for use in cleaning up any spillage that occurred under the bins or in general site operations.

5.3.5 Construction Materials Load Out

It is proposed to construct two truck-loading stations as shown on Figure 5.9. Each station would contain two truck-loading points that are enclosed on three sides.

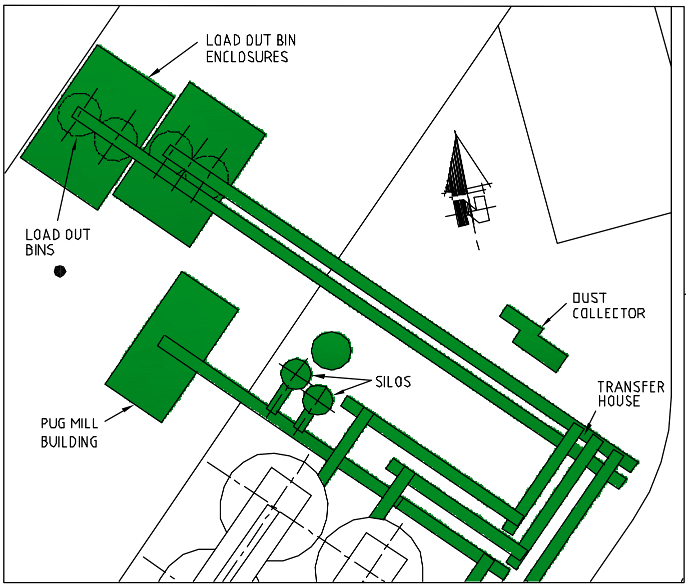
Loads would be batched to order from the main storage bins and transferred to a loading bin above the load point. Material transfer from the main storage bins to the loading bin would be by conveyor and diverter chute. Once the truck is correctly positioned below the loading bin the material would be discharged into a truck via a telescopic chute. The telescopic chute is to minimise the dust and noise impacts and potential spillage of product being loaded. Each row of the main storage bins can feed any truck-loading point providing flexibility in material storage and handling.

All conveyor transfer points would be contained within buildings.

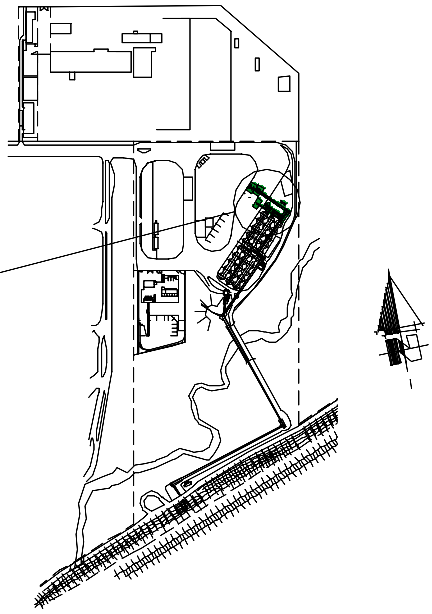
On entry to the site trucks receiving aggregate would proceed directly via the inbound weighbridge and docketing area. All trucks would be scanned and coded upon entry to the site. The computer-controlled system would identify which loading point each truck driver is to proceed to and the load the truck is to receive. The trucks would move forward to the specified loading point where materials would be delivered from either the main storage bins or the Pug Mill/Blending Plant.

The truck driver would initiate the loading process once satisfied his vehicle is properly positioned. The driver would move the truck back and forth under the loading point to control the load distribution. The weigh scales for each loading bin ensure the amount of material loaded into each vehicle does not exceed the legal load limit in any compartment of the truck. In the event of main storage system malfunction or peak demand situations the trucks may load from material stored in the radial stacker or ground storage bay areas.

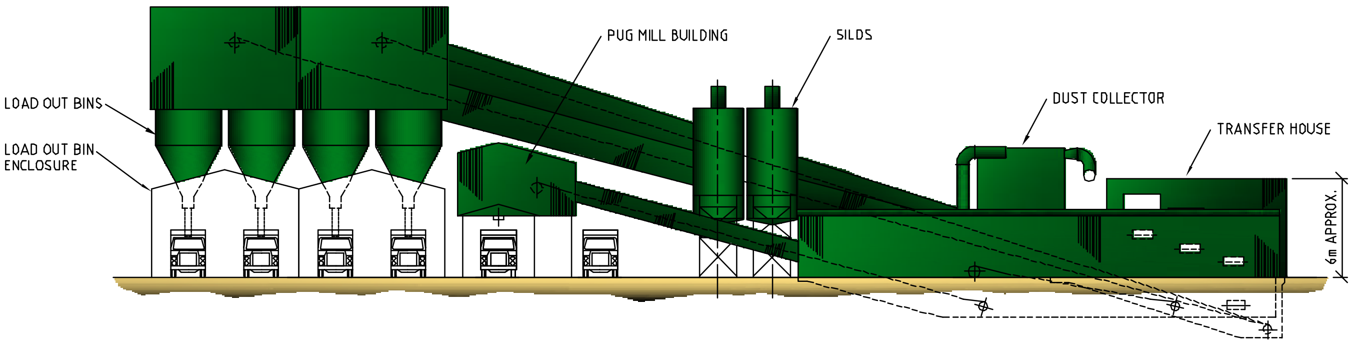
Once loaded the truck proceeds to either the docketing point in front of the loading point or a weighbridge at the site exit for weighing and docketing. The trucks would then proceed to a tarping area to cover their loads, from which they exit the site.
It is anticipated that raw materials delivery trucks would be loaded ready to proceed to the weighbridge within three to four minutes of entering the site, giving each load point the capacity to load 15 to 20 trucks per hour. In peak times these load points would be assisted by the front end



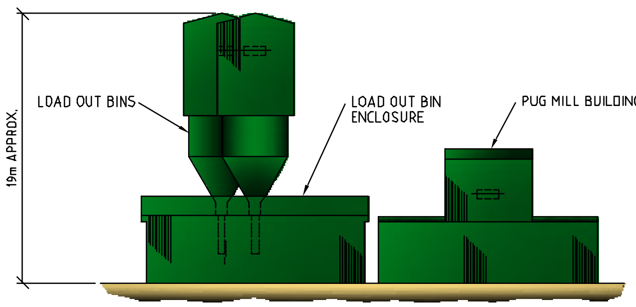
LOCATION PLAN



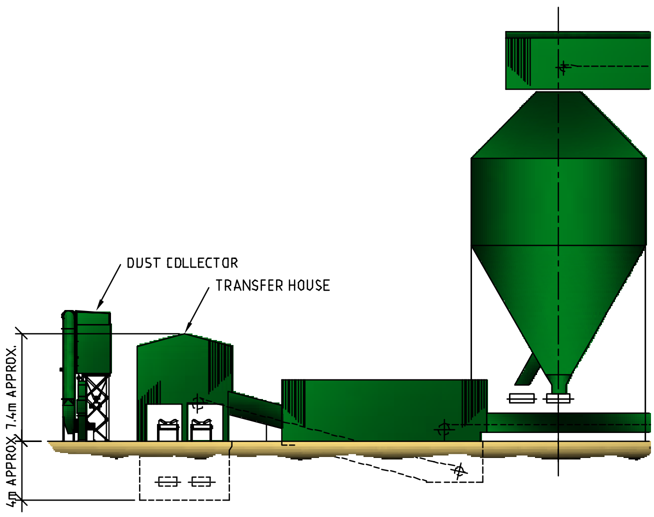
KEY PLAN



ELEVATION LOOKING NORTH



WESTERN ELEVATION



SECTIONAL ELEVATION ON TRANSFER CONVEYORS

CONCEPT ONLY

0 5 10 15 20 METRES

ROOTY HILL R.D.C.

TRUCK LOADING STATION AND PUG MILL ELEVATIONS

FIG 5.9

loader loading material from the ground storage bays or from the radial stacker. The loader capacity would be 10-15 truck loads per hour. These loading rates are to ensure customer requirements are met and queuing associated with the site is minimised.

To account for potential truck requirements in the future, all elements of the site, including the truck loading process, weighbridges and roadways, have been sized to handle a B-Double configuration.

5.3.6 Blending Plant / Pug Mill

To enable the supply of stabilised road base products to the market a Blending Plant/Pug Mill plant with 100 t capacity cement and lime storage silos would be constructed (refer Figure 5.9). The Pug Mill/Blending Plant mixes controlled amounts of road base with cement or lime and water. The mill is a mixing box with two horizontal shafts that have arms with paddles mounted on them. The shafts rotate in opposite directions and the arms/paddles mix the product.

All cementitious material would be pneumatically conveyed in enclosed systems that comply with NSW DEC requirements. Cement and lime discharge from the tankers would occur on the north eastern side of the main storage silos. The fill point would be roofed and bunded to control runoff from potential spills at this point.

All final products from this facility would have water mixed through it, minimising the risk of dust generation.

It is proposed to supply the Blending Plant/Pug Mill from the main storage bins via conveyor with a capacity of approximately 400 tph.

The loading point would be enclosed on three sides, with a drive over sump below it to catch and contain material and water that may accumulate in the area from spillage or cleaning out undertaken at the end of each day after use.

The Blending Plant/Pug Mill and the fill points for the cement and lime storage silos would be bunded. Any water within the bunded areas would be designated to be “dirty water”. The water would flow to a stormwater pit/grit trap and then pumped to the Concrete Batching Plant for recycling (refer Technical Report No 2).

5.3.7 On Ground Storage

Five on ground storage bays would be constructed, with a capacity of approximately 500 t each. Concrete walls would enclose each bay on three sides separating the different materials.

This area would be used for:

- Storage of special / other products (as described in Section 5.3.3);
- Storage of blended products for loading onto trucks by front end loader in peak times or in the event of a malfunction with the main storage bins system;
- Storage of materials from overloaded trucks (in the event of a loading system malfunction); and
- Temporary storage of any spilled materials.

A water spray dust suppression system would be installed on these bays for use as required. It is expected these bays would be in use daily.

5.3.8 Workshop and Store

A workshop building would be located to the east of the main storage bins. This building would be used for routine maintenance tasks and to store the spare parts necessary to maintain the operation. It would also include office space for the maintenance staff. Adjacent to this building would be 8 parking spaces for the maintenance staff to avoid the need for people to walk across the site through movements of heavy vehicles to get to their place of work.

The workshop would include fresh and waste oil stores/tanks located within a bunded area.

Access is via the road around the eastern side of the site.

Table 5.1 lists the maximum quantities of hazardous and non-hazardous materials that would be stored in the workshop and store.

Table 5.1
Approximate Quantities of Materials Stored in the Workshop and Store

MATERIALS		QUANTITY
Gases (40/50 litre bottles)	Oxygen	10 bottles
	Acetylene	6 bottles
	LPG	7 bottles
	Nitrogen	1 bottle
	Argon	3 bottles
Oils	New	5000 litres
	Used	2500 litres
Other	Paints/Primes/Solvents/Thinners	100 litres
	Truckwash detergent	300 litres
	Degreaser	300 litres
	Grease	600 litres

All chemicals would be stored in accordance with the relevant Australian Standards, in particular:

- *AS 1940 (1993)The Storage and Handling of Flammable and Combustible Liquids; and*
- *AS 3780 (1994)The Storage and Handling of Corrosive Substances.*

All on-site employees would be trained in all relevant aspects of safe storage and handling of all chemicals stored on site.

5.3.9 RDC Control Room and Office

An office building would be located between the entry and exit weighbridges. This building would house the site management team, weighbridge operators and the computer system controlling activities within the RDC. It would be two stories in height to enable the RDC controller to view as many of the site operations as possible.

The ground floor of this building would house the site manager and associated staff. Car parking spaces would be provided adjacent to this building.

5.4 OTHER FACILITIES ASSOCIATED WITH THE RDC

5.4.1 Truck Wash Bay

The truck wash bay to the north of the main storage bins would be used to wash road grime off the trucks to maintain an acceptable appearance. All water from such a facility would be collected, sediment removed and then treated by an oil separator before discharging to sewer. The oils trapped by the separator would be captured in a waste oil storage tank adjoining the wash bay and disposed of to a licensed recycling facility.

Figure 5.10 shows the location and layout of the proposed Truck Wash Bay.

5.4.2 Truck Refuelling Area

The truck re-fuelling facility would be located adjacent to and east of the exit weighbridges (refer Figure 5.11). It would consist of a 100,000 L storage facility, bunded and roofed in accordance with NSW DEC guidelines.

Road tankers would fill the storage tanks whilst parked on the refuelling slab. Spillage control for this area would be provided. The facility would include two re-fuelling bowsers and an oil store for topping up engine oils during daily vehicle checks.

The area would be paved with drainage controls. All water from the facility would be collected, sediment removed and then treated by an oil separator before discharging to sewer. The oils trapped by the separator would be captured in a waste oil tank adjoining the refuelling area and disposed to a licensed recycling facility.

5.4.3 Truck Parking

A sealed area for 38 trucks (truck & dog configuration) would be provided adjacent to the exit weighbridge area on the western side of the property. Additional truck parking would be provided adjacent to the radial stacker for 12 trucks. This parking would accommodate the truck fleet.

