
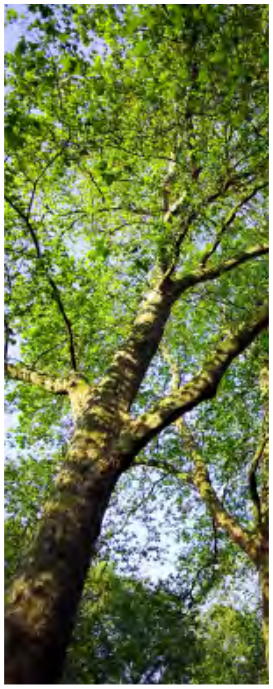


Airds and Bradbury Renewal Project

Infrastructure Report

March 2011
Landcom

Mott MacDonald
Hughes Trueman

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Content

1. Introduction

Airds and Bradbury are located approximately 2.5 km south east of the Campbelltown CBD, the regional centre of the Macarthur Region, about 50 km from the City of Sydney. They are established residential suburbs with good road access to the regional centre and elsewhere in the metropolitan area.

The public housing estate at Airds Bradbury was built in the 1970s and early 1980s by the (then) New South Wales Housing Commission. In common with other public housing areas of that era, significant parts of the Project Area are laid out in accordance with “Radburn” urban design principles.

The Radburn design has proven to be unsuitable for public housing communities because of poor vehicular access, unsafe rear lanes and inadequate surveillance of open spaces. A recent comparative needs study of housing estates showed Airds Bradbury to be one of the five metropolitan estates with the highest level of disadvantage, relatively high unemployment and many high needs tenants.

In September 2003 Housing NSW co-ordinated and lodged an Airds Bradbury Renewal Project Masterplan and supporting draft reports for the (then) Airds Bradbury Renewal Project essentially for the Smiths Creek Bypass Corridor “SCBC” Area with Campbelltown City Council. Campbelltown Council resolved on 17th February 2004 to prepare and exhibit the Airds Renewal Masterplan and Draft Local Environment Plan. The exhibition of the Master plan did not proceed as a number of issues surfaced and required resolution. The project has continued to evolve and over the last few years Housing NSW has been assessing its staging needs for the renewal program in the context of the economic life and the current condition of its housing stock.

The Airds Bradbury Renewal Project presents opportunities and constraints for all stakeholders. These issues include;

- Private and Public property ownership integration requirements for the estate, are recognised as being crucial to the estates viability and character.
- Through facility management and community building activities undertaken through the development shall ensure the level of amenity and opportunity for tenants and private owners in Airds and Bradbury will be enhanced.
- Value adding in design is recognised and is achieved through continual improvement and application of affordable ESD principals. The use of infrastructure best management practices for water cycle management, water sensitive urban design and sustainable urban design principles with the recognition of whole life costs and the maximisation of community benefits is a foundation to the developments viability.
- Partnership with all stakeholders with particular focus on respecting resident and tenant rights, community service agencies, Campbelltown City Council and other statutory authorities is appreciated as being imperative for the achievement of the best outcome for the Airds and Bradbury Community.

The following project outcomes are recognised as being integral to the successful delivery of the renewal:

- Financial - the documentation, management and construction of the project stages must be delivered within the confines of a project budget and program.
- Marketing – the dwellings and community facilities must be functionally sound and aesthetically pleasing to ensure the project's commercial viability.
- Environmental – the end product must be in accordance with the legislative and statutory requirements, as well as the principles of ESD.
- Services / Infrastructure – due to the staged nature of the project within an existing community, all new infrastructure works must be carried out without disruption to existing users. To this end, the proposed services works may require lead in or lead out works, temporary diversions, etc. Further, it is recognised that much of the existing infrastructure may be retained within the determined Masterplan layout. The infrastructure concept designs will ensure that this is taken into account and ensure that the extent of retained infrastructure is maximized. Existing service constraints within the Smiths Creek bypass Corridor have previously been identified and will play a determining factor for the masterplan development.

The Airds Bradbury Renewal process must cater for the existing services and residents in the estate. As part of this underlying commitment, the retention of services to all residents is crucial to the development process, by utilising temporary services and lead-ins to provide live connections and uninterrupted service to the retained private dwellings or to facilitate the proposed staging.

It is expected that the following stakeholders will be involved in the Airds Bradbury renewal:

- Landcom
- Campbelltown City Council
- Housing NSW
- NSW Department of Planning
- NSW Roads and Traffic Authority
- Department of Environment and Climate Change
- Sydney Water
- Utility service providers (Integral Energy Telstra and Jemena)
- The local community

The development works of the overall project will include:

- The demolition of structures, including dwellings, roads and services;
- The construction of a new subdivision including:
  - Bulk Earthworks;
  - New streets;
  - Retention and upgrade of existing streets
  - Stormwater management works; and
  - Provision of new and enhanced utility services.
- Public domain improvements including new parks as part of a network of landscaped public open spaces and street trees
- New community facilities and improvements

1.1 Scope of Work

The objective of this report is to provide comment on the opportunities and constraints for the Airds Bradbury Renewal Project and assist the Urban Planners, Urbis, in preparing the Concept Plan. The views expressed herein are to provide a broad strategy for servicing the proposed development.

Mott MacDonald Hughes Trueman has been appointed by Landcom to undertake a review of the existing service infrastructure and provide an outline for the constraints associated with the proposed development at Airds and Bradbury based on the Concept Plan prepared by Urbis.

Housing NSW intend to redevelop a significant amount of the public housing stock in the suburb of Airds and Bradbury. As part of the redevelopment a total of 531 residential dwellings will be demolished with an additional 1224 residential lots being created.

Following review of the available documentation provided by Urbis, Mott MacDonald Hughes Trueman has prepared an Infrastructure Strategy Report for the site which:

- provides comment on existing services with regard to the preferred Concept Plan;
- identifies relationship requirements for staging of the works; and
- identifies constraints and issues for the total development and individual stages.

The study identifies development issues which are relevant to the Airds Bradbury Renewal Project. The most significant of these include:

- Protection or augmentation of existing trunk services to the estate, new infrastructure and temporary connections to service occupied dwellings,
- Removal and replacement of existing roads and services due to realignment of roads/lot layout.

1.2 Documentation

The following documentation has been resourced

- A comprehensive Services Search (DBYD).
- Concept Plan by Urbis
- A Sydney Water Hydra search
- Sydney Water Feasibility Application
- Written correspondence from relevant authorities and service providers (refer Appendix A).

1.3 Drawings

The following plans have been prepared by Mott MacDonald Hughes Trueman for the proposed development in conjunction with this report. The drawings are listed below and have been included in Appendix E of the report:

Drawing No.	Title
09P741-SKC600	Existing Lot Layout with Existing Contours
09P741-SKC601	Proposed Lot Layout and Staging Plan
09P741-SKC602	Existing Services Plan – Water
09P741-SKC603	Existing Services Plan – Sewer
09P741-SKC604	Existing Services Plan – Telecommunications
09P741-SKC605	Existing Services Plan – Electrical
09P741-SKC606	Existing Services Plan - Gas

2. Existing Site Description

2.1 The Site

Airds and Bradbury are located approximately 2.5 km south east of the Campbelltown CBD, the regional centre of the Macarthur Region, about 50 km from the City of Sydney. They are established residential suburbs with good road access to the regional centre and elsewhere in the metropolitan area.

The Airds Bradbury Renewal Project covers an area of approximately 210 hectares. The study area is bounded by existing housing estates of Ambarvale, Rosemeadow and Ruse. The site area is defined between Georges River Road to the north, Riverside Reserve & Greengate Reserve to the East, Greengate Road to the south and Creigan Road to the west.

2.2 Topography

The site generally grades from the south to north with most grades being below 10% however some isolated areas exceed 25%. Areas of steep terrain may make it difficult to provide accessibility without significant earthworks.

The topography of the site, with its troughs and ridges, guides stormwater flows along defined overland flow paths. These overland flow paths, moderate slopes and the existing sub-standard stormwater system may impact upon a number of dwellings.

3. Proposed Works

The planning approach by Housing NSW which encompasses the majority of the suburb of Airds and part of Bradbury, aims to renew the suburb by replacing much of the public housing stock. Along with this replacement strategy, the renewal of the urban framework of Airds also presents a number of opportunities to the region. These included a review of the infrastructure that services the area, an enhancement of the open space and community facilities serving the community and provision of a sustainable housing mix for the area.

3.1 Internal Works

The Airds Bradbury Renewal Project works relate to all environmental, social, amenity and engineering aspects of modifying an existing residential area to a revitalised residential estate.

The layout proposes to demolish 514 existing cottages. Some cottages have already been demolished. Together with the demolition of some dwellings, the layout proposes to embellish a number of cottage precincts within the area to assist in their long term retention.

This project with its mix of redevelopment and retention of cottage precincts and privately owned dwellings has some requirements in addition to the standard tasks required during a typical development. These site specific requirements include temporary service and road connections, remediation of stormwater overland flow paths and services upgrades.

The internal works for the redevelopment of Airds and Bradbury include the initial site establishment. This role in the project includes the establishment of amenities, fencing, traffic control, survey facilities and site security for entire stage. The environmental controls relating to the soil and water management facilities and the management of environmental issues are required to be established at the early stage of the staged development.

