Provision of

Infrastructure and Services

Former Hoxton Park Airport, Hoxton Park

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1 Introduction - Provision of infrastructure, drainage and programmed civil works

This Report discusses the provision of infrastructure necessary to service the proposed distribution centres and other minor allotments. Proposed infrastructure works include;

- ~ Roads;
- ~ Drainage;
- ~ Services and Utilities, and;
- ~ Bulk earthworks including excavation and fill.

During the provision of new infrastructure, it will be necessary to maintain access and services arrangements for adjoining lot owners 401-403. These lot owners have been consulted on the development and will continue to be informed as the development proceeds.

At the completion of works, new roads & stormwater facilities will be dedicated to Liverpool City Council for public use and easements created for services as required by relevant authorities.

2 Roads & Access

The Roads and Traffic Authority (RTA) is currently in the process of carrying out a major upgrade of Cowpasture Road. Part of the upgrade includes a new intersection at the boundary of the site. This new intersection will provide access to the site with the current access point to be decommissioned at the appropriate time. The VPA obligations cover off the necessary obligations.

There is a proposed future secondary access which traverses Hinchinbrook Creek ("northern intersection") again onto Cowpasture Road. This intersection will be designed and constructed in accordance with RTA requirements at the appropriate time.

As part of the development a new north/south access road will provide access from the new intersection on Cowpasture Road to the site.

The proposed road network and intersection points are generally consistent with an established Street Network plan for this Precinct as detailed on Figure 1 Part 2.9, *Land Subdivision in Former Hoxton Park Airport Site,* of Liverpool Council's Development Control Plan 2008. Council's Street Network Plan is reproduced below.

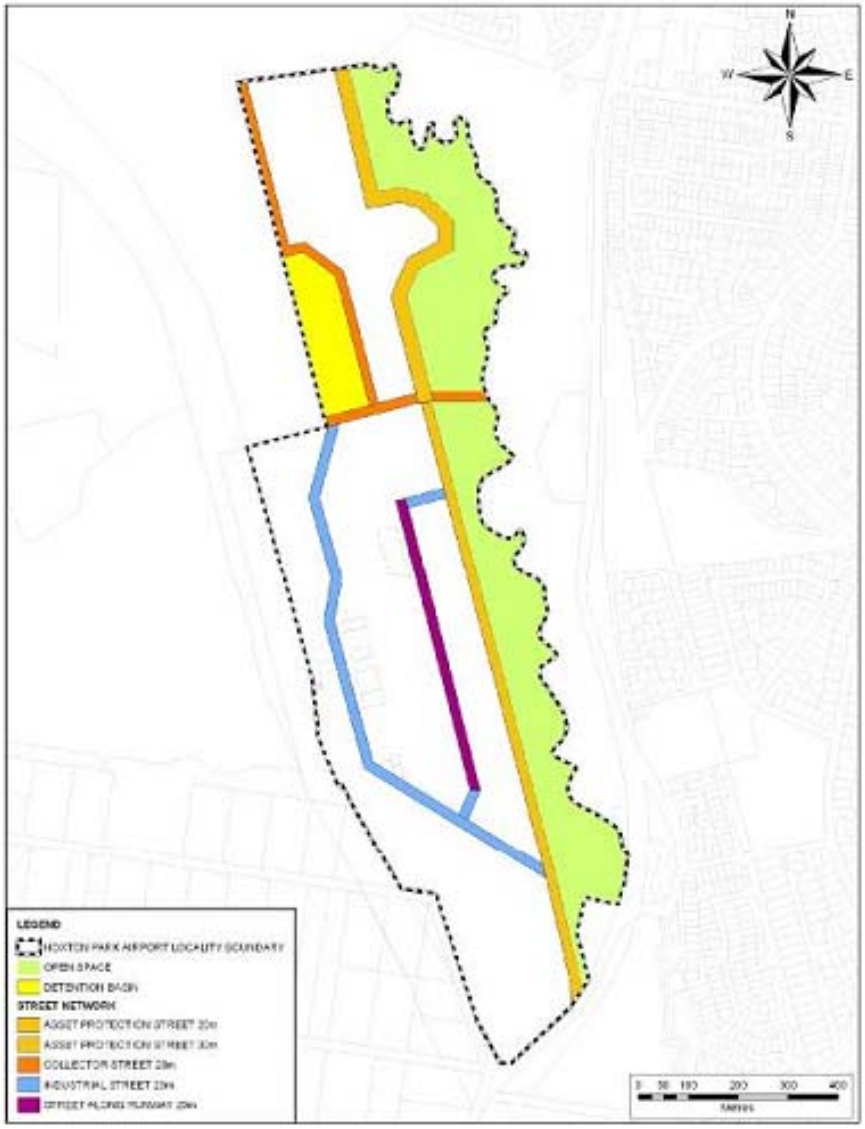

Figure 1: Street Network Plan, Liverpool Development Control Plan 2008, Part 2.9 – Land subdivision in Former Hoxton Park Airport Site

Figure 2 below provides an overlay of the proposed street network, shown dashed, on to Council's Street Network Plan, as contained in the Council's DCP.