Shift start times would be staggered in groups of 5 to 10 to ensure efficient departure of the trucks from the RDC. All Readymix trucks would be loaded prior to parking at the end of a shift, to ensure an efficient start to the next shift.

5.4.4 Main Car Park

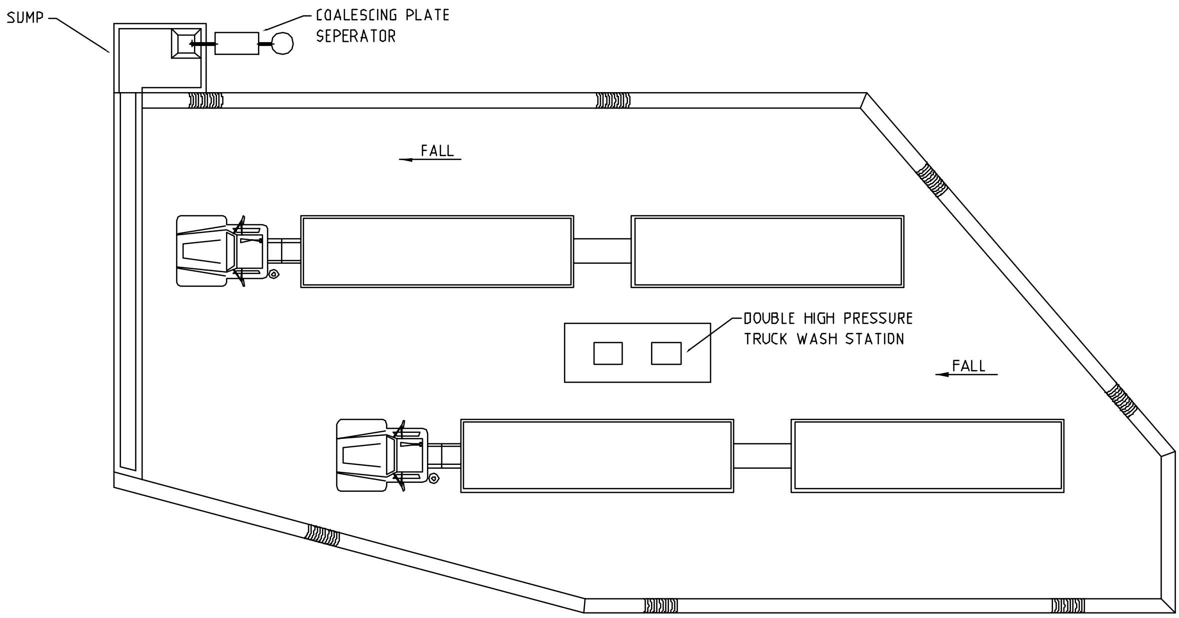
A sealed area for 110 cars would be provided to the west of the truck parking area. This would provide spaces for all drivers of trucks based at the site, RDC site operations and management team, transport allocations team and visitors. As previously mentioned, maintenance staff would park adjacent to the workshop on the eastern side of the main storage bins.

Access to the car park would be from the Concrete Batching Plant access road. All vehicles turning right at this intersection would be required to stop in a properly designed right turn bay before proceeding.

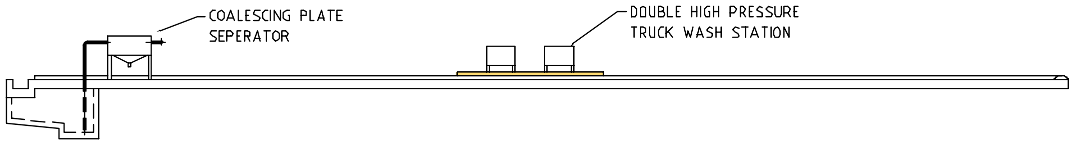
A visitor reception point (instructions & phone) would be located adjacent to this car park area to control movements of people unfamiliar with the site.

5.4.5 Driver Amenities / Lunch Room / Site Training Room and Transport Area Office

Two double storey buildings would be located on the western edge of the truck parking area (refer Figure 5.1). The training room would be used for meetings and conducting training as may be

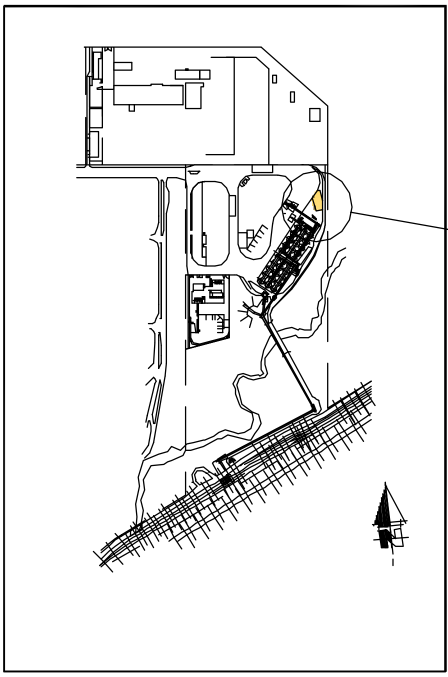


TRUCK WASH SLAB - PLAN

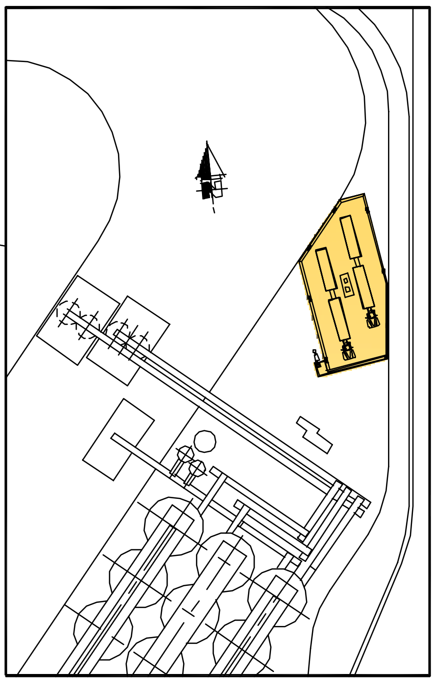


TRUCK WASH SLAB ELEVATION

0 2 4 6 8 10 METRES



KEY PLAN



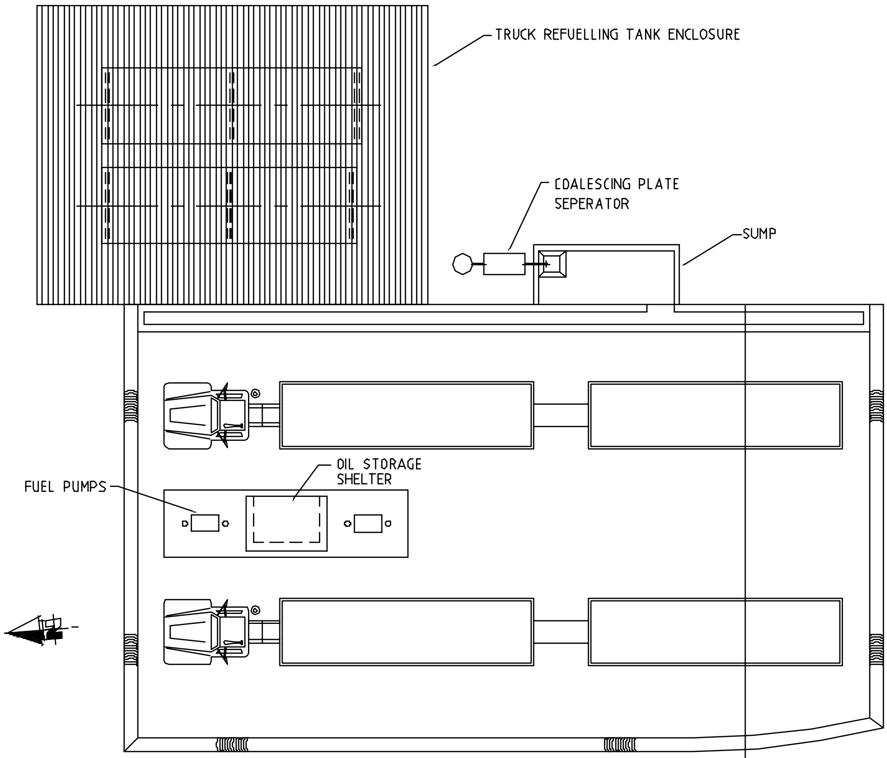
LOCATION PLAN

CONCEPT ONLY

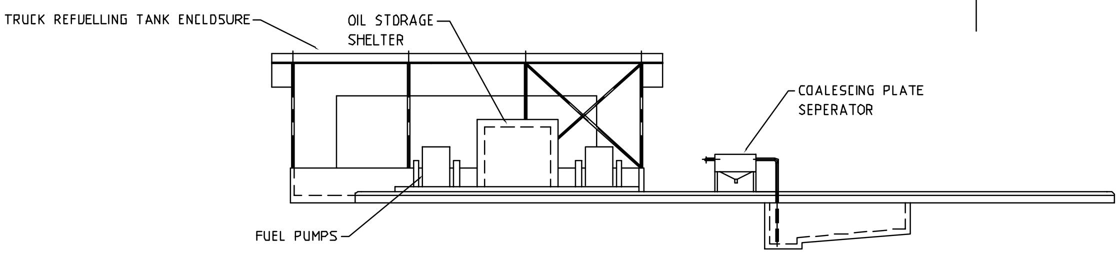
ROOTY HILL R.D.C.

TRUCK WASH SLAB

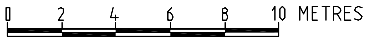
FIG 5.10

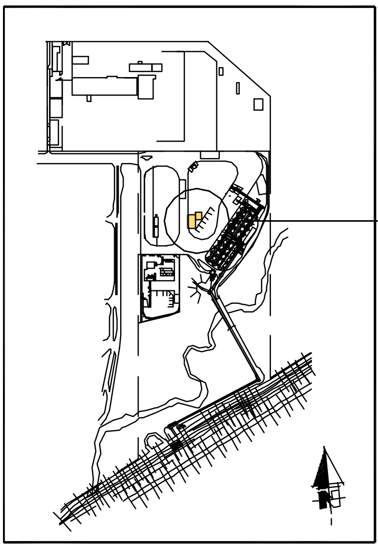


TRUCK REFUELLING SLAB - PLAN

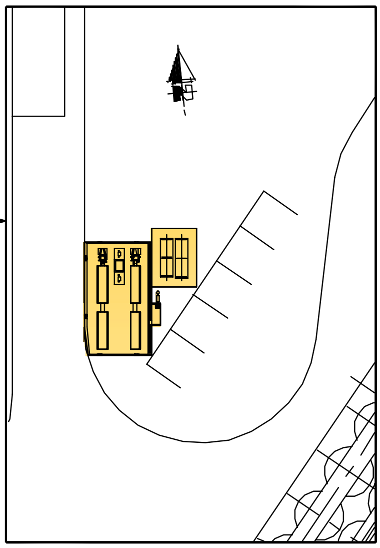


TRUCK REFUELLING SLAB ELEVATION





KEY PLAN



LOCATION PLAN

CONCEPT ONLY

ROOTY HILL R.D.C.

TRUCK REFUELLING AREA

FIG 5.11

required from time to time. Drivers who are on site when the meal breaks fall due would use the amenities building.

The transport area office would house the allocation centre and the main administration functions for Readymix's Sydney Raw Materials Transport division. The function of the transport allocations office is to control and track the movements of the truck fleet as it delivers materials through the Sydney metropolitan area and allocate loads to specific trucks as they return to the site.

5.4.6 Regional Office and Laboratory

Regional administration offices and a Materials Testing Laboratory would be located in two new buildings on the existing car park area in the Humes site adjacent to Kellogg Road (refer Figure 5.1). The laboratory building would be a single storey industrial type facility with mezzanine offices and the office building would be four levels (plus parking). The concept designs for this facility are shown on Figures 5.12 and 5.13, including a perspective from Kellogg Road and sections through the proposed buildings.

One building would incorporate work areas and amenities for office personnel and the other work areas and amenities for laboratory personnel. Approximately 65 employees would initially work in the regional office building. This building has been designed to house up to 120 people, to allow for future growth of this office. Approximately 27 employees would work in the laboratory building, though not all the employees in the laboratory would be on site at all times. This is due to the need to conduct concrete testing at the point of delivery on construction building sites.

Normal office hours would be between 7:00 am and 7:00 pm Monday to Friday, normal laboratory hours would be 6:00 am to 6:00 pm Monday to Saturday.

Light vehicle access to these buildings would be from a new entrance off Kellogg Road, exit would be via a new single lane road running down the western boundary of the Humes site to Woodstock Avenue. Access to the laboratory for deliveries of supplies and collection of waste skips would be through the Humes site, with entry and exit via Woodstock Avenue.