Together with the demolition of some of the dwellings there would also be demolition and removal of the existing infrastructure, being road pavements, pedestrian footpaths, pipe systems, underground services and utilities and vegetation that cannot be retained during the redevelopment process.

The earthworks for the development will generally be undertaken on an individual stage by stage approach however the stockpiling for and borrowing from stages will be considered on a whole redevelopment approach. Accordingly, the regrading works to modify and enhance overland flow paths and to adjust the development platforms will require the reuse, stockpiling, and borrowing of material from the entire development site. It is also anticipated that the works on the site might reveal areas of unsuitable or contaminated material that will need to be disposed off site. Balance cut to fill from modelling during the detailed design process will need to be undertaken. Re-grading of the existing lots can be undertaken as part of this process to “lose” any amounts of excess spoil across the development. This method is considerably more cost effective than removal of any clean surplus from site.

The road and drainage works along with the servicing facilities require a thorough assessment of the potential opportunities for retention of facilities and the required lead-in of facilities for stages.

Some of the open space and dual use facilities (open space and stormwater management) may also require extensive works due to the need for relocation and / or embellishment.

3.2 Staging

The Airds Bradbury Renewal Project is proposed to be developed over a series of 12 stages. The stages have been developed through consideration of physical constraints and re-housing requirements. The present staging reflects the requirement for construction of lower staging prior to upper catchment staging. The sequencing of the stages has considered:

- Staging of the relocation of residents and the demolition of the Housing NSW dwellings,
- Minimisation of the disruption to the existing services and thus the residents, within the precincts where private residences are being retained,
- Service provisions and the reduction in lead-ins, temporary connections or dependencies upon undeveloped stages for service provisions or access,
- The management of increased or concentrated stormwater flows upon downstream stages should be considered.
- The management of the earthworks, particularly the balancing of the material between stages that require substantial filling but do not have a source should be considered. The sequence of events during the staging and the potential impacts of deleterious material being located during construction highlight some of the possible concerns.

These factors will continue to be assessed during design development and may result in changes to staging to respond to the above factors.

3.3 Services

3.3.1 Water

The Kentlyn Water Pumping Station (WP0131) is currently located adjacent to Georges River Road. Local mains & the DV (dividing valve) near Peppin Crescent may require adjustments to suit the Stage 1A lot layout.

A 750mm and 2 x 600mm diameter trunk mains extend from the Campbelltown South reservoir at Karrabul Road along the Smiths Creek Bypass Corridor via Stages 6, 3, 2B, 2A, and 1B then exits the site at Georges River Road. The water mains are of regional importance as they supply water to the surrounding suburbs. A 250mm diameter main is currently located within Baden Powell Reserve which may have impact on the lot layout proposed in Stage 9. These larger mains are to be retained.

Smaller diameter mains traverse the site, internally and externally, the internal mains will be retained where possible but re-locations will be unavoidable. The mains, 150mm in diameter and above will be costly to re-locate but can be moved if necessary. It is intended to retain all of the external mains; these however may require adjustment particularly where proposed roads bisect them.

The list below indicates the location of mains 150mm diameter or larger.

Street Name	Water Main Size	Stage
Georges River Road	750	Stage 1A, 1B, 5
	300, 200	Stage 5
Riverside Drive West	200	Stage 4
Riverside Drive East	150	Stage 5
Smiths Creek Bypass Corridor and 6	750, 2 x 600	Stage 1B, 2A, 2B, 3
St Johns Road	375, 250	Stage 9
Briar Road	400, 375, 300	Stage 3 and 7A
Greengate Road	200	Stage 6 and 8
College Road	200	Stage 1B and 2

The water serviceing strategy for the Concept Plan comprises;
- Retaining existing major trunk mains passing through the site;
- Retaining other trunk mains where possible to minimise disruption to services
- Augmenting services required to meet the needs of the development

3.3.2 Sewer

A sewer pumping station is located at the end of Katella Place within Stage 7B. A 300mm sewer rising main extends from the pumping station along Katella Place to Greengate Road. From here the rising main extends along Greengate Road to Briar Road and connects to a sewer manhole approximately 30m along the south western edge of Riverside Drive. The proposed lot arrangement / intersection treatment of Briar Road and Riverside Drive indicates that this rising sewer main will need to be relocated. The current layout also shows a proposed road at the end of Katella Place going through the existing pumping station. These items can be considerably costly to relocate as they will require temporary facilities to maintain service.

Another sewer pumping station is located at the end of Dalkeith Place within Stage 8. A 150mm sewer rising main extends from the pumping station, along Merino Crescent where it connects to a sewer

manhole near the intersection of Merino Crescent and Waterhouse Place. The proposed lot arrangement in Stage 8 indicates that this rising sewer main will need to be relocated.

Smaller diameter sewer mains traverse the site, internally and externally, the internal mains will be retained where possible but re-locations will be unavoidable. The mains, 225mm diameter and above are generally carrier mains and can be costly to re-locate. It is intended to retain all of the external mains; these however may require adjustment particularly where proposed roads bisect them and where the lot layout has been modified.

The list below indicates the location of mains (including rising mains) 225mm diameter or larger.

Street Name / Precinct	Sewer Main Size	Stage
Riverside Drive	300, 225	Stage 1A, 1B, 2A, 2B, 4, 7A & 7B
Tiverton Precinct	300	Stages 5
Briar Road	300	Stage 7B
Greengate Road	300, 150 (Rising Main)	Stage 7A & 7B
Katella Place	150 (Rising Main)	Stage 7B
Merino Crescent	150 (Rising Main)	Stage 8
SCBC	300	Stage 6
Briar Road	400	Stage 6
Creigan Road	400	Stages 3

Sewerage services are available to the site and will be augmented / relocated as required to meet the needs of the development.

3.3.3 Electrical

The existing Airds estates' electrical servicing is primarily by underground reticulation. Existing ducts and cable routes are proposed to be maintained within roads that are to be retained. It is anticipated that all other redundant ducting and cabling through proposed lots will be removed. The majority of underground electrical reticulation is live and may involve the disconnection and provision of temporary connections to service retained properties as required.

Integral Energy has assessed the anticipated load required for the development to be in the order of 6MVA. A load of this magnitude will possibly require additional 11kV feeders from Kentlyn Zone

Substation (Kentlyn ZS) that is located immediately to the north east of the proposed development adjacent to stage 2A. The number of feeders required will depend on the load on the existing 11kV feeders at the time of development. The load needs to be confirmed upon a future application to Integral Energy.

The area proposed to be developed contains electricity easements and 66kV overhead transmission lines, which are feeders 861 and 867.

In principal, Integral Energy accepts the developer to underground the captioned transmission mains subject to the following criterion being fulfilled:

- The new 66kV transmission cables shall be installed from the Kentlyn ZS to Georges River Rd for feeder 861 & from the Kentlyn ZS to south of Greengate Rd for feeder 867
- Existing easements shall remain until removal of the overhead lines
- Each transmission line must be undergrounded completely via the road network in the subdivision but not in sections or stages
- The developer/ ASP must carry out an environmental assessment to confirm the line route

Integral Energy will not allow the developer to relocate (not underground) the overhead transmission lines to other locations in an underground reticulated subdivision.

In addition, Integral Energy has indicated that there are a few complications with the existing 11kV cable network and the noise level of Kentlyn ZS. The developer will need to relocate 11kV cables into the road network and design/build sound walls at Kentlyn ZS to reduce noise to adjacent residential land.

Integral Energy will also provide noise attenuation in conjunction with any planned upgrade of the substation.

3.3.4 Telecommunications

The existing Airds estates' telecommunications network consists of reticulated services but contains no exchange or major through routes. As with electrical, existing telecom ducts and cabling should be retained where possible but they will need to be removed where it does not follow proposed road alignments.

Additional underground conduit provision may be required for Telstra, Optus and NBN Co. to cater for increased demand in telecommunication services in the future such as Broadband, cable television and optical fibre cabling / NBN. Future long term and additional provision of Telstra, Optus and NBN Co. services for the area will need to be reviewed with the service providers to allow for provision of services to each lot.

An initial meeting was held with Telstra to discuss servicing requirements for the Airds and Bradbury renewal project. After the initial meeting and several follow-ups, Telstra have not issued formal advice with regards to proposed telecommunications infrastructure.

3.3.5 Gas

Existing gas mains are located throughout the Airds estate; the gas mains within the major roads should be retained. These are located in;

- Riverside Drive
- Briar Road

Discussions with Bradley Gee of Jemena the local gas supplier, has indicated that Jemena may require additional gas infrastructure to service the development. Ongoing discussion is required to determine Jemena's precise service provision to the development site and any requirements associated with the relocation of gas infrastructure.

4. Issues to be Managed During Implementation of Concept Plan

A number of constraints and opportunities have been identified based on the proposed Concept Plan and infrastructure available for the renewal project. Although each stage possesses common constraints and development issues, they also present area / stage specific constraints that are intrinsic to their own development.