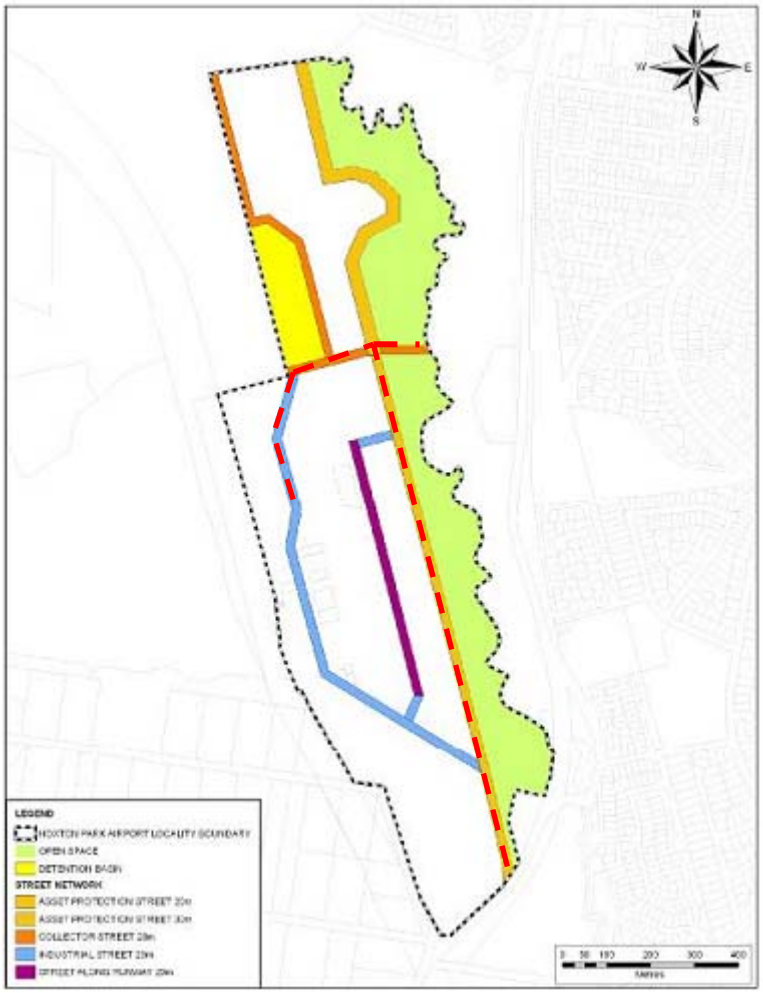

Figure 2: Proposed Street Network Plan, Proposed Distribution Centres & Land Subdivision upon the Former Hoxton Park Airport Site.

The total length of roads to be constructed is approximately 1300m, comprising an internal north-south access road (Road 1), a new east-west road (Road 2), and new road (Road 3) terminating in a cul-de-sac. This arrangement is shown in Attachment 1. Future access to Lots 401 – 403 DP 1141990 will be gained via new Road 3, which will in part utilise the existing road pavement.

Road 1 is proposed to be divided into three treatments namely;

- From the existing Cowpasture Road intersection to Chainage 60
- Chainage 60 to 240
- Chainage 240 to Roundabout

The section of road from Cowpasture Road to Chainage 60 is proposed to consist of a variable width pavement to suit the existing constructed intersection kerb alignments transitioning to the full 13.0m pavement at Chainage 60. The arrangement of the lanes transitions over the length of this segment to develop the two outbound traffic lanes and one inbound lane at the existing intersection. At Chainage 60, the lanes will develop into the full configuration of 2x3.5m traffic lanes and 2x3.0m parking lanes midblock. It is proposed to contain this pavement within a 17m road reservation to allow suitable area for the floodway that is required to be constructed to the east of the road.