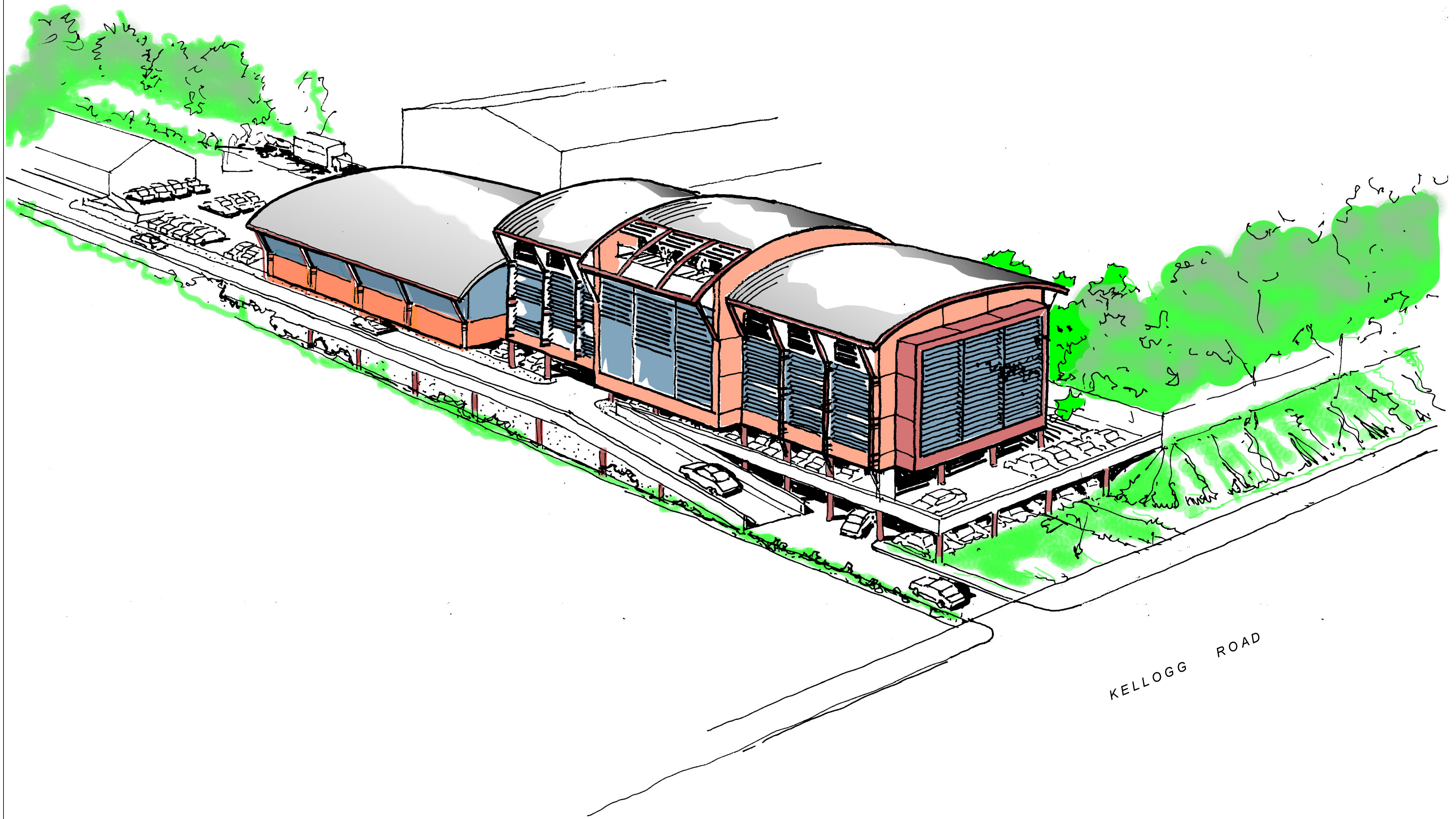
A total of 189 car parking spaces would be provided in the existing Humes car park area and the new buildings. Humes employees would occupy 105 of these spaces. Laboratory and Office staff would use the remainder. The number of spaces provided for the new buildings is in accordance with the Blacktown City Council DCP.

The overall number of car parking spaces on the entire site is 310 (including the 105 spaces retained for the existing Humes operation). This provides adequate parking spaces for employees and visitors likely to be associated with the site (taking into account the shifts worked). Overall there would be 189 car parking spaces on the Humes site, 110 in the main RDC carpark, 3 adjacent to the control room and 8 adjacent to the workshop.

Laboratory operations would include the Sydney region concrete testing laboratory and quarry materials testing for products at the RDC. The laboratory operations would also include analysis and reporting of the test results generated at the laboratory.

The laboratory would undertake mechanical testing of concrete and quarry products using light plant and equipment. A gantry crane located in the main body of the building would provide lifting capacity of up to 1 t. Small batches of concrete would be prepared for trials and product development. All wastes will be removed from site and water recycled where appropriate.

Landscaping would be undertaken in the set-back area between the buildings and the site boundary. This is included in the site Landscape Masterplan (refer Section 7.9).

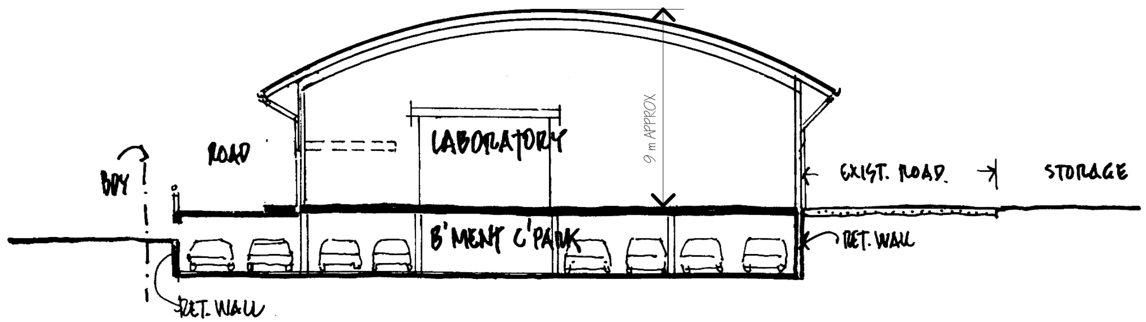


ROOTY HILL R.D.C.

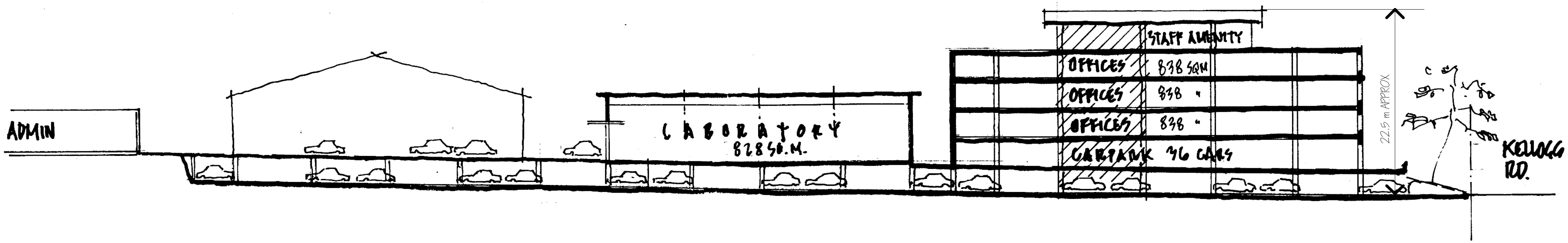
OFFICE AND LABORATORY - CONCEPT

FIG. 5.12

\\SERVER\Projects\RedMix-RH\CAD\01_Sketch\Scheme3\READYMIX-RDC-Scheme.lbk
Wednesday, 22 June 2005



LABORATORY CROSS SECTION



OFFICE AND LABORATORY CROSS SECTION

SCALE 1:500

CONCEPT ONLY

ROOTY HILL R.D.C.

OFFICE AND LABORATORY SECTIONS

FIG. 5.13

\\SERVER\Projects\RedMix-RH\CAD\01_Sketch\Scheme3\READYMIX-RDC-Scheme.lbk
Wednesday, 22 June 2005

5.5 OPERATIONAL TRAFFIC MOVEMENTS

All traffic to the RDC would access the site via Kellogg Road (except for some minor laboratory traffic that would enter the site through the existing Humes access on Woodstock Avenue). Access to and from Kellogg Road for all heavy vehicles from the south would be via Woodstock Avenue direct from the M7. Heavy vehicles to and from the north would use Glendenning Road and Power Street direct to the M7. No other heavy vehicle routes would be used.

Deliveries would be despatched from the site 24 hours per day, 7 days per week. Most loads would be despatched between 6 am and 6 pm on weekdays and Saturdays, with continuing operations on the site (lower number of despatches) outside of these hours to meet customer requirements. This would assist in spreading out the arrival and departures of trucks minimising the potential for queuing of trucks on the site and the concentration of impacts.

Initially sales from the RDC are expected to start at about 2 to 2.5 Mtpa. Using a truck & dog configuration (33 t payload), this would give a daily average of 258 loads dispatched. Over time when the full capacity of 4 Mtpa is reached, the average daily loads increases to 400.

It is anticipated approximately 30 to 40% of loads leaving the site would travel north on the M7, with the remainder travelling south. This distribution would be subject to market and customer requirements which include the civil industry, asphalt/concrete plants and construction sites.

Additional to this are traffic movements associated with the Concrete Batching Plant. All Concrete Batching Plant traffic would access the site via Kellogg Road. Within the site there is a dedicated entry and exit road to the Concrete Batching Plant adjacent to the boundary with the OneSteel property.

Access routes to and from Kellogg Road for concrete agitators would be determined by the required delivery location on a load-by-load basis. Access routes for heavy vehicles delivering to the Concrete Batching Plant would be controlled as part of the RDC.

The expected traffic movements for the site during the morning peak are 110 loads per hour with 10 other cars/vans/light vehicles.

The majority of employees on the site are expected to have arrived for work prior to the morning peak hour, hence they are not included in the above figures for the peak hour.

Traffic flow on the RDC site is designed to be one way to avoid risk of collisions (refer Figure 5.14). The number of intersections has been minimised. Where there are intersections they would be signposted to make it clear which traffic needs to give way. By-pass lanes have been provided at queuing points to make it possible to move around the site as needed if not needing to weigh or load. As much as possible light and heavy vehicle traffic has been separated with the only exception to this being site management, maintenance and deliveries.

In the event of an on-site emergency, entry or exit locations would be through gates into the adjoining OneSteel and Humes sites and to North Parade.

It is proposed to construct two types of pavement within the site. Truck loading areas, truck parking areas and the main internal roads are proposed to be constructed using reinforced concrete pavement while car parking areas and the secondary internal roads are proposed to be constructed using flexible pavement (refer Technical Report No 2).

ROOTY HILL R.D.C.