The typical development constraints relevant to the entire Airds Bradbury Renewal Project are:

- The location of the 750mm and 2 x 600mm diameter water mains traversing the site,
- The retention of the existing cottages and private dwellings and the maintenance of their access and services at all times during the renewal process,
- Provision and amplification of services to the development,
- Undergrounding of the electrical transmission lines through SCBC to the Kentlyn zone sub- station. This should be undertaken as a single construction roll out based upon detailed design road levels for stages 2A, 2B, 3 and 6.
- Bushfire asset protection zones along the eastern portion of the site adjacent to Riverside Reserve and Greengate Reserve will need to be allowed for during the development application process,
- Isolated areas of uncontrolled or contaminated fill on the site that may affect civil works;
- Slopes within the site of greater than 10% create access difficulties, requiring regrading works to allow construction of the roads and residential lots,
- The management of the earthworks process during the development staging requires a strategy for the coordination of cutting, filling, stockpiling and borrowing processes for the entire development,
- The functionality of existing receiving services need to be assessed in consultation with the relevant Authorities as part of the individual development stages.
- The potential need for upgrade of the regional sub-station as part of the electrical infrastructure including undergrounding the 66Kv overhead transmission lines through the Smiths Creek Bypass Corridor. (Integral Energy has indicated a preliminary design is required to be prepared before confirmation of the future requirement and costing can be confirmed.)
- Trenching through Cumberland Plain Woodland areas associated with undergrounding electrical transmission lines.
- The potential to divert services where roads are to be removed particularly in Riverside Drive.
- Removal of the existing underpasses along Riverside drive
- Contaminated material to be disposed of offsite,
- Temporary stormwater management during the staged development.
- Measures to ensure the safety of residents adjacent to the works,
- Potential for the construction and upgrade to external roads and intersections adjoining the development.
- The possible need to seal all water bodies or stormwater management facilities against the effect of soil salinity.
- National Broadband Network (NBN Co) infrastructure in the form of pit and pipe is to be funded by the developer. NBN Co is to provide and install fibre optic cable. Further discussions with NBN Co will be required at the detailed design stage.

These matters may be considered in the context of each subsequent application for each stage and resolved.

4.1 Stage 1A

4.1.1 Constraints

Earthworks and Regrading

- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within the Smiths Creek Bypass Corridor). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks design to be determined as part of the design development.
- Transportation of spoil material to the nominated stockpile site by scraper or by truck and dog along existing roads.

Roads

- Signalisation of intersection roads at new estate entrance (Georges River Road and Riverside Drive) may be required.
- Pavement reconstruction may be required for the Stage 1A road frontage of Riverside Drive.

Estate Works

- Half road width reconstruction may be required for the full Stage 1 road frontage of Georges River Road.
- Construction of temporary sales office may be required.

Services

- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services maintained throughout construction.
- Possible lowering of services may be required where new roads intersect with existing roads.

4.2 Stage 1B

4.2.1 Constraints

Earthworks and Regrading

- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within the Smiths Creek Bypass Corridor). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks design to be determined as part of the design development.
- Transportation of spoil material to the nominated stockpile site by scraper or by truck and dog along existing roads.

Roads

- Signalisation of intersection roads at new estate entrance (Georges River Road) may be required.
- Pavement reconstruction may be required for the Stage 1B road frontage of Riverside Drive.

Services

- Protect the existing 750mm and 2 x 600mm diameter mains water mains and sewer mains to Sydney Water requirements.
- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services maintained throughout construction.
- Possible lowering of services may be required where new roads intersect with existing roads.

4.3 Stage 2A

4.3.1 Constraints

Earthworks and Regrading

- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within the Smiths Creek Bypass Corridor). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks design to be determined as part of the design development.
- Transportation of spoil material to the nominated stockpile site by scraper or by truck and dog along existing roads.

Roads

- Pavement reconstruction may be required for the Stage 2A road frontage of Riverside Drive.

Services

- Protect the existing 750mm and 2 x 600mm diameter mains water mains and sewer mains to Sydney Water requirements.
- Electrical transmission lines from Kentlyn Zone Substation will need to be relocated and undergrounded into the road network. Sound walls to be provided at Kentlyn Zone Substation to reduce noise to adjacent residential land. Electrical transmission lines should be undergrounded throughout the Smiths Creek Bypass Corridor.
- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services maintained throughout construction.
- Possible lowering of services may be required where new roads intersect with existing roads.

4.4 Stage 2B

4.4.1 Constraints

Earthworks and Regrading

- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within the Smiths Creek Bypass Corridor). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks design to be determined as part of the design development.

- Transportation of spoil material to the nominated stockpile site by scraper or by truck and dog along existing roads.

Roads
- Pavement reconstruction may be required for the Stage 2B road frontage of Riverside Drive.

Services
- Protect the existing 750mm and 2 x 600mm diameter mains water mains and sewer mains to Sydney Water requirements.
- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services maintained throughout construction.
- Possible lowering of services may be required where new roads intersect with existing roads.

4.5 Stage 3

4.5.1 Constraints

Earthworks and Regrading
- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within the Smiths Creek Bypass Corridor). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks requirements to be determined as part of the design development.

Roads
- Provide temporary traffic management to maintain access to existing dwellings for the duration Creigan Road embellishment.
- Pavement reconstruction may be required for the Stage 3 road frontage of Riverside Drive.
- Provide temporary traffic management to maintain access to existing dwellings for the duration of Creigan Road embellishment.
- Signalisation or other traffic management treatments may be required for road linkages at intersections with Smiths Creek Bypass Corridor and Riverside Drive.

Services
- Protect the existing 750mm and 2 x 600mm diameter water mains in Smiths Creek Bypass Corridor and 400mm diameter sewer mains to Sydney Water requirements.
- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services maintained throughout construction.
- Existing aged care facility to have live, uninterrupted services maintained throughout construction.
- 130m of Sewer Main is to be realigned to Sydney Water requirements on Creigan Road to accommodate proposed lot layout.
- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services maintained throughout construction.
- Possible lowering of services may be required where new roads intersect with existing roads.

4.6 Stage 4

4.6.1 Constraints

Earthworks and Regrading

- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within the Smiths Creek Bypass Corridor or Kevin Wheatley Reserve). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks requirements to be determined as part of the design development.
- Transportation of spoil material to the nominated stockpile site by scraper or by truck and dog along existing roads.

Roads

- Intersection treatments may be required where new road linkages connect with Riverside Drive
- Removal of underpass under Riverside Drive
- Pavement reconstruction may be required for the Stage 4 road frontage of Riverside Drive.

Services

- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services maintained throughout the construction period.
- Trunk mains located within Riverside Drive will need to be relocated / protected to suit the proposed lot layout to service provider's requirements.
- Possible lowering of services may be required where new roads intersect with existing roads.

4.6.2 Opportunities

Services

- Retain existing services in Riverside Drive.

4.7 Stage 5

4.7.1 Constraints

Earthworks and Regrading

- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within the Smiths Creek Bypass Corridor or Merino Park). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks requirements to be determined as part of the design development.

Roads

- Provide temporary traffic management to maintain access to existing dwellings for the duration of construction / embellishment works specifically on Peppin Crescent, Georges River Road and Riverside Drive.
- Half road reconstruction may be required on Georges River Road
- Pavement reconstruction may be required for the Stage 5 road frontage of Peppin Crescent and Riverside Drive.

Services

- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services to be maintained throughout construction.
- Additional trunk mains will need to be relocated to suit the proposed road alignment of Riverside Drive in accordance with Sydney Water / Authority requirements.
- Possible lowering of services may be required where new roads intersect with existing roads.

4.8 Stage 6

4.8.1 Constraints

Earthworks and Regrading

- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within Baden Powell Reserve). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks requirements to be determined as part of the design development.
- Transportation of spoil material to the nominated stockpile site by scraper or by truck and dog along existing roads.

Roads

- Provide temporary traffic management to maintain access to existing dwellings for the duration of Merino Crescent, Water House Place and Kullaroo Avenue embellishment.
- Signalisation of the Briar Road / Smiths Creek Bypass Corridor may be required.
- Provide temporary traffic management to maintain access to existing dwellings for the duration of Briar Road Merino Crescent and Waterhouse Place and Kullaroo Avenue embellishment. Pavement reconstruction may be required for the Stage 6 road frontage of Merino Crescent.

Services

- Protect the existing 750mm and 2 x 600mm diameter water mains in Smiths Creek Bypass Corridor and 400mm diameter sewer mains in Briar Road in accordance with Sydney Water requirements.
- Existing occupied dwellings adjacent to the stage boundary including Reiby Juvenile Justice Centre to have live, uninterrupted services maintained throughout construction.
- Sewer Main along proposed Smiths Creek Bypass Corridor road may need to be realigned to accommodate the proposed lot layout
- Possible lowering of services may be required where new roads intersect with existing roads.

4.9 Stage 7A

4.9.1 Constraints

Earthworks and Regrading

- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within Baden Powell Reserve or Merino Park). Clean surplus material to be removed from

site. Alternatively, importation of fill material may be required depending on the earthworks requirements to be determined as part of the design development.
- Transportation of spoil material to the nominated stockpile site by scraper or by truck and dog along existing roads.

Roads
- Provide temporary traffic management to maintain access to existing dwellings for the duration of Riverside Drive and Briar Road embellishment.
- Full road reconstruction may be required for Riverside Drive Road as part of embellishment works.
- Intersection treatments may be required where road linkages connect with Riverside Drive.
- Removal of underpass under Riverside Drive
- Pavement reconstruction may be required for the Stage 7A road frontage of Riverside Drive and Briar Road.