The section of road from Chainage 60 to Chainage 240 is proposed to be 13.0m with 2x3.5m traffic lanes and 2x3.0m parking lanes midblock. Due to the requirement to provide a floodway to the east of the road to ensure appropriate floodplain management, it is proposed to contain the pavement within a 17.0m wide reservation. The balance of the land creating the floodplain is to be dedicated to Council as Drainage Reserve.

The section of road from Chainage 240 to the future roundabout is proposed to be 13.0m with 2x3.5m traffic lanes and 2x3.0m parking lanes midblock. It is proposed to be contained within a road reserve of 20.8m.

All new roads and intersections have been designed to cater for 19 metre semi trailers and 26 meter B Doubles in accordance with AS2890.2-2002 and Austroads requirements. It is noted that Cowpasture Road and the M7 link are both declared B Double routes.

Road 1 is proposed to have a footpath on the western side of the road. Pedestrian movements along this road are expected to be small, not warranting duplication on both sides of the road. It is also noted that there is not development potential on the eastern side of this access road. Road 2 will be provided with a cycleway on the northern side of the road ultimately providing connectivity to the M7 cycle network and Middleton Grange as per the DCP. A footpath is proposed on the southern side of Road 2. This will ultimately connect to the footpath on the future bridge crossing of Hinchinbrook Creek to Cowpasture Road in the east. It is understood Road 2 will also provide a carriageway for local public bus services.

The Roads and Traffic Authority have been consulted in relation to the intersections with Cowpasture Road and have provided a framework for progressing design plans for both intersections.

Road and intersection designs servicing the Distribution Facilities are supported by a detailed Traffic Impact Assessment, prepared by Colston Budd Hunt & Kafes Pty Ltd, as appended to the Environmental Assessment, which includes swept paths detailing truck movements.

Details of the preliminary road design are provided as Attachment 1 to this report. Full road design and construction details will be provided to Liverpool City Council at a later date. Council is proposed to be appointed as the Certifying Authority for the access roads.

All new roads will be made public by dedication.

3 Drainage

3.1.1 General

Parsons Brinkerhoff have prepared a Stormwater and Water Quality Management Strategy for the proposed development, a copy of which is provided as Attachment 2.

All street and roof drainage will be conveyed by a pipe and overland flow path system to the existing points of discharge to Hinchinbrook Creek. Wherever possible an integrated treatment train approach using swales and at source filters will be adopted. At the discharge locations appropriate end of line water quality treatment measures (e.g. gross pollutant traps) will be installed using high hydrocarbon reducing proprietary units. This is further discussed in Attachment 2.

3.1.2 Internal Drainage – Driveway and Carpark Design

Stormwater runoff from the proposed hardstand areas will be conveyed via sheet flow into a pit and pipe network.

The pit and pipe network will be designed to cater for a minimum 1 in 20 year ARI design storm. Localised sags around pits will provide greater inlet capacities. This will ensure flows up to the 1 in 20 year design remain within the pipe system.

The exception to this is the area in the north western corner of Big W. This area is not able to be graded out to cater for storms in excess of the 1:20 year ARI. The pit and pipe network in this area will be designed to cater for the 1 in 100 year design storm for duration up to 24 hours.

Localised sags will be used extensively throughout the carpark/driveways and forecourt areas. The exception to this is the east and south eastern area of DSE. This area, being a dedicated forklift zone is required to not have any sharp changes in grade. The area is also used for stacking containers. The maximum vertical deflection allowed in these areas is 1.5 degrees which equates to 2.5 percent. Grades in this area have been kept below this value.

Big W Site

Low flow stormwater pipes will drain the carpark and driveway to the north, east and south of Big W and integrate with the water quality measures proposed. They will drain underneath proposed Road No.1 into Hinchinbrook Creek. Runoff above the 1 in 20 year design storm will be conveyed via overland flow. It will be directed into an open channel running adjacent to Road No.1 on the western side. The open channel will discharge into creeks located downstream.

It is proposed to provide another open channel adjacent to the south western area of Big W. This channel will convey runoff from the Big W carpark. The western driveway including low flows, will all drain to the proposed channels. This channel discharges to the proposed detention basin on SP2 zoned land.

DSE Site

Low flow stormwater pipes will drain the carpark and driveway surrounding DSE and integrate with the water quality measures proposed. They will drain underneath proposed Road No.1 into Hinchinbrook Creek. Runoff above the 1 in 20 year design storm will be conveyed via overland flow. In the carpark and driveways to the north and west stormwater will be directed underneath the DSE entry into a proposed water quality basin. The remaining carpark and driveway areas will be directed into an open channel running adjacent to Road No.1 on the western side. The open channel will discharge into creeks located downstream.