PROPOSED SITE TRAFFIC FLOW

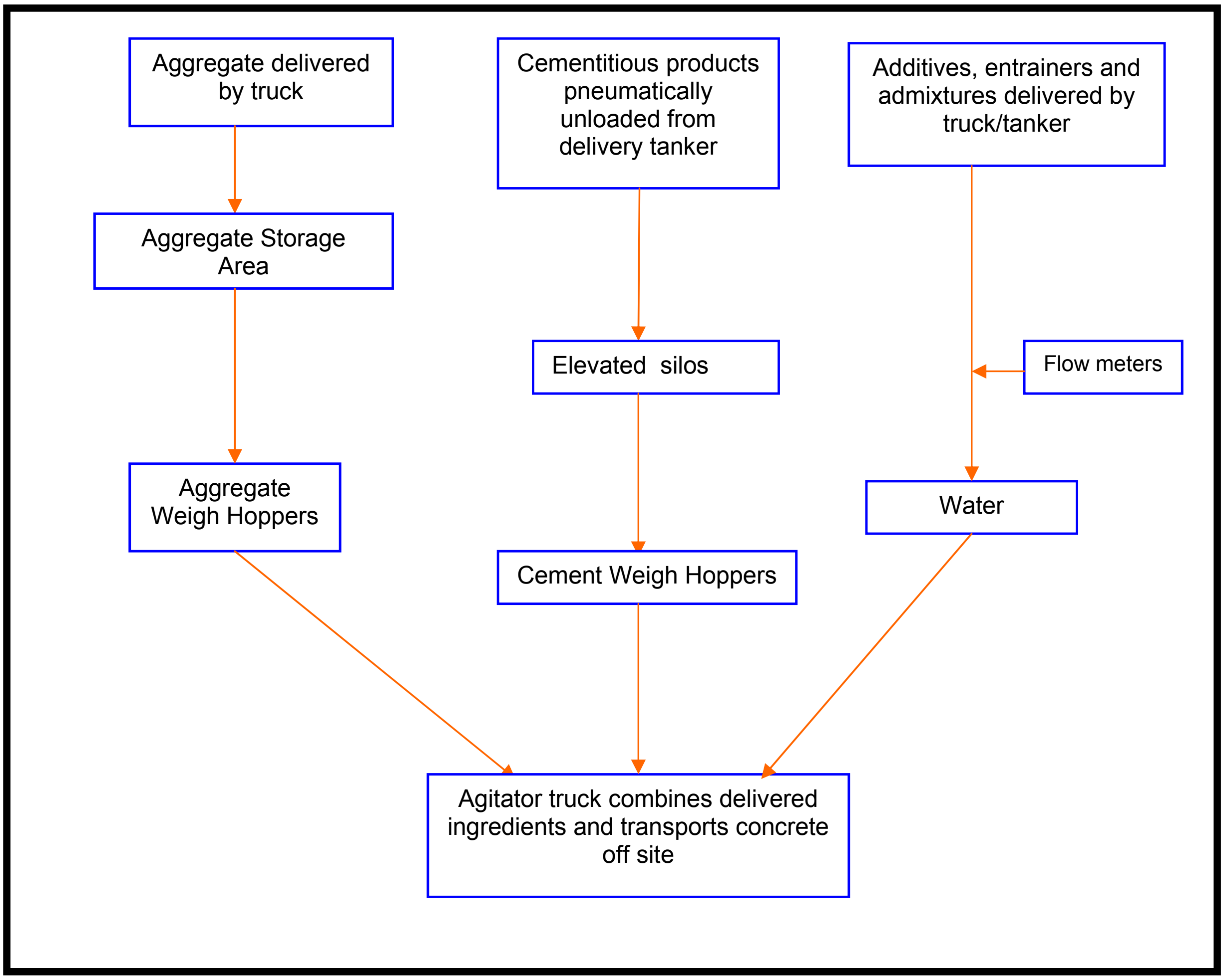
FIG 5.14

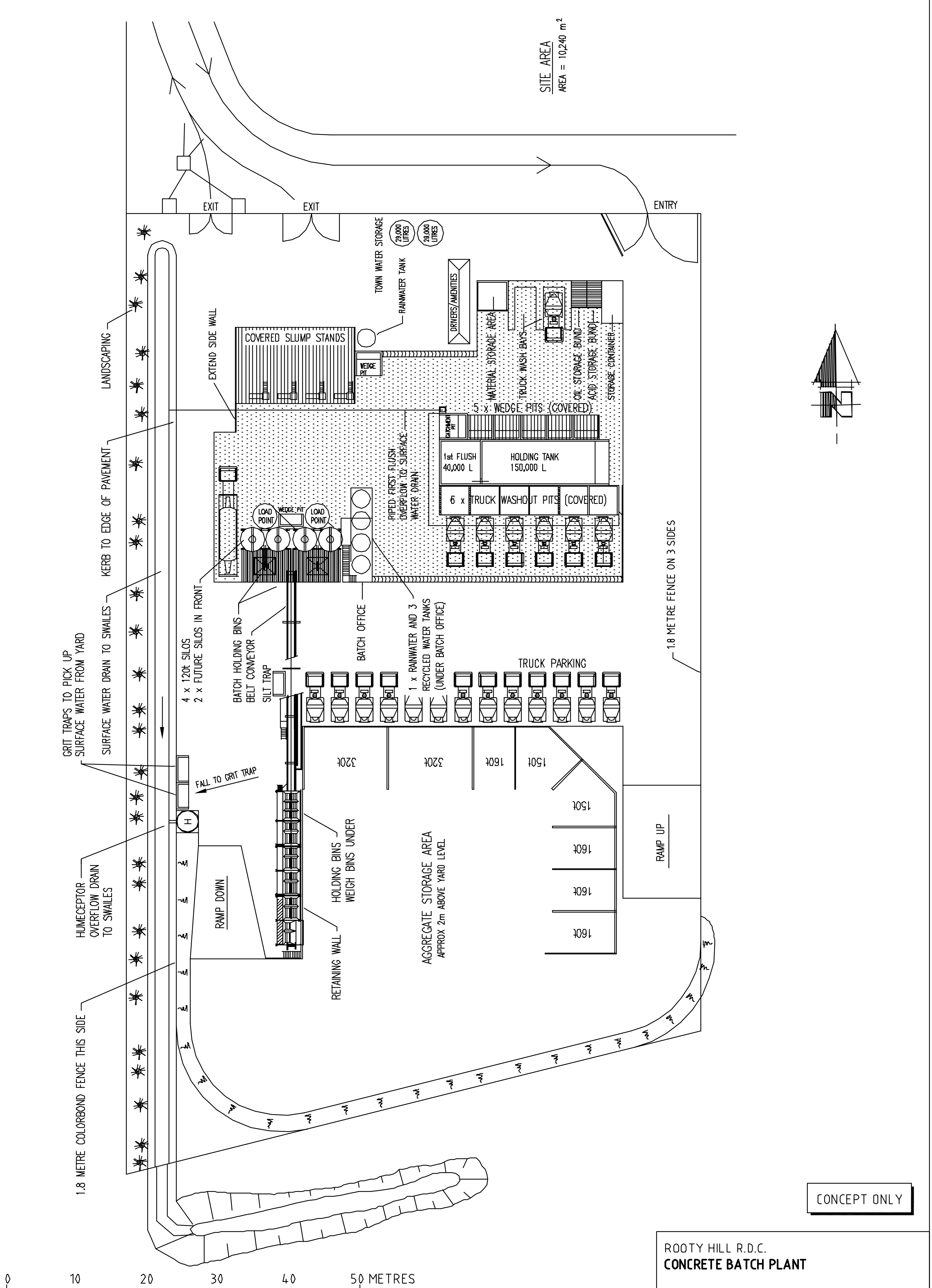
5.6 CONCRETE BATCHING PLANT

5.6.1 The Process

The Concrete Batching Plant would have the capacity to produce up to 200,000 m^3 of concrete annually. This is the same capacity for the Concrete Batching Plant approved by Blacktown City Council in 2004. The plant is a semi-enclosed metal clad structure with four silos. The upper level of the batch house comprises weigh bins and holding bins for holding the specific batch quantities of each load of concrete. The lower level provides access for the truck agitators to receive batches of concrete. The concrete plant weighs and delivers specified volumes of cement, aggregate, admixtures, additives and water to the truck agitators. Admixtures are contained in storage tanks connected to flow meters, which dose the concrete batch water with the correct amount of admixture prior to being discharged to the truck agitator. The concrete plant office, including the control room would be located so site and batch operations are close to the plant operators. A computer system is incorporated into the Concrete Batching Plant control room to enable regulation of the automated production facilities. This computer system monitors levels in the storage bins, silos and admixture tanks as well as the operation of the conveyors and pumps.

The Concrete Batching Plant is a Dual Alley Dry Concrete Batching Plant where mixing of the materials occurs within the truck agitators. The overall layout and elevations of the plant are shown on Figures 5.15 and 5.16. The following flow diagram shows the operations of the Concrete Batching Plant.

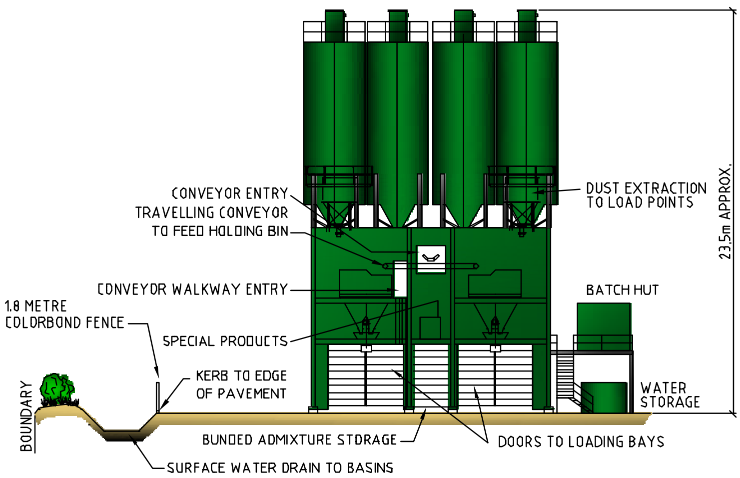




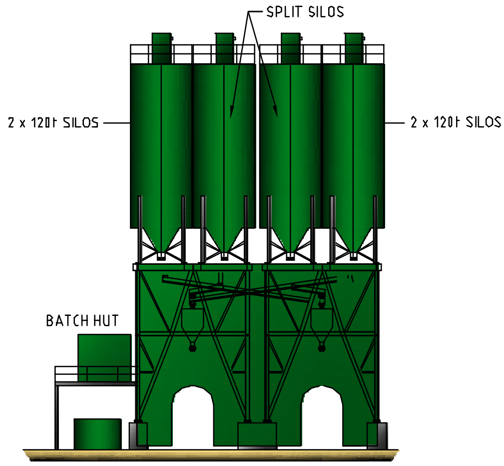
ROOTY HILL R.D.C.

CONCRETE BATCH PLANT

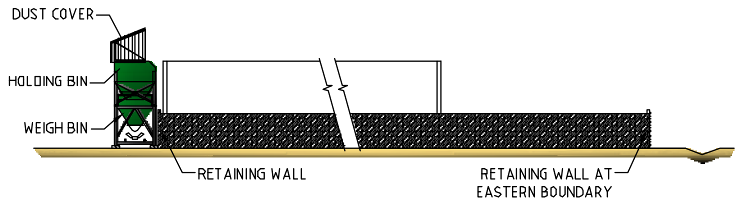
FIG 5.15



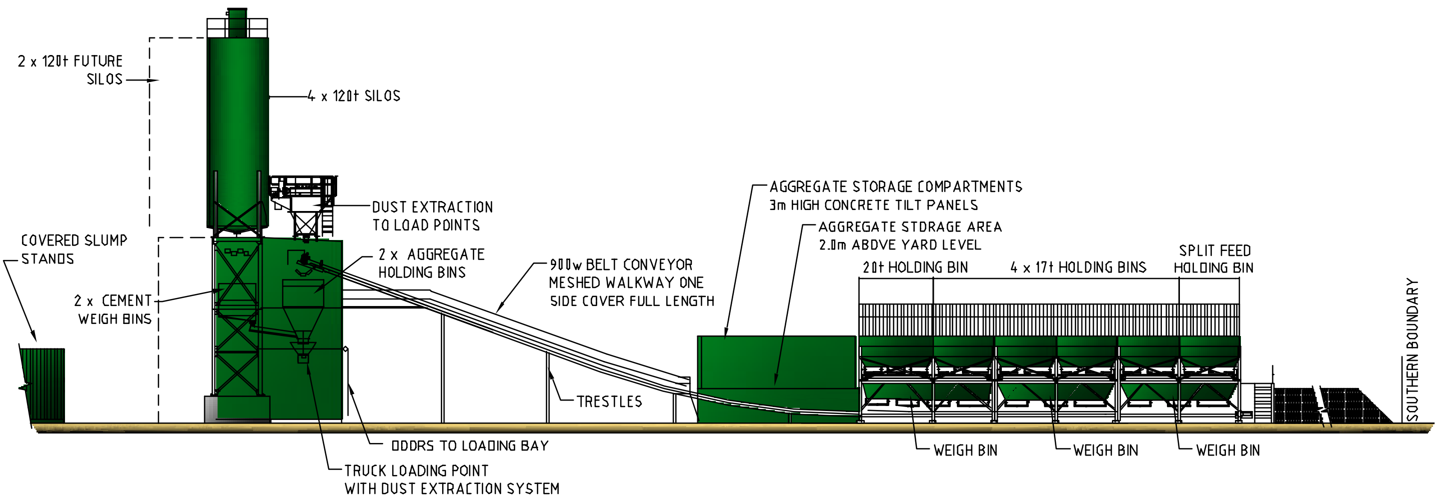
SOUTH ELEVATION



NORTH ELEVATION



SOUTH ELEVATION OF AGGREGATE STORAGE AREA



WEST ELEVATION

0 5 10 15 20 METRES

CONCEPT ONLY

REFERENCE
CONCRETE BATCH PLANT SITE LAYOUT FIG 5.15

ROOTY HILL R.D.C.
CONCRETE BATCH PLANT
ELEVATIONS
FIG 5.16

Once the rail siding is constructed and operational, raw materials deliveries to the plant would not generate traffic external to the site with the exception of some products. On average 21 loads per day would be delivered, with the delivery trucks then being loaded from the RDC before leaving the site, thereby not generating additional traffic movements for the site.

The height of the Concrete Batching Plant including the silos is approximately 23 m. Four silos, each with the capacity to store 120 t are utilised for the storage of cement, fly ash, micro silica and other cementitious products as required. Two of these silos would have a dividing wall down the middle to give a total of six storage compartments for cementitious products. The silos are fitted with a reverse pulse dust filter system, pressure relief valves and an automatic overfill protection to NSW DEC standards.

The four silos would be furnished with a high level alarm which sounds at the unloading point when the silo is 95 % full. The driver then has 90 seconds to stop discharging product into the silo before a bladder in the intake pipe is inflated to prevent discharge.

The silos would also be fitted with a pressure relief valve and an alarm to indicate if the valve fails. If the valve fails, a bladder inflates to prevent air entering the silo. There would be one pressure relief valve per silo. The upper level of the batch house, containing the weigh hoppers would also be fitted with a reverse pulse dry dust extraction filter to vent displaced air during filling and prevent dust emissions. The admixture tanks are fitted with overflow points into a bunded area and a collection system that allows product to be disposed of or directed back into the tanks when they have spare capacity.