Services
- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services maintained throughout construction.
- Additional trunk mains will need to be relocated to suit the proposed road alignment of Riverside Drive in accordance with Sydney Water / Authority requirements.
- Possible lowering of services may be required where new roads intersect with existing roads.

4.10 Stage 7B

4.10.1 Constraints

Earthworks and Regrading
- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within Baden Powell Reserve or Merino Park). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks requirements to be determined as part of the design development.
- Transportation of spoil material to the nominated stockpile site by scraper or by truck and dog along existing roads.

Roads
- Intersection treatments may be required where road linkages connect with Briar Road and Riverside Drive.
- Temporary traffic management required to maintain access to existing dwellings for the duration of Riverside Road and Briar Road realignment and embellishment works.
- Full road reconstruction may be required for Riverside Drive Road as part of embellishment works.
- Pavement reconstruction may be required for the Stage 7B road frontage of Greengate Road and Briar Road.

Services
- Existing occupied dwellings within and adjacent to the stage boundary to have live, uninterrupted services maintained throughout construction.

- Sewer Rising Main (approx 310m) will need to be relocated to suit the proposed lot layout / road alignment in accordance with Sydney Water requirements.
- Additional trunk mains will need to be relocated to suit the proposed lot layout / road alignment in accordance with Sydney Water / Authority requirements.
- Possible lowering of services may be required where new roads intersect with existing roads.
- Provide temporary traffic management to maintain access to existing dwellings for the duration of Greengate Road and Briar Road embellishment works.
- Intersection treatments may be required at the junction Briar Road / Greengate Road

4.10.2 Opportunities

Roads
- Retain existing Greengate Road alignment and levels.

Services
- Existing dwelling services infrastructure may be utilised to service proposed lots in localised areas.

4.11 Stage 8

4.11.1 Constraints

Earthworks and Regrading
- Excess spoil may need to be temporarily stockpiled for filling in future stages if required (possible location within Baden Powell Reserve or Merino Park). Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks requirements to be determined as part of the design development.
- Transportation of spoil material to the nominated stockpile site by scraper or by truck and dog along existing roads.

Roads
- Provide temporary traffic management to maintain access to existing dwellings for the duration of Greengate Road embellishment.
- Pavement reconstruction may be required for the Stage 8 road frontage of Greengate Road and Briar Road.
- Signalisation or other forms of intersection treatments may be required at road linkages particularly at the intersection of the Merino Crescent extension and Greengate Road.

Services
- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services maintained throughout construction.
- Possible lowering of services may be required where new roads intersect with existing roads.

4.11.2 Opportunities

Services

- Existing services infrastructure may be utilised to service proposed lots arrangement in localised areas.

Roads

- Retain existing Greengate Road alignment, levels and pavement materials subject to road dilapidation enquiry.

4.12 Stage 9

4.12.1 Constraints

Earthworks and Regrading

- Excess spoil may need to be temporarily stockpiled for filling within the stage. Clean surplus material to be removed from site. Alternatively, importation of fill material may be required depending on the earthworks requirements to be determined as part of the design development.

Roads

- Provide temporary traffic management to maintain access to existing dwellings for the duration of Docharty Road embellishment and on St Johns Road for the duration of construction.
- Pavement reconstruction may be required for the Stage 9 road frontage of Docharty Road and St Johns Road.

Services

- Existing occupied dwellings adjacent to the stage boundary to have live, uninterrupted services to be maintained throughout construction.
- Aged Care Facility to have live, uninterrupted services to be maintained throughout construction.
- Existing water mains in St Johns Road to be protected for the duration of works in accordance with Sydney Water requirements.
- Existing water main and gas main along St Johns Road may need to be located in an extended road reserve if they cannot be relocated to suit the proposed layout.
- Possible lowering of services may be required where new roads intersect with existing roads.

Estate Major Works

- Reinstate Smiths Creek Bypass Corridor after stockpile material has been removed.
- Reinstate Baden Powell Reserve after stockpile material has been removed.

4.13 Infrastructure Management Issues

The items listed below have been identified as having an impact on the project. Consideration has been given to these issues in the Environmental Assessment (EA).

4.13.1 Bushfire Asset Protection Zones

The areas immediately to the east of Georges River Parkway contain significant vegetation cover. An assessment of potential bushfire impacts has been undertaken. Recommendations for the extent of APZ have been made and indicate a 40m wide protection zone to be established from the extremity of future dwellings. Bushfire risks have been assessed and recommendations made.

4.13.2 Uncontrolled Fill

Isolated pockets of uncontrolled fill may exist across the site. Areas with uncontrolled fill that will affect civil works or housing is to be excavated and refilled in a controlled manner. In addition, uncontrolled fill has been identified as the most likely possible source of any soil contamination within the site.

4.13.3 Demolition Asbestos Contamination

Housing demolition by Housing NSW is likely to require the removal of asbestos. This will occur in accordance with the relevant Australian Standards.

4.13.4 Retention of Dwellings

A number of existing private dwellings that will be retained will remain occupied for the duration of construction. The occupants of these dwellings will require external access and connection to uninterrupted services at all times. Specific details regarding construction methodology will need to be determined as part of detailed design and tender documentation in each subsequent application for each stage.

4.13.5 Sydney Water - Water mains

The existing 750mm and 2 x 600mm diameter water mains currently traverse the site in a North-South direction, generally along the Smiths Creek Bypass Corridor of the development. Discussions with Sydney Water have indicated that the relocation of the water mains is not feasible. Sydney Water has indicated that these mains may be placed in an extended verge / within the road reserve. These mains will have to be protected during the construction period.

4.13.6 Connection to Existing Downstream Sewer System/s

Lengths of sewer main within the development will also be retained where possible where they follow proposed property boundaries. A flow analysis should be undertaken to confirm if mains require amplification.

4.13.7 Retention of Services

It has been identified that some impact on residents and construction costs can be reduced by the retention of existing services where possible. This is only considered feasible where the existing road route and profile is being maintained. As there may be changes in ground levels because of earthworks or road modifications, existing services may not have sufficient cover to be retained.

4.13.8 Electricity

Due to increased use of electrical household appliances such as air conditioners there is a possibility that the regional sub-station for the area will need to be upgraded. Preliminary discussions with Integral Energy have indicated this, however, until such time that a preliminary design can be lodged with IE, they are not willing to indicate what cost would be associated with this up-grade. Timing of upgrade works will need to be determined with Integral Energy.

4.13.9 Resident Safety

The proximity of the works to occupied residential areas may constitute a safety hazard to residents during construction however; with proper management of the works and suitable security measures the level of hazard would be reduced. A construction management plan may be prepared for each stage of the works indicating how this is to occur.

4.13.10 Broadband Supply

The need to supplement the current roll out of the National Broadband Network of Optic Fibre has been acknowledged as a likely requirement for most developments in Western Sydney. Further discussions with Telstra or NBN Co. will be required to determine requirements in the proposed development area.

4.13.11 Stormwater Infrastructure

All enquiries regarding stormwater infrastructure and flooding should be referred to Storm Consulting's Water Cycle Management and Flooding report.

5. Conclusion and Recommendations

All relevant services issues will be further investigated at the detailed design stage in order to take advantage of the opportunities for cost savings and reduced exposure to risk which may be expected to arise from consideration of the following:

- Finalise the detailed survey of the developable area to identify above ground and below ground structures, services and utilities requiring modification, removal or replacement,
- Preparation of an Earthworks Management Report / plans to coincide with the construction stages as part of the design development. This would minimise the double handling of excavated material or exporting surplus and importing deficit material from independent stages thereby providing cost savings,
- Investigation of the capacity of existing Authority services on the site and the extent of augmentation, and retention that is possible,
- Assessment of the maintenance and precautionary requirements of Sydney Water with specific regards to the 750mm and 2 x 600mm water mains that bisect the site.
- Further discussion with Integral Energy to determine any cost implications for upgrade of the Kentlyn Zone Sub-station.
- Further discussion with Telstra / NBN Co to determine any requirements for the area.
- Further discussion with Jemena Gas to confirm requirements for the area
- Sydney Water has previously indicated that the existing water and sewer network has sufficient capacity to cater for the proposed development at the time the application for feasibility assessment was made. Further investigation will need to be undertaken at the detailed design stage.

Appendices

Appendix A. Integral Energy

James Gilligan

From: David Ho [David.Ho@integral.com.au]
Sent: Friday, 12 February 2010 4:25 PM
To: James Gilligan
Cc: Peter Freckelton; Neil Mineeff; Robert Lewis
Subject: ENL1233 - Residential Redevelopment and 66kV Overhead Lines Relocation - Riverside Drive AIRDS

Dear James,

Thank you for your enquiry regarding the electricity supply to above proposed residential redevelopment. This enquiry has been registered under our reference number – ENL1233, please quote this number for all future correspondence.

Proposed Development
Housing NSW intends to redevelop a significant area of the public housing stock in the suburb of Airds. As part of the redevelopment a total of 641 residential dwellings will be demolished with the creation of 838 lots. This will result in an additional 228 residential lots being created. It is anticipated that the proposed redevelopment will take place over 13 stages. The proposed / additional load calculations have been based on ADMD of 7kVA per lot.