Preliminary designs for the drainage of the proposed driveways and parking areas are provided as Attachment 3.

3.1.3 Water management during construction

A temporary siltation control facility is intended to be provided during bulk earthworks as shown on the proposed Erosion & Sediment Control Plan provided as Attachment 4.

3.1.4 Stormwater management and controls

Advice received from Liverpool Council has stated that on site detention to limit post development flowrates leaving the site would not be required due to the site's proximity to Hinchinbrook Creek.

Should the construction of the proposed Basin 6 be delayed it may be necessary to construct a low earth berm to the north of the proposed development to ensure runoff in this area is diverted to Hinchinbrook Creek away from the proposed development. These details will be resolved at the Construction Certificate stage of the project.

4 Services and Utilities

Consultation with various service providers has been undertaken by ADW Johnson and others to determine current and future provision of key services. The findings of these investigations are discussed below. A plan detailing the location of existing and proposed service is provided as Attachment 5.

4.1.1 Sewer

Reticulated sewer is currently provided to the site by Sydney Water and is currently being installed as part of required works in relation to a recent three (3) lot subdivision of the site creating Lots 401-403 DP 1141990 (Sydney Water Case No. 115803). This sewer infrastructure provides suitable connections to cater for the proposed developments.

A copy of the application from Olsen Infrastructure to Sydney Water for sewer connection advice is provided as Attachment 6.

4.1.2 Water (Potable)

Potable water is currently provided to the site via a 150mm diameter domestic water service line located in Cowpasture Road, at the southern end of the site. Sydney Water has indicated that future supply to the Precinct will be gained from a new 250mm diameter water main, to be constructed by the lead developer, under the M7 to the north of the airport site and a 150mm main at the southern portion of the airport site from Cowpasture Road including a 150mm link-main along Cowpasture Road to Sixteenth Avenue.

A copy of the application from Olsen Infrastructure to Sydney Water for water connection advice is provided as Attachment 6.

4.1.3 Water (Recycled)

The site is located within an area scheduled by Sydney Water to received recycled water for non-potable use i.e. irrigation, toilet flushing, firefighting and washing machine use – subject to Department of Health approval.

Sydney Water has advised that ultimately the development will be supplied with recycled water from the future Hoxton Park Recycled Water Supply Scheme, via a 300mm main extension from Middleton Grange to be provided under the M7 Motorway.

A request for Design Requirements has been included in the Feasibility Application submitted by Olsen Infrastructure as outline in point 4.1.2 above.

4.1.4 Electricity

Integral Energy have advised that, through the appointed as service coordinator Connect Infrastructure, electricity supply will be made available to this site via new high voltage mains to be installed.

Based on discussions with Integral energy it is envisaged that two (2) 11kV feeder cables will be installed from Hinchinbrook Zone substation and reticulated to smaller distribution substations located strategically within the site.

A formal application and proposed method of supply for the connection for electricity to the Distribution Facilities has been submitted to Integral Energy for their approval/comment.

Connect Infrastructure will also coordinate the provision of temporary builder supply.

A copy of correspondence from Connect Infrastructure is provided as Attachment 7.

4.1.5 Gas

Service provider Jemena has advised that reticulated gas will be available to the development via an extension of the 110mm main located in Middleton Grange. This supply has the capacity for the proposed development.

Discussions will continue with Jemena as detailed designs are prepared as part of road civil plans.

A plan indicating the location of natural gas is provided as Attachment 8.

4.1.6 Communications

Telecommunication facilities are currently provided to the site with Telstra confirming that network infrastructure has been provided previously in relation to the three (3) lot subdivision of the site creating Lots 401-403 DP 1141990. A copy of Telstra's correspondence is provided as Attachment 9.

A separate application has recently been made Telstra Smart Community in relation to the proposed development. The requirements and location of service infrastructure will be documented as part of detailed civil drawings for the future roadways.

5 Bulk earthworks

5.1 General

Levels across the site vary from 34m AHD to 51m AHD with grades being generally flat, ranging from 0% to 4%. In the proposed area of development, surface levels fall to the south by about 5 m over a length of approximately 800 m.

The site is located adjacent to the floodplain of Hinchinbrook Creek. In order to provide flood free access and building envelopes it is anticipated that approximately 180,000m^3 of fill will be required to be imported as part of the construction process.

A separate Development Application has been recently been consented to by Liverpool City Council (Ref: DA-837/2010) for the stockpiling of required fill.