Parking for all employees would be in the main RDC car park, with parking provided for 20 agitators within the concrete plant area. An amenities building contains a lunchroom and toilets and is located adjacent to the agitator parking area.

There are 8 open on-ground aggregate storage bins with a combined capacity of 1740 t. Each bin has a three-sided concrete wall, and the sand bins are fitted with dust suppression sprays that are manually operated as required. A front-end loader moves the materials from the aggregate storage bins to the weigh hopper where 6 holding bins are located over 3 weigh bins. Once weighed for a specific batch, a covered conveyor with a spill tray then transfers the material from the weigh hopper to either of the two aggregate holding bins within the Concrete Batching Plant.

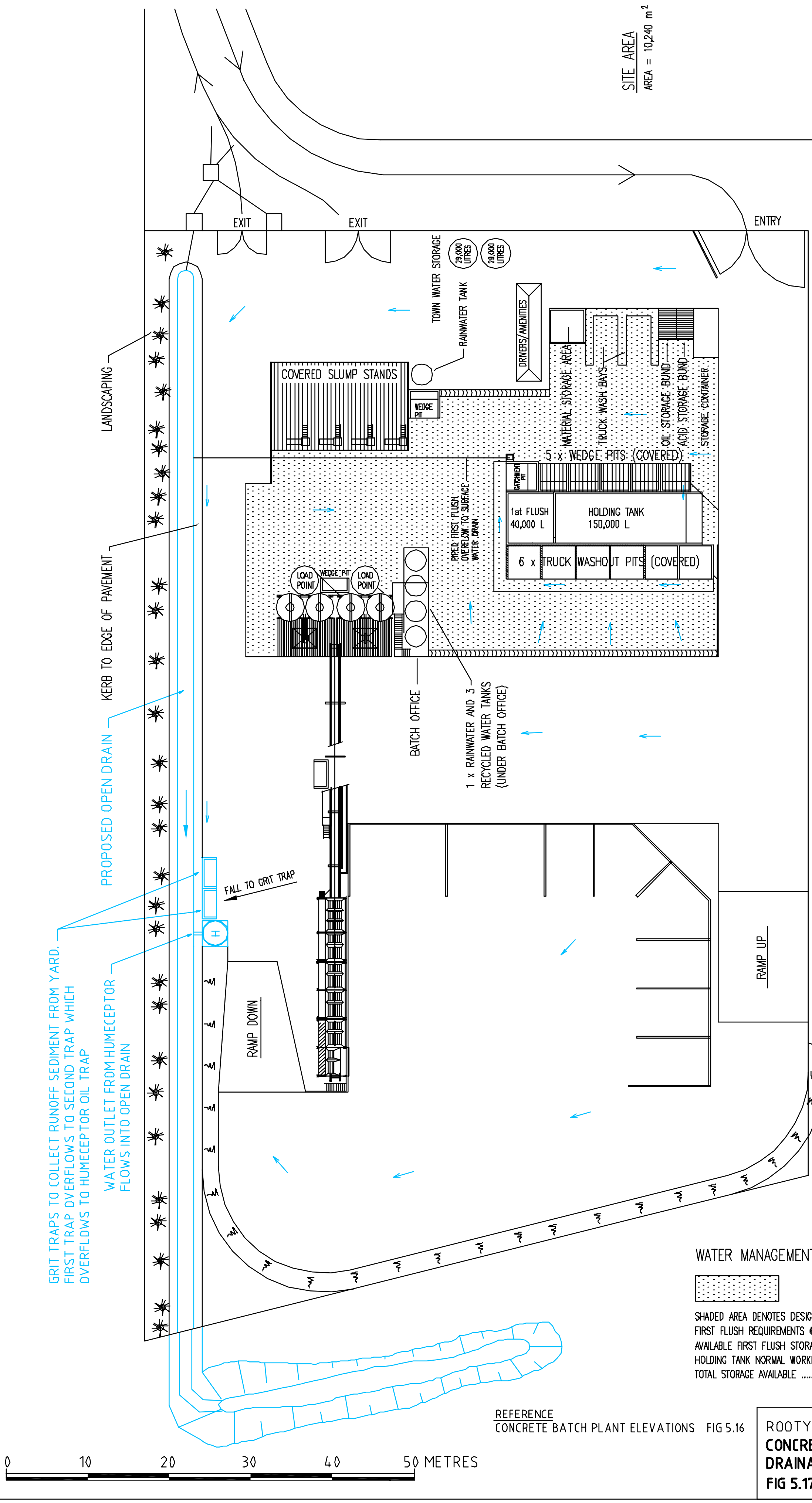
Materials stored at the Concrete Batching Plant would include concrete constituents, admixtures, lubricants and cleaning agents. The concrete constituents include aggregate, cement, flyash, silica fume, recycled water and smaller quantities of other additives.

Grease and hydraulic oil would be stored in the oil/acid store on the eastern side of the plant. Approximately 100 kg of grease and 500 litres of oil would be stored. Cleaning agents including detergents and truck acid would also be stored. Truck acid storage would comprise 1000 litres within the oil/acid store. All storage areas would be bunded.

5.6.2 Water Management

Due to the nature of some products used on site, water would be generated in some activities that cannot be discharged from the site and into waterways due to high alkaline levels. Thus, all activities that may lead to the generation of high pH water have been identified and designated as ‘dirty’ areas.

Figure 5.17 provides a diagrammatic representation of the proposed water management system for the Concrete Batching Plant. First flush runoff from the dirty area (1500 square metres) would be captured and recycled for site re-use. The first flush pit would have a total runoff storage capacity that exceeds the first twenty millimetres of initial runoff from the dirty area.



CONCEPT ONLY

WATER MANAGEMENT DATA

SHADED AREA DENOTES DESIGNATED CONTAMINATED AREA	1500 m²	
FIRST FLUSH REQUIREMENTS @ 20 LITRES PER m²	30000	LITRES
AVAILABLE FIRST FLUSH STORAGE CAPACITY	40000	LITRES
HOLDING TANK NORMAL WORKING CAPACITY	150000	LITRES
TOTAL STORAGE AVAILABLE	190000	LITRES

REFERENCE
CONCRETE BATCH PLANT ELEVATIONS FIG 5.16

ROOTY HILL R.D.C.

CONCRETE BATCH PLANT DRAINAGE SYSTEM

FIG 5.17

The plant is divided into sections: designated as ‘dirty’ or ‘clean’ areas, based on the nature of activities that are carried out in these areas.

Water from ‘clean’ areas is deemed suitable for discharge from the site. Thus, the profile of the site has been designed to allow clean water to discharge from the western side of the site. Water passes through a system of grit traps and a Humeceptor (hydrodynamic source control device), in order to capture any solids or other contaminants, before passing through a series of basins and banks prior to discharge into riparian vegetation and hence, Angus Creek.

The activities that have the potential to produce alkaline waters have been restricted to an area designated ‘dirty’, which is segregated from areas deemed as ‘clean’ by bunds and other barriers.

Activities including unloading of cement tankers, delivery of admixtures, loading of trucks, slumping of loads, agitator washout and truck cleaning are considered dirty activities, so water from these sections are diverted to a series of pits for the reuse of water in concrete production.

Water collected in the wash out pits, truck wash down area and slump stands and load points, drain to the below ground catchment pit (low point) where the water then settles through a series of five covered wedge pits before entering the holding tank. The wedge pits have overflow weirs between the pits to allow water to move into the next wedge pit once the highest pit is full. As the water moves from the highest pit to the lowest pit, slimes (cementitious and other fines) are able to settle out of the water and remain in the wedge pits for future removal when dry.

After moving through the series of five wedge pits, the water reaches the below ground holding tank. Theoretically the water contained here is considered “desilted” water suitable for storage and reuse. Further, the water is pumped from the holding tank to the bunded recycled water storage tanks located on site for future use in concrete production.

The contents of the settlement pits and wash out pits would be disposed of to a licensed waste disposal facility or recycling facility. The bays are periodically emptied when the contents are dry enough to handle.

This system would also be used to treat water pumped to the Concrete Batching Plant from the Blending Plant/Pug Mill.

Rainwater from the dirty area is captured by a purpose built first flush pit in the dirty water area. This area would have a total run off storage capacity that exceeds 20 mm of initial runoff. There is one first flush pit on site. Under rainfall conditions water would pass through the catchment pit, wedge pits, holding tank and then enter the first flush pit. This pit is large enough to capture in excess of the first 20 mm of rainfall in the dirty area, which would ensure that paved areas in the dirty area have been flushed clean. Water collected in the first flush collection pit is pumped to the water storage tanks for reuse. Thus, further rainfall would be deemed clean, and would discharge to stormwater via a high level overflow weir once the first flush pit is full. The system has been designed to comply with NSW DEC guidelines for first flush systems.

As much water as possible used in the batching process would be recycled from this water collection system on site. Water collected from “dirty” areas would be collected and stored in above ground recycled water storage tanks. The storage tanks would be bunded and have the capacity to contain between 40 000 – 60 000 L.

In order to ensure residual concrete is not able to dry and set in the truck agitator, it is essential to remove excess concrete from the agitator at the end of each working day or in between loads as required. There would be six covered wash out pits located on site for drivers to remove excess concrete from the truck-mounted agitators. The trucks would reverse into the wash out pits and fill the empty barrel with water. The drum is rotated to remove excess residual concrete from the interior. The entire contents of the agitator (water and any solids) would then be discharged into the wash out pit. Water used in the wash out bays would then be recycled.

Water discharged into the wash out pits would be collected in the below ground catchment pit where the water then passes through a series of five wedge pits designed to remove sediment from the water before recycling can occur.

Likewise, a truck wash down area is proposed to be located on the Concrete Batching Plant site allowing drivers the opportunity to clean the trucks. Water used here must be clean water and would also be recovered and directed towards the wedge pits for recycling in the concrete batching process.

5.7 CREEK CROSSINGS

Bridges are proposed to be constructed across Angus Creek at two locations, one a road and conveyor crossing to link the southern and northern section of the site and the other to cross Angus Creek for the rail siding and the realigned North Parade.

The bridges have been designed in conjunction with detailed flood modelling of the site to ensure neither bridge has a significant impact on upstream flood water levels.

5.7.1 Internal Site Access Road Crossing

The road/conveyor bridge across Angus Creek (refer Figure 5.18) would be a span bridge to minimise impact on the creek bed. It would link the northern and southern sections of the site and provide access to the conveyors, rail unloading station and rail siding on the southern side of the site during operations. It would also be used for access to the southern part of the site during the construction phase. The conveyor transferring materials from the rail unloading station to the materials storage and truck load out areas on the northern part of the site would be supported by this bridge.

The bridge would have a top of structure level sloping from approximately RL 34.25 to 33.25 m relative to the Angus Creek bed level and a structure depth of approximately one metre. It would have a centre span of 20 m, with sections spanning 10 m either side of the centre section. The access roadway levels transition back to the natural surface levels within 25 m of the bridge abutment on the south and rise to the RDC pavement level on the north. The road section of the bridge would be approximately 8 m wide, with an additional 3.5 m on the western side to support the conveyor running parallel to the bridge. The design and method of construction of the bridge would meet the requirements of the NSW DPI and DNR. The sections on either side of the creek maintain a corridor for wildlife movement along the creek. The deck for the conveyor section of the bridge would be grid mesh to ensure light under the bridge is maximised.

The pipes associated with a previous creek crossing currently restrict water flow. These would be removed prior to construction of the new bridge, after consent is obtained from the NSW DPI.

5.7.2 Rail and North Parade Crossing

The construction of the rail siding north of the Main Western Railway line would require a crossing of Angus Creek just north of the current alignment of North Parade. The relocated North Parade would also include a bridge crossing of Angus Creek at the same location (refer Figure 5.19).

The proposed bridge structures would comprise a single span with a rectangular opening approximately 20 m wide and approximately 2 m deep relative to the Angus Creek bed level of 32.8 m. Local widening of the creek bed would be undertaken to assist the passage of floodwaters at the location of this bridge. These works would be in accordance with DPI and DNR requirements. Appropriately designed scour protection would also be provided for the creek bed at this location. The design and method of construction of the bridge would be in accordance with the requirements of DNR and NSW DPI.

Water discharged into the wash out pits would be collected in the below ground catchment pit where the water then passes through a series of five wedge pits designed to remove sediment from the water before recycling can occur.

Likewise, a truck wash down area is proposed to be located on the Concrete Batching Plant site allowing drivers the opportunity to clean the trucks. Water used here must be clean water and would also be recovered and directed towards the wedge pits for recycling in the concrete batching process.

5.7 CREEK CROSSINGS

Bridges are proposed to be constructed across Angus Creek at two locations, one a road and conveyor crossing to link the southern and northern section of the site and the other to cross Angus Creek for the rail siding and the realigned North Parade.