Supply to the Development
Integral Energy has assessed the anticipated load required for the development to be in the order of 6MVA. A load of this magnitude will possibly require additional 11kV feeders from Kentlyn Zone Substation that is located within the boundaries of the proposed development. The number of feeders required will depend on the load on the existing 11kV feeders at the time of development. The load needs to be confirmed upon a firm application.

Existing 66kV Transmission Overhead Mains
The area proposed to be rezoned contains electricity easements and 66kV overhead transmission lines, which are feeders 861 and 867. In principal, **Integral Energy accepts the developer to underground the captioned transmission mains subjected to the following criterion are fulfilled:**

- The new 66kV transmission cables shall be installed from the Kentlyn ZS to Georges River Rd for feeder 861 & from the Kentlyn ZS to south of Greengate Rd for feeder 867
- Existing easements shall remain until after removal of the overhead lines
- Each transmission line must be undergrounded completely via the road network in the subdivision but not in sections or stages
- The developer/ ASP must carry out an environmental assessment to confirm the line route

Integral Energy will not accept the developer to relocate (not underground) the transmission overhead lines to other locations in an underground subdivision.

In addition, there is a few complicating issues with the existing 11kV cable network and the noise level of Kentlyn ZS. The developer will need to relocate 11kV cables into the road network and design/build sound walls at Kentlyn to reduce noise to adjacent residential land.

I trust this preliminary advice provides the information that was requested. Please note that the advice provided is in response to an enquiry only and does not constitute a formal method of supply. An application must be submitted to Integral Energy prior making any financial commitments.

If you have any questions regarding this matter, please contact me.

Yours faithfully

David Ho

David Ho | **Contestable Project Manager - North**
Network Connections | **INTEGRAL ENERGY**
david.ho@integral.com.au | 51 Huntingwood Drive, Huntingwood NSW 2148
PH 02 9853 6680 | **FAX** 02 9853 6036

Appendix B. Sydney Water

Case Number: 117954

20 January 2010

LANDCOM OF NSW
c/- HUGHES TRUEMAN PTY LTD

FEASIBILITY LETTER

Developer:	**LANDCOM OF NSW**
Your reference:	**09P741**
Development:	**Lot 1 DP DP541678 COLLEGE RD, Campbelltown**
Development Description:	**The proposed development is to demolish 641 lots and reconfigure for 888 lots, along with proposed roadways and existing roadway re-alignment to suit proposed subdivision.**
Your application date:	**1 December 2009**

Dear Applicant

This Feasibility Letter (Letter) is a guide only. It provides general information about what Sydney Water's requirements could be if you applied to us for a Section 73 Certificate (Certificate) for your proposed development. **The information is accurate at today's date only.**

If you obtain development consent for that development from your consent authority (this is usually your local Council) they will require you to apply to us for a Section 73 Certificate. You will need to submit a new application (and pay another application fee) to us for that Certificate by using your current or another Water Servicing Coordinator (Coordinator).

Sydney Water will then send you either a:

- Notice of Requirements (Notice) and Works Agreement (Agreement); or
- Certificate.

These documents will be the definitive statement of Sydney Water's requirements.

There may be changes in Sydney Water's requirements between the issue dates of this Letter and the Notice or Certificate. The changes may be:

- if you change your proposed development, e.g. the development description or the plan/ site layout, after today, the requirements in this Letter could change when you submit your new application; and
- if you decide to do your development in stages then you must submit a new application (and pay another application fee) for each stage.

What You Must Do To Get A Section 73 Certificate In The Future.

To get a Section 73 Certificate you must do the following things. You can also find out about this process by visiting www.sydneywater.com.au > Building Developing and Plumbing > Developing Your Land.

1. **Obtain Development Consent from the consent authority for your development proposal.**

2. **Engage a Water Servicing Coordinator (Coordinator).**

   You must engage your current or another authorised Coordinator to manage the design and construction of works that you must provide, at your cost, to service your development. If you wish to engage another Coordinator (at any point in this process) you must write and tell Sydney Water.

   For a list of authorised Coordinators, either visit www.sydneywater.com.au > Building Developing and Plumbing > Developing Your Land or call **13 20 92.**

   The Coordinator will be your point of contact with Sydney Water. They can answer most questions that you might have about the process and developer charges and can give you a quote or information about costs for services/works (including Sydney Water costs).

3. **Major Works Agreement**

   After the Coordinator has submitted your new application, they will receive the Sydney Water Notice and Works Agreement. You will need to sign and lodge **both originals** of that Agreement with your nominated Coordinator.

   The agreement sets out for this development:
   - your responsibilities;
   - Sydney Water's responsibilities; and
   - the Coordinator's responsibilities.

   You must do all the things that we ask you to do in that Agreement. This is because your development does not have water and sewer services and you must construct and pay for the following works extensions under this Agreement to provide these services.

   After Sydney Water has signed the documents, one of them will be returned to your Coordinator.

   Note: The Coordinator must be fully authorised by us for the whole time of the agreement.

4. **Water and Sewer Works**

   4.1 Water

Your development must have a frontage to a water main that is the right size and can be used for connection. Each lot must have frontage to a water main, a separate connection and water meter.
Sydney Water has assessed your application and found that:

- The drinking water system does have sufficient capacity to serve the proposed development.
- All works are to be constructed in accordance with the Water Supply Code of Australia (Sydney Water Edition - WSA 03-2002).
- Any fittings affected by road alterations are to be adjusted to the designed finished surface level.
- All adjusted drinking water mains are to be re-laid at standard depth for that main sizing and where possible in Sydney Water's allocations.
- The proposed drinking water infrastructure for this development will be sized & configured according to the Water Supply Code of Australia (Sydney Water Edition WSA 03-2002).
- An accredited Hydraulic Designer will be engaged by the developer to ensure that the proposed drinking water infrastructure for this development will be sized & configured according to the Water Supply Code of Australia (Sydney Water Edition WSA 03-2002). Evidence of Code compliance should be attached with the design.
- The proposed lots will be served by a drinking water extension off the 375mm main in Briar Road. Appropriate water main extensions will be required.
- Should any major trunk water mains be affected by this subdivision, you will need to carry out the works in accordance with Water Code Of Australia (Sydney Water Edition-WSA 03-2002).

- **You must provide a water service connection and property service (also known as a "property service (main to meter)") at your cost for all lots off the water main construction required above/ the existing water main in the subdivision and your Coordinator must manage the work. See section below for details.**

- Existing water property services and meters may be used as a property service (main to meter) where appropriate for the proposed lots if they are located in an appropriate position. Your Coordinator will be able to provide further advice regarding this.

- **Property Service (Main to Meter) Installation Details**

The property service connection must be carried out by a Sydney Water listed Driller and the installation of the property service must either be carried out or supervised by a licensed plumber. They must meet the:

(a) Administrative requirements of the New South Wales Code of Practice for Plumbing and Drainage; and
(b) Sydney Water Property Service (Main to Meter) Installations Technical Requirements.

Before the Certificate can issue, your Coordinator must give Sydney Water:

- All the "Work as Constructed" information that shows what was constructed; and
- Certification that the property service works comply with Sydney Water's requirements.

4.2 Sewer

Your development must have a sewer main that is the right size and can be used for connection. That sewer must also have a connection point within your development's boundaries.

Sydney Water has assessed your application and found that:

§ The current wastewater system does have sufficient capacity to serve the proposed development.

- The subdivision will require an extension off the 400 mm wastewater main in Briar Road, and then to provide appropriate sewer main extensions to each lot where required.
- The proposed wastewater infrastructure for this development will be sized & configured according to the Sewerage Code of Australia (Sydney Water Edition WSA 02-2002).
- An accredited Hydraulic Designer will be engaged by the developer to ensure that the proposed wastewater infrastructure for this development will be sized & configured according to the Sewerage Code of Australia (Sydney Water Edition WSA 02-2002). Evidence of Code compliance should be attached with the design.
- A wastewater extension is required to service the proposed development.

5. Ancillary Matters

5.1 Asset adjustments

After Sydney Water issues this Notice (and more detailed designs are available), Sydney Water may require that the water main/sewer main/stormwater located in the footway/your property needs to be adjusted/deviated. If this happens, you will need to do this work as well as the extension we have detailed above at your cost. The work must meet the conditions of this Notice and you will need to complete it **before we can issue the Certificate**. Sydney Water will need to see the completed designs for the work and we will require you to lodge a security. The security will be refunded once the work is completed.

5.2 Entry onto neighbouring property

If you need to enter a neighbouring property, you must have the written permission of the relevant property owners and tenants. You must use Sydney Water's **Permission to Enter** form(s) for this. You can get copies of these forms from your Coordinator or the Sydney Water website. Your Coordinator can also negotiate on your behalf. Please make sure that you address all the items on the form(s) including payment of compensation and whether there are other ways of designing and constructing that could avoid or reduce their impacts. You will be responsible for all costs of mediation involved in resolving any disputes. Please allow enough time for entry issues to be resolved.

5.3 Costs

Construction of these **future** works will require you to pay project management, survey, design and construction costs **directly to your suppliers**. Additional costs payable to Sydney Water may include:

- water main shutdown and disinfection;
- connection of new water mains to Sydney Water system(s);
- design and construction audit fees;
- contract administration, Operations Area Charge & Customer Redress prior to project finalisation;
- creation or alteration of easements etc; and
- water usage charges where water has been supplied for building activity purposes prior to disinfection of a newly constructed water main.