The extent of cut and fill over the site is shown on the plan titled "Indicative Site Cut & Fill" provided as Attachment 10.

Bulk earthworks are required to commence as soon as possible after approval and have been scheduled to commence in May 2010.

5.2 Building Pads

The site levels generally have to be raised by up to 2.5 m above existing levels to provide the required levels for each warehouse. The warehouses are proposed to be constructed on different pad levels of RL 41.45 for the DSE building and RL 39.7 for the Big W building. There will be some minor cut in the north western corners of each platform. Approval is also sought for the construction of the parcel to the south of the Big W building with two pads proposed at approximately RL35.29 and RL35.79.

The geotechnical investigation suggests that there is up to about 1 m of existing silty clay filling over the site.

In areas of cut, which are expected to be of the order of about 1 m, the material should be easily removed by conventional earthmoving equipment. In areas of filling, up to 500mm of the existing filling material is required to be removed and replaced under geotechnical supervision

5.3 Roads & Drainage

In order to construct proposed Road 1 above the 1:100 flood level, site levels will have to be raised by up to 1.4m in some locations above exiting levels.

Earthworks will also include the construction of temporary sediment control basin, to be located towards the southern end of the site as detailed on the attached plan title “Erosion and Sediment Control Plan”.

Full details on bulk earthworks will be documented as part of detailed design plans.

6 Environmental Controls

Environmental controls throughout the construction process are proposed at a number of levels. These include;

- Construction Management/Environmental Management Plan – prepared by Mirvac Constructions provides broad controls for site management;
- Project specific Environmental Management Plan prepared by all key sub-contractors, to be submitted with final designs and implemented on site;
- Erosion & Sediment Control Plan – A detailed plan will form part of the final earthworks road and drainage design plans, of which a preliminary plan is provided as Attachment 4 Full details will be provided as part of final detailed design plans.;
- Salinity Management – Douglas Partners, have provided preliminary advice in relation to the preparation of a Salinity Management Plan, a copy of which is appended to the Environmental Assessment. Full details will be provided as part of final detailed design plans.
- Potentially Contaminated Lands - Douglas Partners, have undertaken a Targeted Phase 2 Contamination Assessment over the site, a copy of which provided is appended to the Environmental Assessment.

  Whilst no immediate contaminations were found, , a Construction Environmental Management Plan (CEMP), will be prepared by an environmental consultant, to address any contamination issues encountered during construction.

7 Easements, Dedications and future subdivision

Approval is sought for further subdivision of the land into five (5) lots, three (3) of which will cater for future development and two (2) containing public assets which will be dedicated to Liverpool City Council. Details of the proposed subdivision are provided below, with a copy of the proposed plan appended to the Environmental Assessment.

Proposed Lot	Area (ha)	Future use
4051	10.62	Dick Smith Distribution Centre
4052	19.97	Big W Distribution Centre
4053	0.9837	Detention Facility – dedicated to LCC
4054	4.92	Residual lot – Future industrial development
4055	(area by deduction)	Open Space (Hinchinbrook Creek riparian corridor) – dedicated to LCC

Upon completion of the major infrastructure;

- All new roads will be made public by dedication upon registration of the subdivision plan.
- Proposed Lot 4053 will be dedicated to Liverpool City Council for drainage purposes, in accordance with the Voluntary Planning Agreement;
- Proposed Lot 4055 will be dedicated to Liverpool City Council for Open Space, in accordance with the Voluntary Planning Agreement.

Appropriate easements will be created over any new or existing services as required by the relevant service authorities.

Existing easements benefiting lots 401-403 will also be amended to suit the development. It is noted that existing easements benefiting lots 401-403 are temporary in nature and contemplate development of the site.

8 Conclusion

Based on the above analyses, all available services necessary to support the proposed development can be extended from existing infrastructure to the subject site. As such there are no servicing constraints that would prevent the development of the site as outlined in the application to the Minister of Planning.

Attachment 1

Preliminary Road Design

Attachment 2

Stormwater and Water Quality Management Strategy

Attachment 3

Preliminary designs for proposed driveways and parking areas

Attachment 4

Erosion and Sediment Control Plan

Attachment 5

Location of existing & proposed services

Attachment 6

Correspondence - Olsen Infrastructure

Attachment 7

Correspondence – Connect Infrastructure

Attachment 8

Location of gas mains, Jemena

Attachment 9

Correspondence - Telstra

Attachment 10

Indicative Site Cut & Fill