The bridges have been designed in conjunction with detailed flood modelling of the site to ensure neither bridge has a significant impact on upstream flood water levels.

5.7.1 Internal Site Access Road Crossing

The road/conveyor bridge across Angus Creek (refer Figure 5.18) would be a span bridge to minimise impact on the creek bed. It would link the northern and southern sections of the site and provide access to the conveyors, rail unloading station and rail siding on the southern side of the site during operations. It would also be used for access to the southern part of the site during the construction phase. The conveyor transferring materials from the rail unloading station to the materials storage and truck load out areas on the northern part of the site would be supported by this bridge.

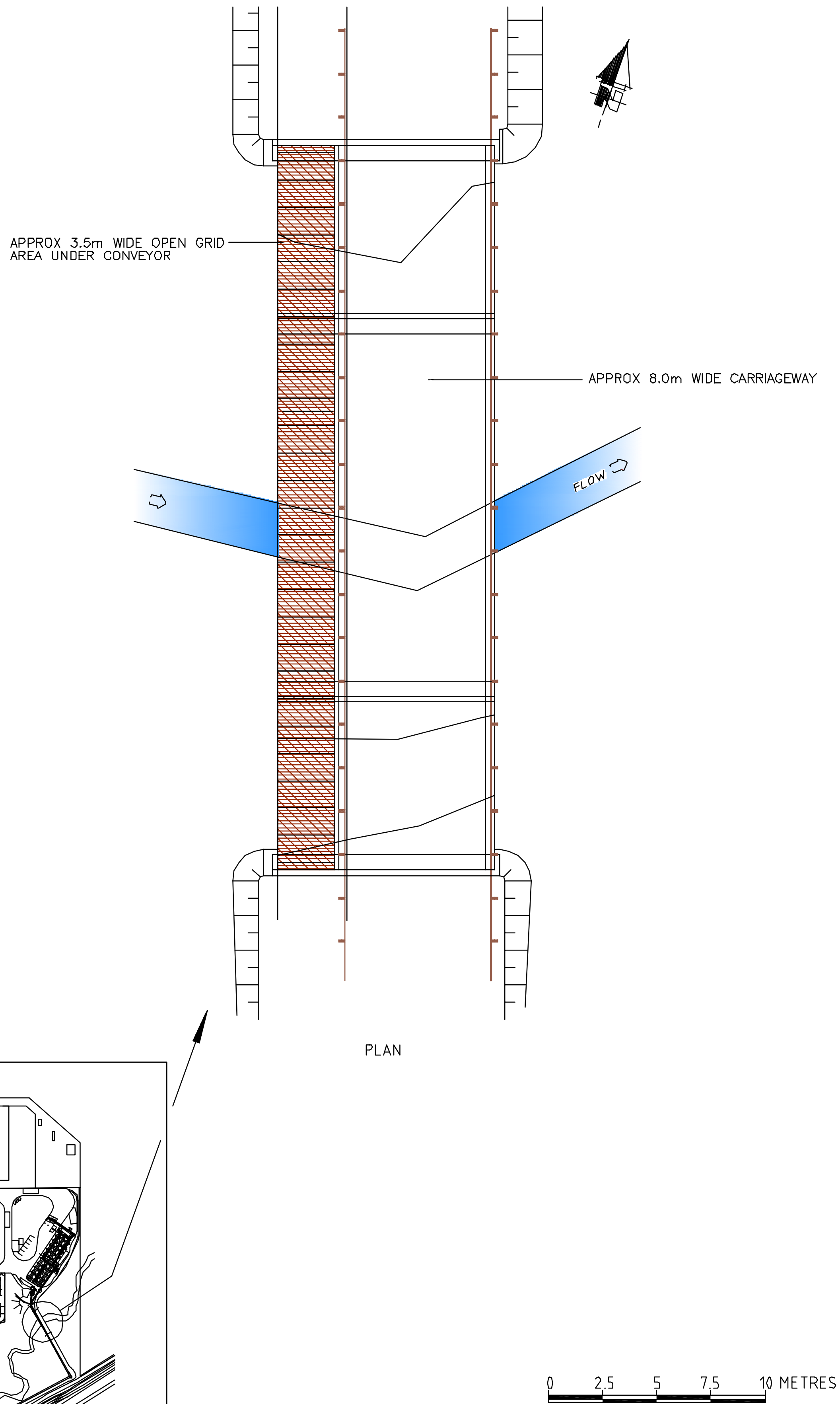
The bridge would have a top of structure level sloping from approximately RL 34.25 to 33.25 m relative to the Angus Creek bed level and a structure depth of approximately one metre. It would have a centre span of 20 m, with sections spanning 10 m either side of the centre section. The access roadway levels transition back to the natural surface levels within 25m of the bridge abutment on the south and rise to the RDC pavement level on the north. The road section of the bridge would be approximately 8 m wide, with an additional 3.5 m on the western side to support the conveyor running parallel to the bridge. The design and method of construction of the bridge would meet the requirements of the NSW DPI and DIPNR. The sections on either side of the creek maintain a corridor for wildlife movement along the creek. The deck for the conveyor section of the bridge would be grid mesh to ensure light under the bridge is maximised.

The pipes associated with a previous creek crossing currently restrict water flow. These would be removed prior to construction of the new bridge, after consent is obtained from the NSW DPI.

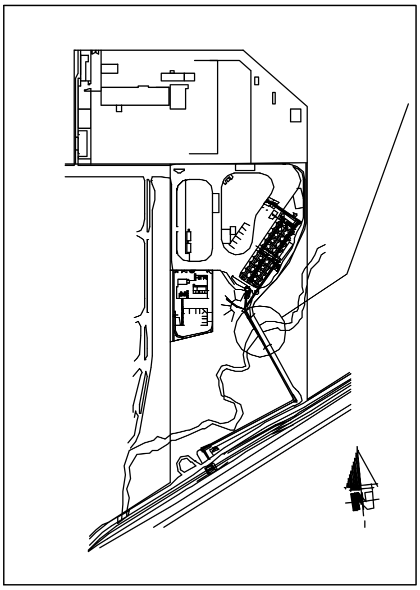
5.7.2 Rail and North Parade Crossing

The construction of the rail siding north of the Main Western Railway line would require a crossing of Angus Creek just north of the current alignment of North Parade. The relocated North Parade would also include a bridge crossing of Angus Creek at the same location (refer Figure 5.19).

The proposed bridge structures would comprise a single span with a rectangular opening approximately 20 m wide and approximately 2 m deep relative to the Angus Creek bed level of 32.8 m. Local widening of the creek bed would be undertaken to assist the passage of floodwaters at the location of this bridge. These works would be in accordance with DPI and DIPNR requirements. Appropriately designed scour protection would also be provided for the creek bed at this location. The design and method of construction of the bridge would be in accordance with the requirements of DIPNR and NSW DPI.



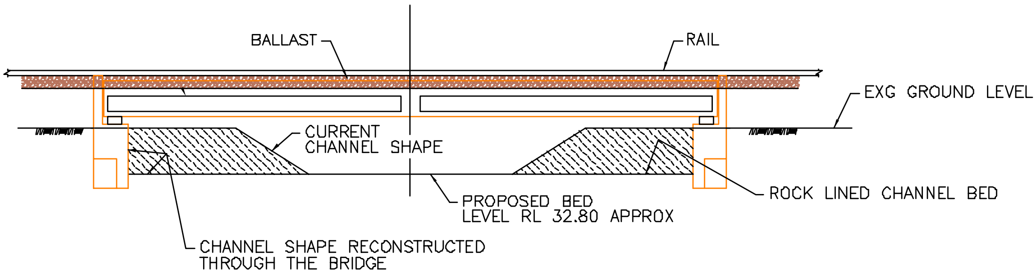
PLAN



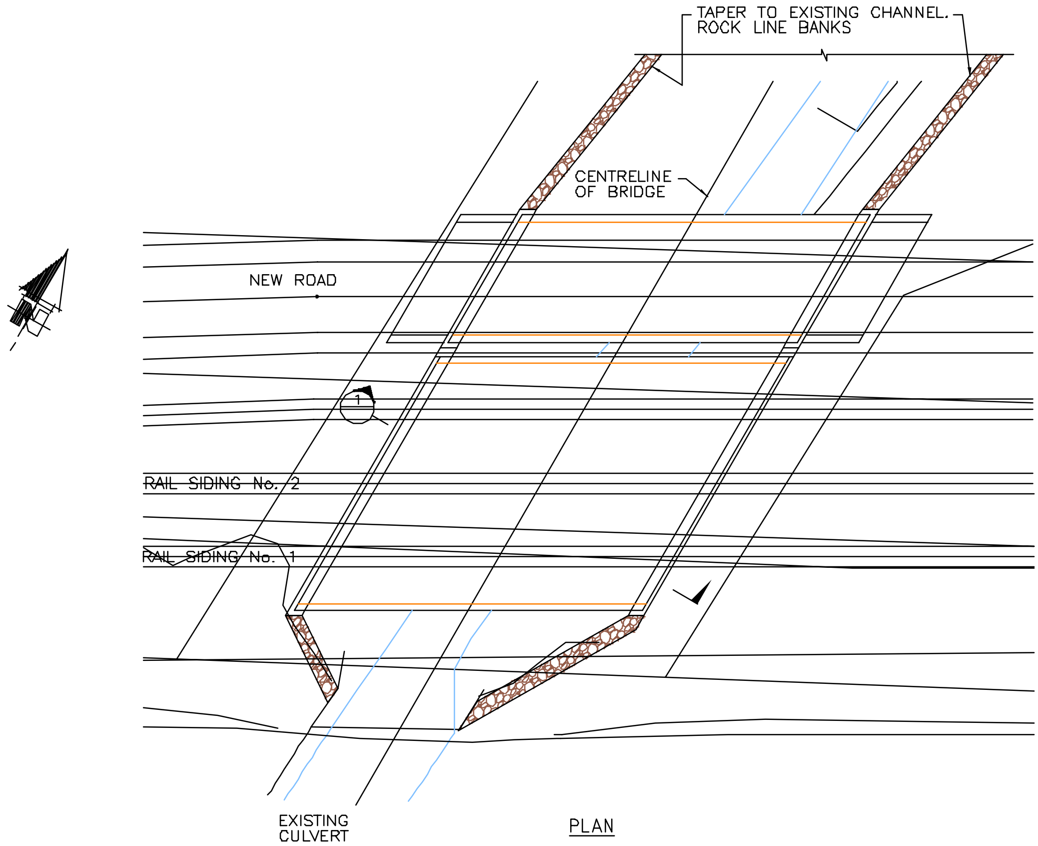
BRIDGE LOCATION PLAN

CONCEPT ONLY

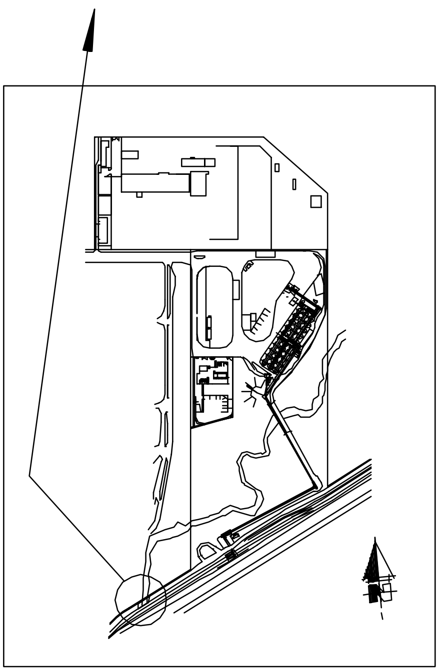
ROOTY HILL R.D.C.
ANGUS CREEK
ROAD & CONVEYOR BRIDGE
FIG 5.18



SECTION



PLAN



BRIDGE LOCATION PLAN

0 2.5 5 7.5 10 METRES

CONCEPT ONLY

ROOTY HILL R.D.C.

ANGUS CREEK RAIL / ROAD BRIDGE

FIG 5.19

5.8 RE-ALIGNMENT OF NORTH PARADE

North Parade is used by Blacktown City Council for access between the works depot adjacent to Rooty Hill Station and the Nurragingy Reserve and Knox Road. RailCorp also use this section of North Parade for access to the Main Western Rail Line and associated services for maintenance. There are a number of services adjacent to North Parade for which maintenance access is essential. Hence it is seen as an important link to which uninterrupted access needs to be maintained. This section of North Parade is also used by the local community to gain access from Rooty Hill to the Nurragingy Reserve and Knox Road usually by foot or by bicycle.

It is proposed to use North Parade for access to the rail siding and the unloading facility. Operators of the unloading facility would need to cross North Parade for daily access to these facilities.

It is proposed to realign North Parade to the north of the proposed rail siding. It would deviate just west of the Eastern Creek crossing and at the Phillip Parkway / M7 overpass. There would be a spur road and level crossing over the railway siding to connect the realigned North Parade with the existing roadway between the siding and the main railway line. This is to maintain access to that area. The crossing would be located at the eastern end of the proposed rail siding.