Note: Payment for any Goods and Services (including Customer Redress) provided by Sydney Water will be required prior to the issue of the Section 73 Certificate or release of the Bank Guarantee or Cash Bond.

Your Coordinator can tell you about these costs.

OTHER THINGS YOU MAY NEED TO DO

Shown below are other things you need to do that are NOT a requirement for the Certificate. They may well be a requirement of Sydney Water in the future because of the impact of your development on our assets. You must read them before you go any further.

Stamping and approval of your building plans

Please note that the building plans must be stamped and approved when each lot is developed. This can be done at a Quick Check agency. For an agency list visit www.sydneywater.com.au > Building and Developing > Quick Check or call 13 20 92).

This is not a requirement for the Certificate but the approval is needed because the construction/building works may affect Sydney Water's assets (e.g. water, sewer and stormwater mains).

Your Coordinator can tell you about the approval process including:

- Possible requirements;
- Costs; and
- Timeframes.

Backflow Prevention Water supply connections

A backflow prevention containment device appropriate to the property's hazard rating must be installed at the property boundary. The device is to be installed on all water supplies entering the property, regardless of the supply type or metering arrangements. It is needed to reduce the risk

of contamination by backflow from these supplies.

A licensed plumber with backflow accreditation can advise you of the correct requirements for your property. To view a copy of Sydney Water's Backflow Prevention Policy and a list of backflow accredited plumbers visit www.sydneywater.com.au **>** Plumbing **>** BackflowPrevention.

The water service for your development

Sydney Water does not consider whether the existing water main(s) talked about above is adequate for fire fighting purposes for your development. We cannot guarantee that this water supply will meet your Council's fire fighting requirements. The Council and your hydraulic consultant can help.

You must make sure that each dwelling/lot has its own 20mm meter.

When access to the water supply is required, the property owner or agent must apply to Sydney Water online. Sydney Water must install a water meter before any water is used. It is illegal for anyone other than a Sydney Water employee to remove the locking mechanism on the water meter.

The online application can be found by visiting our website www.sydneywater.com.au **>** Plumbing. The applicant will need to have the:

1. Account (Property) Number which can be obtained from the Coordinator; and
2. Serial Number which can be found on the metal tag on your property service.

You can find more information by using the "Ask Sydney Water" section of our website.

Fire Fighting

Definition of fire fighting systems is the responsibility of the developer and is not part of the Section 73 process. It is recommended that a consultant should advise the developer regarding the fire fighting flow of the development and the ability of Sydney Water's system to provide that flow in an emergency. Sydney Water's Operating Licence directs that Sydney Water's mains are only required to provide domestic supply at a minimum pressure of 15 m head.

Disused Water Service Sealing

You must pay to disconnect all disused private water services and seal them at the point of connection to a Sydney Water water main. This work must meet Sydney Water's standards in the NSW Code of Practice for Plumbing and Drainage (the Code) and be done by a licensed plumber. The licensed plumber must arrange for an inspection of the work by a Sydney Water plumbing and draining inspector. After Sydney Water's inspector has looked at the work, the drainer can issue the Certificate of Compliance. The Code requires this.

Disused Sewerage Service Sealing

Please do not forget that you must pay to disconnect all disused private sewerage services and seal them at the point of connection to a Sydney Water sewer main. This work must meet

Sydney Water's standards in the NSW Code of Practice for Plumbing and Drainage (the Code) and be done by a licensed drainer. The licensed drainer must arrange for an inspection of the work by a Sydney Water plumbing and draining inspector. After Sydney Water's inspector has looked at the work, the drainer can issue the Certificate of Compliance. The Code requires this.

Soffit Requirements

Please be aware that floor levels must be able to meet Sydney Water's soffit requirements for property connection and drainage.

Other fees and requirements

The requirements in this Notice relate to your Certificate application only. Sydney Water may be involved with other aspects of your development and there may be other fees or requirements. These include:

- plumbing and drainage inspection costs;
- the installation of backflow prevention devices; and
- council fire fighting requirements. (It will help you to know what the fire fighting requirements are for your development as soon as possible. Your hydraulic consultant can help you here.)

No warranties or assurances can be given about the suitability of this document or any of its provisions for any specific transaction. It does not constitute an approval from Sydney Water and to the extent that it is able, Sydney Water limits its liability to the reissue of this Letter or the return of your application fee. You should rely on your own independent professional advice.

END

Appendix C. Jemena

Appendix D. Telstra

James Gilligan

From: Walicki, Brian [Brian.Walicki@team.telstra.com]
Sent: Monday, 31 May 2010 4:25 PM
To: jgilligan@hughestrueman.com.au
Cc: schatfield@hughestrueman.com.au
Subject: Telstra comment on Airds / Bradbury redevelopment

Attention: James Gilligan,
Civil Engineer
Hughes Trueman

Dear James,

Thankyou for meeting 13/05/2010 and discussing Landcom's intent to redevelop Airds and Bradbury, advised to Telstra through our Smart Community internet site on Intent to Develop reference 12034859.

Telstra supports Landcom's objective of redeveloping Airds and Bradbury, and desires to be the infrastructure and service provider of choice in this area. I make the following comments on behalf of Telstra – an owner of existing infrastructure in the proposed development area.

Relocation of Telstra's existing conduit network will be required at multiple locations throughout the proposed development, and is to be funded by the developer.

Removal of existing conduit and cable is to be done at developers cost, and is to be managed in conjunction with Telstra's Network Integrity group. Contact Dial Before You Dig at http://www.1100.com.au/default.aspx or telephone 1100 before beginning construction activities.

Telstra desires to maintain its ability to reach existing service addresses in this area with an equivalent conduit network post network disturbance caused by this development. Installation of conduit to reach additional new service addresses will be funded by Telstra, and it is Telstra's desire to utilise joint-use trenches in these areas.

Should Telstra be selected as the telecommunications infrastructure provider for this area, there are likely to be economies of scope in managing network disturbance and restoration together with supply of new cable infrastructure.

Installation of new cable infrastructure is likely to be subject to new legislative arrangements at the time this development occurs. Telstra's current mechanism for deployment of fixed telecommunications infrastructure involves a Telstra Smart Community® Velocity™ agreement between Telstra and the developer of this area, resulting in deployment of optical fibre infrastructure rather than copper cable.

You outlined four specific areas of concern during our meeting:

1. SKC412 on your drawing 09P741-SKC400 Rev A.

Extensive relocation of existing conduit and cable is required in this area due to the proposed road alignment. Total sheathed cable capacity includes 900 pairs of copper cable and 36 optic fibres. Infrastructure includes main cable network which supplies many surrounding existing streets spurring from Riverside Rd and optical fibre which serves John Warby Public School.

2. SKC415 on your drawing 09P741-SKC400 Rev A.

Minor relocation of existing conduit is required in this area. Service impact is limited to service addresses on Deans Rd, Heathfield Pl, and Nandewar Pl. Total sheathed cable capacity impacted is in the order of 200 copper pairs.

3. SKC410 on your drawing 09P741-SKC400 Rev A.

Extensive relocation of existing conduit and cable is required in this area due to proposed change of land use. Total sheathed cable capacity includes 1300 copper cable pairs and 12 optical fibres.

4. Existing intersection east of SKC410
Relocation of existing conduit and cable is required in this area due to proposed realignment of road location. Total sheathed cable capacity includes 600 copper cable pairs and 24 optical fibres.

Relocation of conduit network is considered feasible, but further detail of your construction stages and choice of telecommunications infrastructure provider is needed before an order of magnitude cost can be provided.

Please continue to lodge Intent to Develop and Application for Reticulation requests through Telstra's Smart Community internet site www.telstra.com.au/smartcommunity.

Yours faithfully,

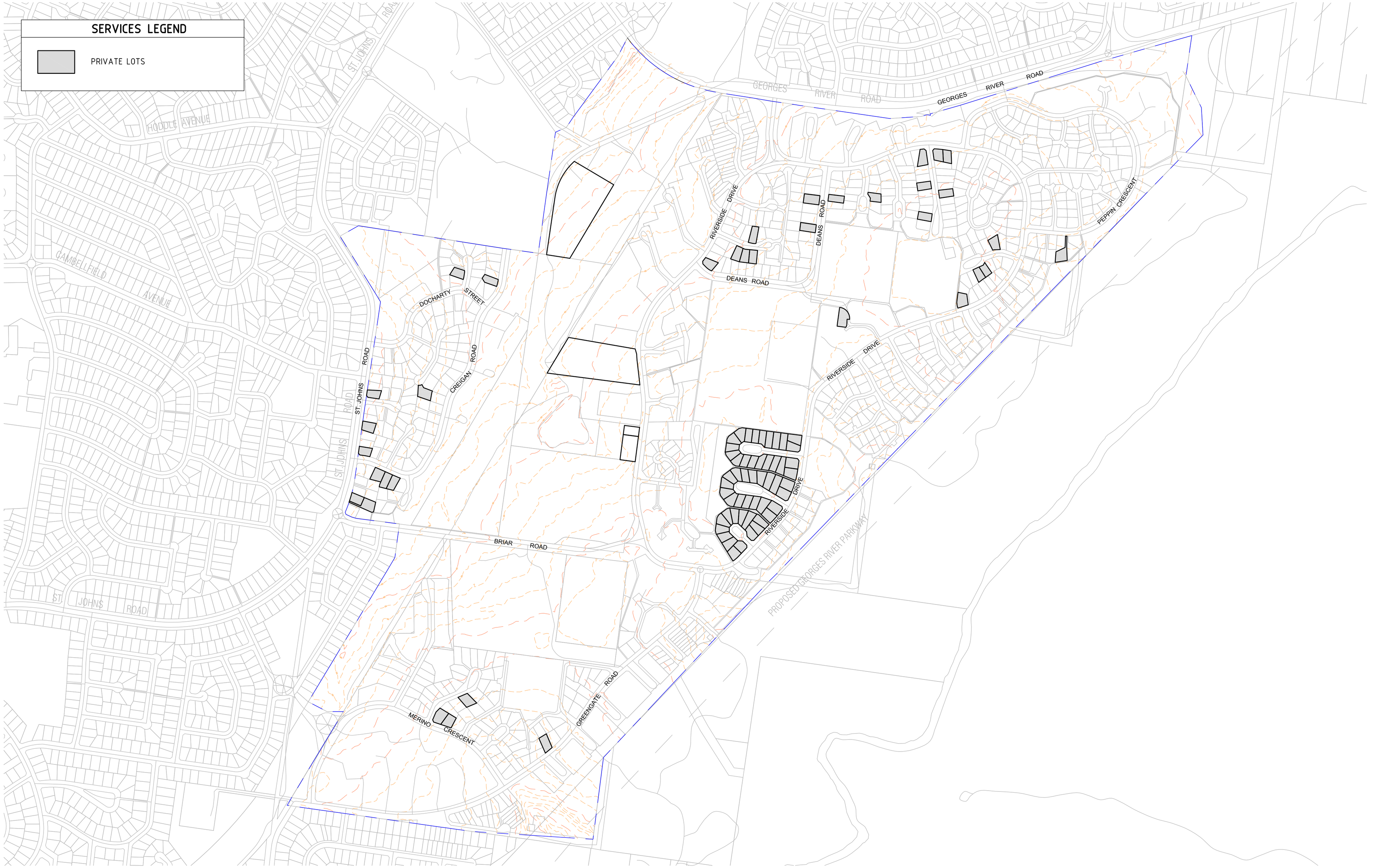
Brian Walicki
Principal Planner
Integrated Network Planning
NSW Forecasting and Area Planning

Telephone: 02 9397 2850
Mobile: 0407 561 975

Appendix E. Infrastructure plans

SERVICES LEGEND

PRIVATE LOTS



FOR INFORMATION

Rev	Amendment / Reason For Issue	Date	Drawing Completed by	Designed & Checked by	Verified by X = Not verified	Issue Authorised (*)
D	FOR INFORMATION	07.03.11	ADS	JG		
C	FOR INFORMATION	25.01.11	ADS	JG	X	
B	FOR INFORMATION	17.12.10	ADS	JG	X	
A	FOR INFORMATION	29.04.10	AMP	JG	X	

* Drawing Status Warning: Unless there is an authorised Hughes Trueman signature at *, this drawing is not authorised for issue.

This Drawing may have been prepared using COLOUR, and may be incomplete if copied to BLACK & WHITE

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Plan Scale 1:4000 @ A1

North

HughesTrueman
Consulting Engineers Planners & Managers
Branches @ St Leonards Parramatta Canberra Wagga Wagga
CONSULT AUSTRALIA Member Firm
ABN 53 831 529 091
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Project: AIRDS AND BRADBURY RENEWAL PROJECT

Client: LANDCOM

Architect/Project Manager:

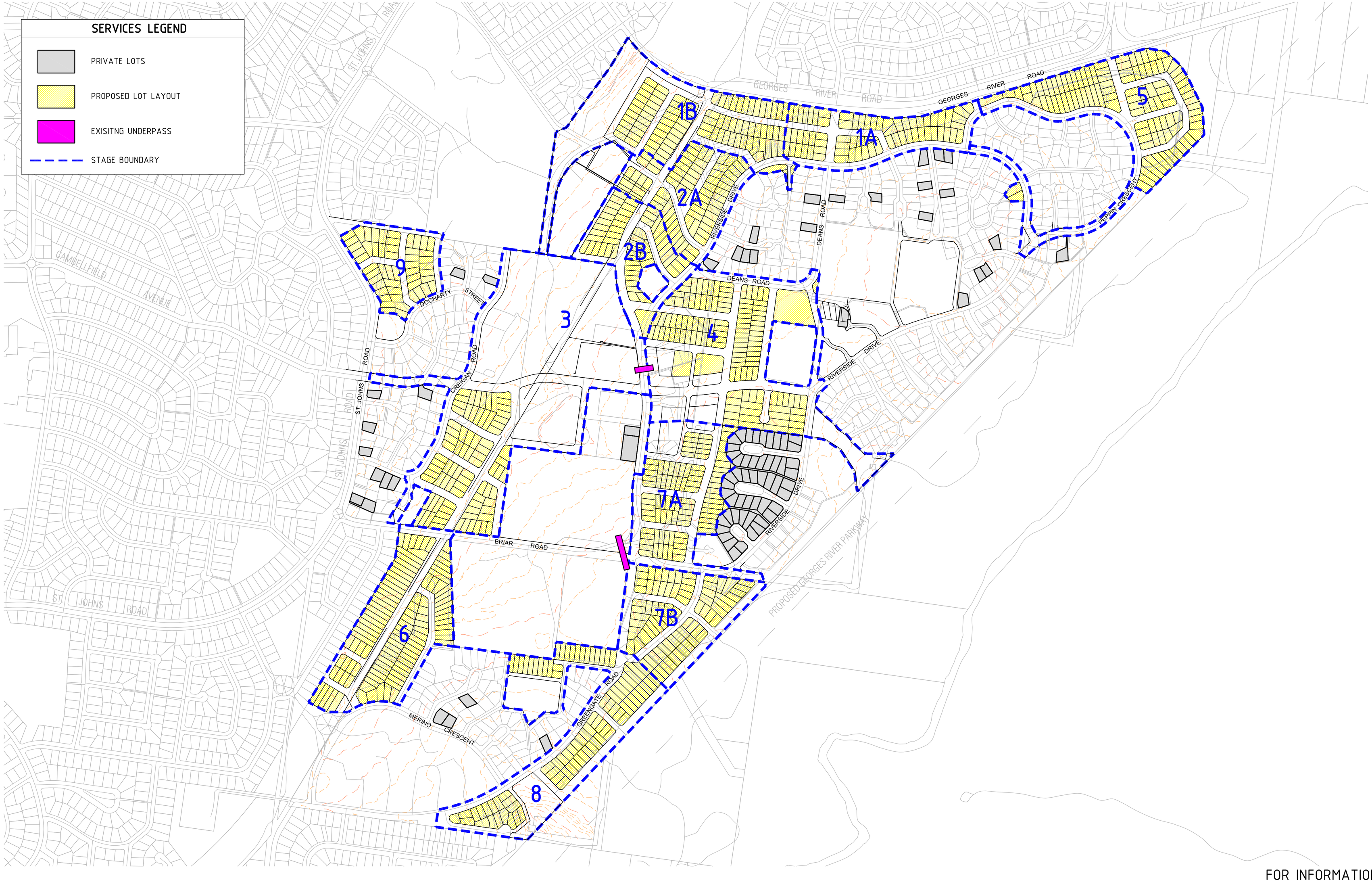
Drawing Title: EXISTING LOT LAYOUT WITH EXISTING CONTOURS

Drawing No.: 09P741-SKC600

Rev: D

300mm A1 SHEET

Date : 07-3-11 Time : 5:32pm Plotted By : gl55895 Filename : P:\Parramatta\Projects\09P741\CADD\Civil\ACAD\Sketches\09P741-SKC600.dwg



FOR INFORMATION

Rev	Amendment / Reason For Issue	Date	Drawing Completed by	Designed & Checked by	Verified by X = Not verified	Issue Authorised (*)
D	FOR INFORMATION	07.03.11	ADS	JG		
C	FOR INFORMATION	25.01.11	ADS	JG	X	
B	FOR INFORMATION	17.12.10	ADS	JG	X	
A	FOR INFORMATION	29.04.10	AMP	JG	X	

* Drawing Status Warning: Unless there is an authorised Hughes Trueman signature at *, this drawing is not authorised for issue.