The re-aligned section of North Parade would have a bitumen sealed pavement and incorporate a cycleway. It would be fenced on both sides to prevent unauthorised access to the RDC site.

As discussed previously, the re-aligned North Parade would cross Angus Creek on a single span bridge, the details of which are addressed in Section 5.7.

5.9 WATER MANAGEMENT

Stormwater flows from adjacent industrial sites would be diverted around the site where applicable. Site drainage would be designed to accommodate and convey flows from a 1 in 100 year ARI (Average Recurrence Interval) rainfall event (refer Figure 5.20).

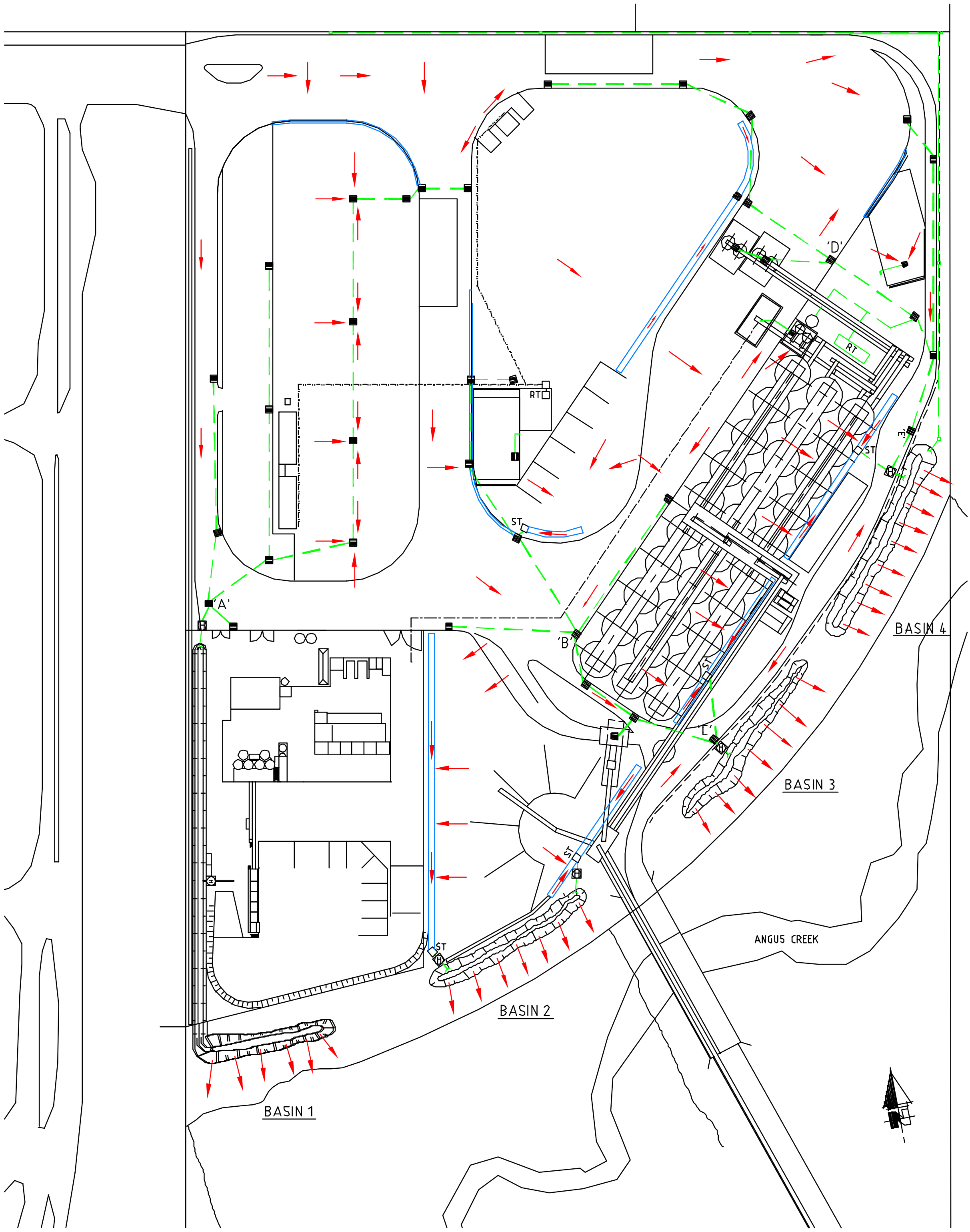
Water storage tanks would be provided for a number of buildings and enclosures on the development site to collect as much rainwater as possible. This water would be reused in:

- Concrete manufacture at the Concrete Batching Plant;
- Material produced through the Blending Plant/Pug Mill;
- The truck wash bay; and
- Site dust suppression systems to minimise the use of mains water on site.

Each of the above uses would also have mains supply as a backup when required.

Water that enters below ground areas such as the rail unloading station or the north east end of the main storage bins would be pumped to collection tanks. If it is of suitable quality it would be reused as above, if not it would either be disposed of to a licensed processing depot or directed to sewer.

Runoff from the paved areas would be drained to a series of settling pits then into a commercially available oil and grease separating unit, such as a Humeceptor or equivalent (refer Figure 5.20). The settling pits would be constructed so that solids caught in them can be cleaned out by the front end loader on site. The oils and grease trapped in the Humeceptor would be pumped out on a regular basis as part of the site maintenance routine and disposed of to either a licensed recycling facility or licensed disposal facility (depending on the suitability of this material for recycling).



SITE PLAN

LEGEND

'A'	REFERENCE POINT FOR STORMWATER DRAINAGE CALCULATIONS
ST	SEDIMENT / GRAVEL PIT
	HUMECEPTOR
	STORMWATER PIT
	STORMWATER PIPE
RT	RAINWATER TANK
	HEADWALL
	RISING MAIN
	ROOF DRAINAGE
	FALL

0 25 50 75 100 METRES

CONCEPT ONLY

ROOTY HILL R.D.C.

STORMWATER MANAGEMENT SYSTEM LAYOUT

FIG 5.20

The development site slopes in the south-easterly direction towards Angus Creek. The proposed site drainage system follows the fall of the ground and runs towards Angus Creek. The site has been divided into four main catchments with drainage systems consisting of surface flow paths and underground stormwater drainage lines (refer Figure 5.21). The underground drainage system has been designed to accommodate and convey the stormwater flows resulting from a 1 in 20 years ARI rainfall event (refer Technical Report No 2). The surface flow paths and the underground drainage system would together accommodate and convey stormwater flows resulting from a 1 in 100 year ARI rainfall event.

The stormwater drainage systems for each catchment would discharge into dispersal basins located at the lowest points of the catchments adjacent to the riparian vegetation corridor associated with Angus Creek. The basins are designed to accommodate the total runoff resulting from a 1 in 3 month ARI rainfall event. The average depth of the basins would be 0.3 m. The banks of the basins would be constructed at a constant level to allow stormwater after filling the basins to overflow to Angus Creek as sheet flow. These basins would generate a “sheet flow” into the riparian vegetation corridor associated with Angus Creek as would currently be experienced during rainfall events. Stormwater resulting from up to a 1 in 3 month ARI rainfall event would be captured in the basins and infiltrate the ground or evaporate.

The only areas classified as “dirty” would be the truck re-fuelling area, the truck wash down bay, the fill points for the cement and lime silos, the discharge point for the Blending Plant/Pug Mill and areas within the Concrete Batching Plant. The water management controls for these areas are detailed in the previous sections of this report.

The runoff from the rail siding to the south of Angus Creek would follow the same flow patterns as currently exist in that area.

The drainage within the Concrete Batching Plant area is a separate system contained within one of the site catchments as described in Section 5.6.2. Runoff from “clean areas” within the plant would be treated in the same manner as detailed for the rest of the site.

Table 5.2 shows estimated annual water consumption for the major components of the RDC.

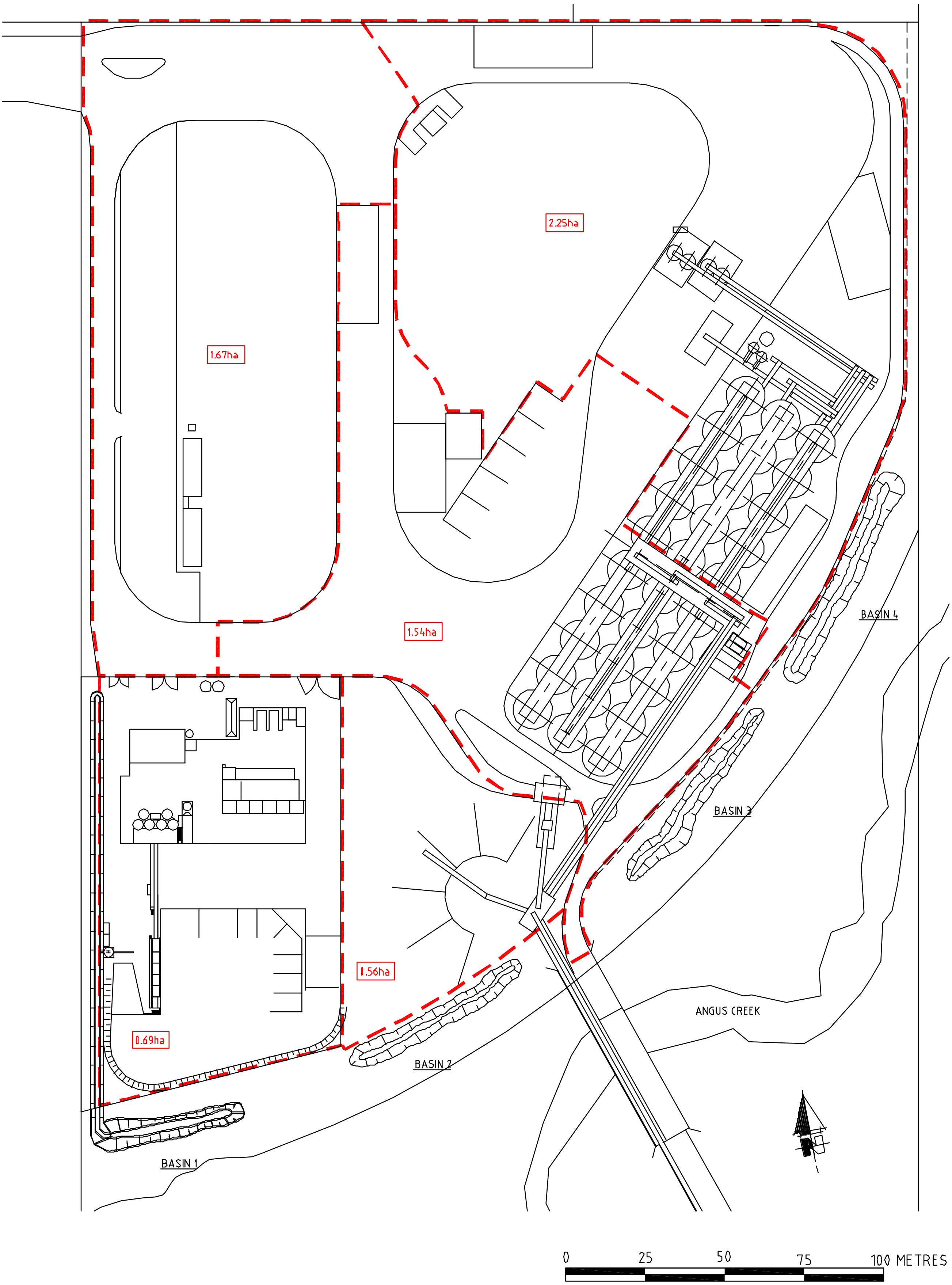
Table 5.2
Estimated RDC Water Consumption

Use	Quantity / Year
Potable Water (including office)	4 ML
Concrete Batching Plant	28 ML
Distribution Centre	17 ML
Truck Wash Bay	1 ML
Laboratory	0.1 ML
TOTAL	50.1 ML

Potable water and water used in the laboratory would be obtained from the Sydney Water main supply. Other water would be sourced from rainwater collected and stored on site and recycled water, supplemented by mains water when necessary.

5.10 WASTE MANAGEMENT

Blacktown City Council’s Site Waste Management & Minimisation DCP identifies waste management performance criteria for a number of development categories including “commercial and industrial” which would include the proposed RDC. Waste management on site would be in accordance with these requirements which include preparation of a Waste Management Plan. Waste storage areas for the proposal are shown on Figure 5.22.