This Drawing may have been prepared using COLOUR, and may be incomplete if copied to BLACK & WHITE

100 50 0 100 200
Plan Scale 1:4000 @ A1

North

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Project: AIRDS AND BRADBURY RENEWAL PROJECT

Client: LANDCOM

Architect/Project Manager:

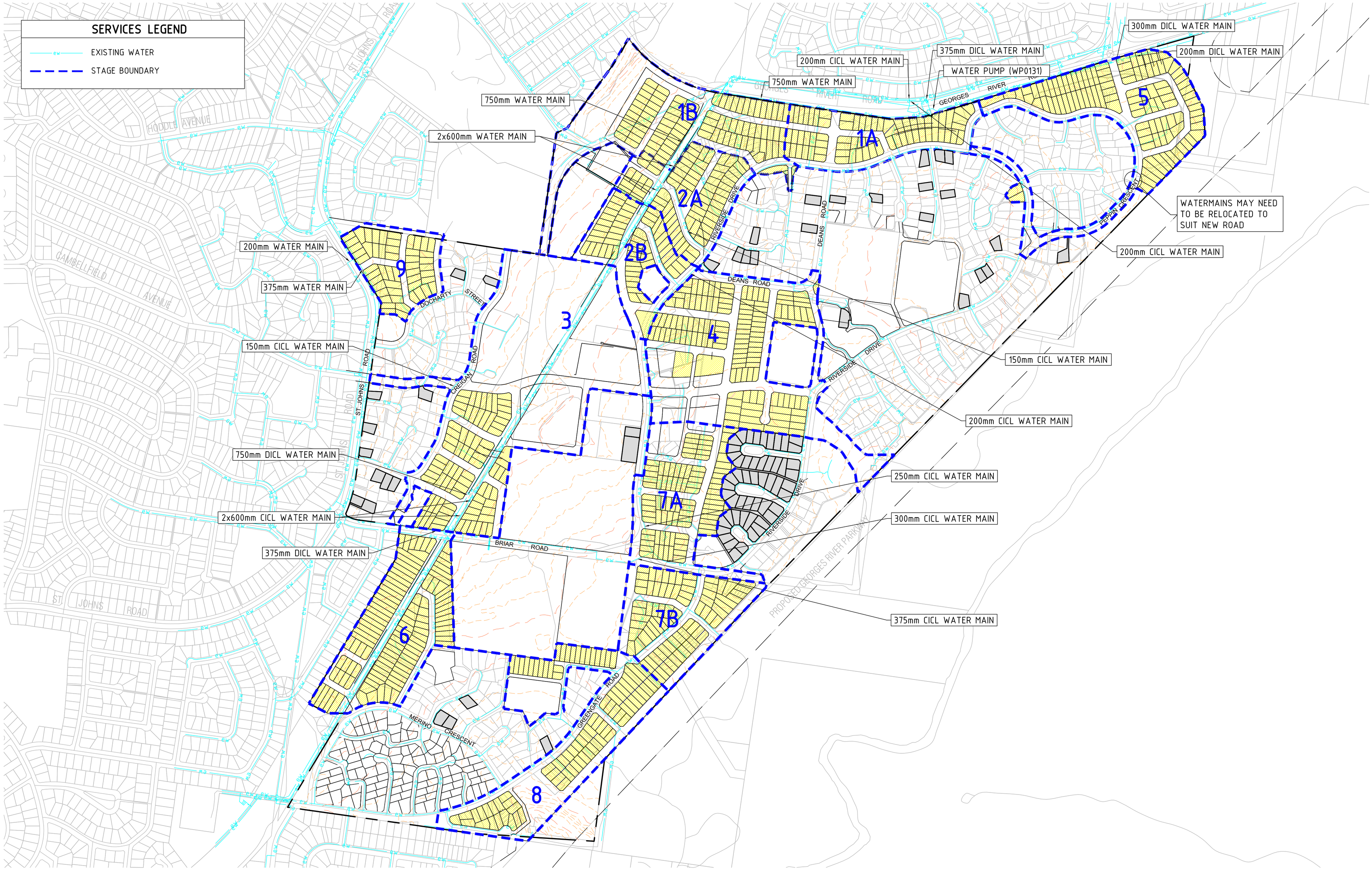
Drawing Title: PROPOSED LOT LAYOUT AND STAGING PLAN

Drawing No.: 09P741-SKC601

Rev: D

A1 SHEET 300mm 200mm 100mm 0

Date: 07.3.11 Time: 5:33pm Plotted By: gs55895 Filename: P:\Parramatta\Projects\2009\09P741\CADD\Cv\ACAD\Sketches\09P741-SKC601.dwg



FOR INFORMATION

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A	FOR INFORMATION	29.04.10	AMP	JG	X	

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100 50 0 100 200
Plan Scale 1:4000 @ A1

North

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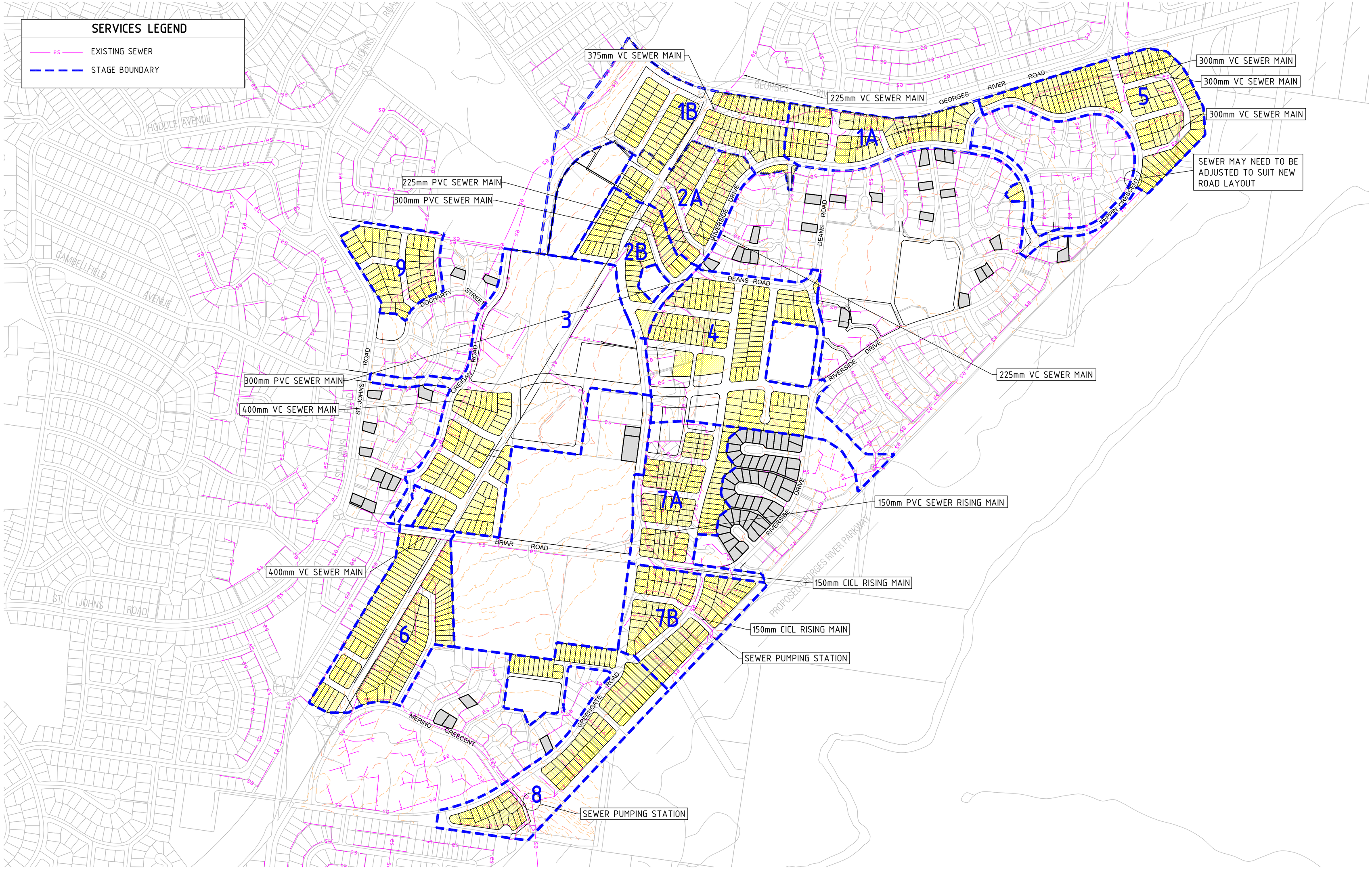
Project: AIRDS AND BRADBURY RENEWAL PROJECT
Client: LANDCOM
Architect/Project Manager:
Drawing Title: EXISTING SERVICES PLAN- WATER
Drawing No.: 09P741-SKC602
Rev: D

Date: 07-3-11 Time: 5:34pm Plotted By: gl55895 Filename: P:\Parramatta\Projects\2009\09P741\CADD\Civil\ACAD\Sketches\09P741-SKC602-SKC606.dwg

300mm A1 SHEET
200mm
100mm
0



FOR INFORMATION

Rev	Amendment / Reason For Issue	Date	Drawing Completed by	Designed & Checked by	Verified by X = Not verified	Issue Authorised (*)
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C	FOR INFORMATION	25.01.11	ADS	JG	X	
B	FOR INFORMATION	17.12.10	ADS	JG	X	
A	FOR INFORMATION	29.04.10	AMP	JG	X	

100 50 0 100 200
Plan Scale 1:4000 @ A1

North

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Project: AIRDS AND BRADBURY RENEWAL PROJECT

Drawing Title: EXISTING SERVICES PLAN- SEWER

Client: LANDCOM

Architect/Project Manager:

Drawing No.: 09P741-SKC603

Rev: D

300mm A1 SHEET
200mm
100mm
0

Date: 07.3.11 Time: 5.35pm Plotted By: gl55895 Filename: P:\Parramatta\Projects\2009\09P741\CADD\Civil\ACAD\Sketches\09P741-SKC602-SKC606.dwg