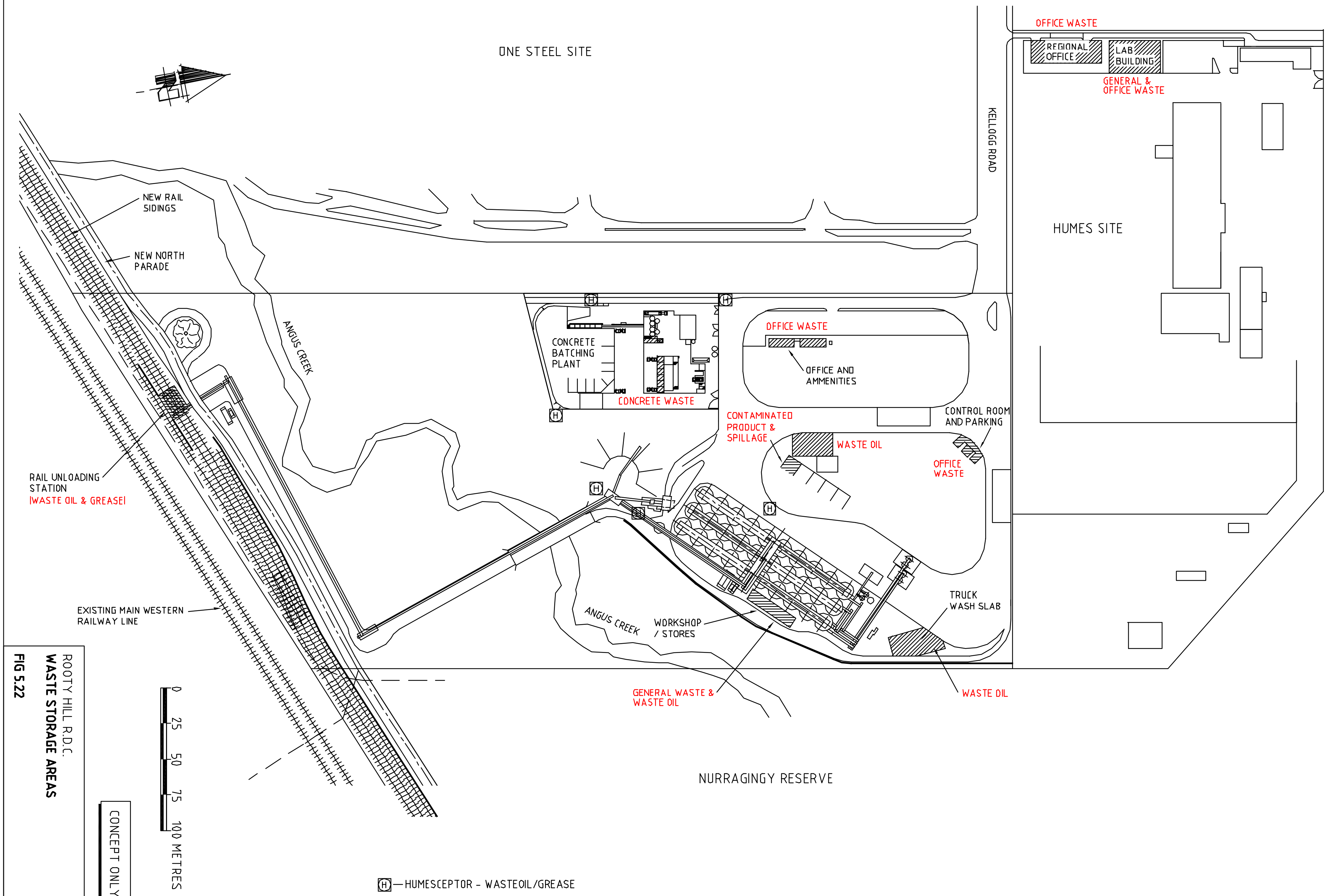


CONCEPT ONLY

SUB CATCHMENT BOUNDARY

ROOTY HILL R.D.C.
SITE DRAINAGE SUB-CATCHMNETS

FIG 5.21



0 25 50 75 100 METRES

CONCEPT ONLY

ROOTY HILL R.D.C.

WASTE STORAGE AREAS

FIG 5.22

The solid waste generated on site would include concrete wash out, returned concrete generated in the settlement pits and steel / industrial waste from maintenance activities. The solid waste would be disposed of to a licensed landfill or recycling facilities.

Dedicated waste bins would be used for domestic waste including office waste. Normal Council collections would be used for this waste.

The amount of waste generated on site would be monitored and reported on a monthly basis. This information is used to check progress against company targets for waste reduction.

5.11 EMPLOYMENT

Table 5.3 summarises the numbers of people that would be employed in the various activities on the site once sales of 4 Mtpa are reached.

Table 5.3
Approximate RDC Employment

Component of RDC	Employees
Rail and Distribution	35
Transport Fleet	80
Concrete Batching Plant	25
Laboratory	27
Office	65
Total Direct	232
Other Transport Contract Carriers	30-40

Total site employment would be approximately 230 - 270. This may increase in the future with increased use of the Regional Office building.

5.12 INFRASTRUCTURE

Electricity

Power supply to the RDC would be sourced from the local zone substation approximately 1km from the development site. Investigations so far indicate the local zone substation has the capacity to supply the extra power demand. The new supply would either run along Woodstock Avenue and Kellogg Road or along Woodstock Avenue to the Humes site and then to the RDC via the Humes site. This would be determined during the detailed design phase in consultation with Integral Energy.

Water

Recycled water would be used wherever possible on the site, as described in Section 5.9. The facilities making use of the recycled water would also have mains water connected as a backup in the event the rainwater tanks are exhausted.

A standard mains system would supply water to the site from the existing Sydney Water supply in the area. This would also feed a ring main around the site for fire fighting. The ring main would be designed in accordance with the relevant regulations.

Sydney Water is investigating the construction of a recycled water main from a nearby sewage treatment plant in the area. When supply from this main is available, the site may use the recycled water (subject to suitable quality) for as many uses as possible.

Annual water consumption for the site is estimated at approximately 50 ML.

Sewage

All amenities on the RDC site would be connected to the sewer running along the eastern boundary of the property in accordance with Sydney Water requirements. The only other areas discharging any material to the sewer would be the re-fuelling area, the truck wash bay, and potentially the rail unloading station. This water would be treated as described at the start of Section 5.5 of this report to ensure it meets Sydney Water criteria prior to release into the sewer.

Telephones

A standard connection to an existing network would be required.

The location of the existing infrastructure services around the site is shown on Figure 5.23.

5.13 CONSTRUCTION

Construction of all site facilities, including the earthworks, would take place over an approximate 2 year period.

The Concrete Batching Plant is expected to be complete before the aggregate distribution facility. It is proposed the Concrete Batching Plant become operational once works on it are completed. It would be utilised to complete construction of the aggregate distribution facility as well as supplying other “external“ customers. The aggregate distribution facility would not become operational until the full program of construction works has been completed.

The construction phase would employ approximately 220 persons over the course of the project, with a peak for any one time of approximately 150 people. Construction activities would occur 6 days per week in accordance with NSW DEC requirements.

Traffic generated by construction activities would involve employee vehicle movements and an average 300 heavy vehicle movements per day (150 in, 150 out) for the duration of construction. All heavy vehicle construction traffic would use the M7 (or Phillip Parkway, should the M7 not be completed) to access the site.

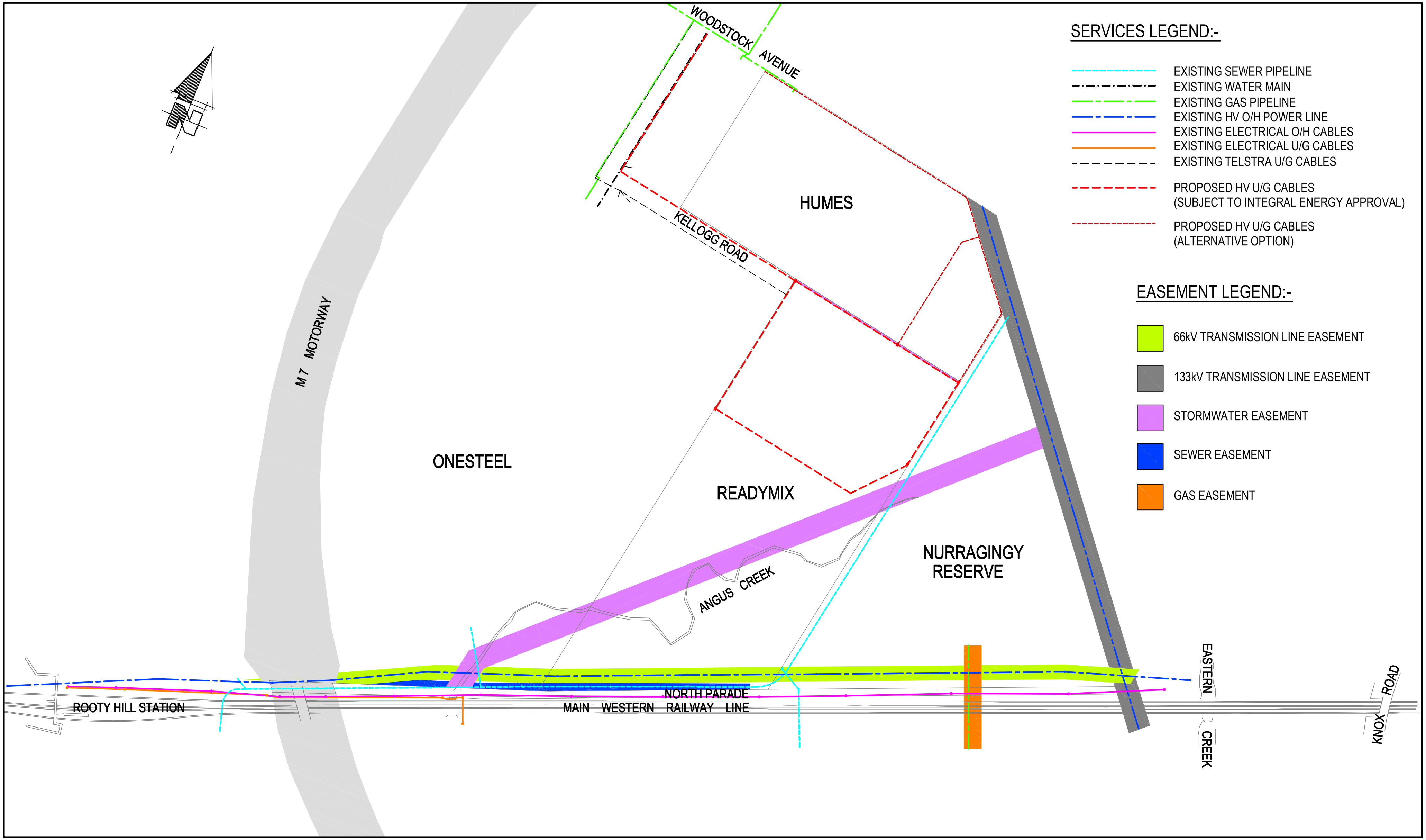
During the initial phase of site construction access to the southern section of the site would be via Knox Road/North Parade. The proposed road bridge across Angus Creek would be constructed early in the construction phase to allow access to the southern section of the site from the northern section of the site and Kellogg Road.

In addition noise barriers would be installed as part of these initial works to ensure mitigative benefits designed for the operational phase can be obtained during the construction phase.

Construction activities would be undertaken in accordance with the requirements of the Site EMP which includes management of construction activities. Key aspects to be managed during this phase include sediment and erosion control, protection of Angus Creek corridor, traffic management, noise and dust control.

Construction activities would be restricted to 7.00 am to 6.00 p.m. Monday to Friday and 8.00 am to 1.00 pm on Saturdays.

There is a significant amount of spoil currently stockpiled on the northern section of the development site. This material originated from the OneSteel site and was placed in its current location while OneSteel owned the site. Testing indicates this material is not contaminated. Consequently, as part of the construction phase this material would be predominantly utilised to



CONCEPT ONLY

ROOTY HILL R.D.C.

SITE INFRASTRUCTURE & SERVICES

FIG. 5.23

PLOT DATE: 28.7.05

form a pad under the Concrete Batching Plant and fill other low areas on the northern section of the site. The remainder (approximately 10,700 m^3) would be either be graded across the site north of the woodland area to provide uniform gradients for drainage and access or removed from the site. All excess material won through the construction of foundations on the site would be used in the same manner. It is estimated approximately 10,000 m^3 of topsoil would need to be removed from the site.

This proposal would involve the reorganisation of product storage areas within the Humes site as the south east corner of the Humes site is used for the entry weighbridges and roadways for the RDC. Once the product currently stored here was relocated, this area would be filled to the levels required. This activity would also require the construction of a retaining wall to maintain the stability of the ground adjacent to the Humes product storage area.

The construction of the final landform north of Angus Creek would not require importing any fill material to the site. The only material that would be imported is for the construction of the rail siding embankment and the realignment of North Parade. This is required because materials with suitable engineering properties for these applications do not exist on the site.

Dust generation from disturbed areas during the earthworks phase would be controlled by the use of a water cart. The water cart would fill from either the Humes site water collection dam, a standpipe connected to the recycled water main in the area (if available at that time), or from the existing mains water system on the Humes site.

Providing access to the southern section of the site would be a priority once construction commences. In the initial stages of construction it would be necessary for some traffic to access the site via North Parade (entering from Knox Road). This would be limited to the first six months of the project. Hence the internal road bridge over Angus Creek is amongst the earliest “sub projects” to be commenced. After this bridge is constructed all construction traffic would access the site from Kellogg Road.

Wherever possible, materials used in the construction of the rail siding would be delivered by rail (such as the rail tracks and ballast).