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Discovery Point Pty Ltd

Discovery Point Stage 1

Civil Engineering Consultancy

Civil Report for Project Application Stage 1

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1 Introduction

This report has been prepared to describe the Civil systems associated with the Project Application for Stage 1 of the proposed development at Discovery Point, Wolli Creek.

This Civil Report addresses stormwater drainage, flooding, geotechnical, groundwater, contamination and excavation/fill issues associated with Stage 1 of the development. Previous reports and studies have been prepared for the Discovery Point development as part of the Concept Plan Application, and these have been utilised in the preparation of this report and the associated Stormwater Plans, 2001193 01/CSK01, CSK02 and CSK03.

2 Site Description

The Discovery Point site is located in Wolli Creek, adjacent to the Cooks River. Stage 1 of the development is bounded by Wolli Creek train station (to the North), Brodie Spark Drive (to the East), Illawarra Railway Line (to the West) and Magdalene Terrace (to the South).

Stage 1 of the proposed Discovery Point development incorporates the construction of two buildings (referred to as Buildings 1B and 1C), construction of the neighbourhood park to the South of Building 1B and construction of various roads (including Spark Lane, Brodie Spark Drive, Discovery Point Place and temporary bus turning circles and access).

3 Flooding

The previous Concept Plan application reports prepared by Smart Civil and Parsons Brinckerhoff identify the revised flood levels applicable to the Stage 1 site.

The Stage 1 site would be subject to a Probable Maximum Flood (PMF) with a level of RL 3.6 (at the western edge of Discovery Point site fronting Cooks River bank) and RL 3.5 (at the centre and eastern edge of Discovery Point site fronting Cooks River bank).

The Parsons Brinckerhoff report identifies the 200 year Average Recurrence Interval flood event level for the site as RL 2.4m AHD. The 200 year ARI is the design flood level which is applicable for the Discovery Point site.

The proposed Stage 1 development is protected from this 200 year Average Recurrence Interval design event as ground the level on all sides of Stage 1 is above RL 2.4m AHD.

A bund is proposed to be constructed during Stage 1 works to protect the temporary entrance to Building 6 basement. The bund will protect the temporary basement entrance to the PMF level. This protection level means that flood warning alarms and designated evacuation routes are not required for the basement.

The level of flood protection (that is, protection to a level of RL 4.3m AHD) provided to the Wolli Creek interchange remains unchanged as a result of the development. The recommended residential freeboard to the design flood level is provided. The design flood level (200 year Average Recurrence Interval) is RL 2.4m. The minimum proposed residential/commercial floor level for Stage 1 is RL 6.3m.

4 Stormwater Drainage

The design of the stormwater system for the Stage 1 site will be based on relevant national design guidelines, Australian Standard Codes of Practice, the standards of Rockdale City Council, and accepted engineering practice. Concept drawings showing the proposed surface levels, direction of overland flows, trunk drainage requirements and catchment analysis have been prepared and are attached to this report. Refer drawings 2001193 01/CSK01, CSK02 and CSK03.

Runoff from buildings will be designed in accordance with AS 3500.3 National Plumbing and Drainage Code Part 3 – Stormwater Drainage. Roof drainage will be documented by the hydraulics consultant. Roof drainage will be directed to rainwater harvest tank/s for re-use. Surplus water will discharge to the street stormwater system. Refer to the Hydraulic Report and drawings for further information regarding roof drainage.

Overall site runoff and stormwater management will be designed in accordance with the Institution of Engineers, Australia publication "Australian Rainfall and Runoff" (1987 Edition), Volumes 1 and 2 (AR&R 1987).

Stormwater drainage has been designed to convey the 100 year ARI flow in pipes to the existing stormwater system (which has the capacity to convey the 100 year ARI flow to the system outlet in the Cooks River). This existing system is in Brodie Spark Drive and Magdalene Terrace (refer drawing 2001193-C-SK01).

Stage 1 incorporates existing stormwater systems which utilise pumps to convey water into the Magdalene Terrace and Brodie Spark Drive networks. These systems are to remain. The earthworks to the neighbourhood park and roadworks to Spark Lane will reduce the catchment which drains to the Magdalene Terrace pump system. The building works adjacent to Brodie Spark Drive will reduce the catchment that drains to the Brodie Spark Drive pump system. The reduction in catchment will reduce the volume of water flowing to these systems, thereby reducing the demand on the pumps.

The proposed stormwater trunk drainage system for Stage 1 is shown in drawing 2001193-C-SK01. Additional sumps and grates will be constructed to limit surface stormwater depths. The locations of these will be determined during detail design, in conjunction with the architect and landscape architect at Construction Certificate Stage.

Stormwater quality is addressed through the use of water sensitive urban design measures (potentially including a bio-retention zone in the neighbourhood park and run all impervious surfaces to landscaped areas prior to capture by stormwater pits). Refer to the Smart Civil Concept Plan report for description of Gross Pollutant Trap (GPT) devices which are proposed during future development Stages.

5 Geotechnical and Groundwater

Geotechnical and Groundwater issues are covered in the Structural Report.

6 Contamination

The Smart Civil Concept Plan report indicates that Potential Acid Sulphate Soil (PASS) has been found at various locations and depths across the Discovery Point site. The depth of excavation for Stage 1 would indicate that it is not likely that PASS will be encountered. It is expected that PASS will be encountered during drilling for piers (the volume of PASS which would be removed during this activity is small). Management of the PASS will be addressed in the Acid Sulphate Soils Management Plan (which should be prepared prior to construction in accordance with the Concept Plan Statement of Commitments).

Coffey Environments Report letter dated 9 June 2010 concludes that the site can be made suitable for the land uses proposed.

7 Excavation/Fill

The bulk earthworks required for Stage 1 are detailed on Bonacci Drawing 2001193C SK04. The Stage 1 works will require cut of approximately 25,000m^3. The Stage 1 works will require fill of approximately 8,600m^3 (as shown on Drawing 2001193C SK04 [P5]).

The finished level of the basement of Building 1C is RL -6.4m AHD. It is expected that bulk excavation will be to RL -6.7m AHD (refer Bonacci Drawings). There will be deeper localised excavation to allow for

construction of the water recycling facility. The finished level of the basement of Building 1B is RL 1.8m AHD. It is expected that bulk excavation will be to RL 1.4m AHD (refer Bonacci Drawings).

There will be fill associated with the construction of the neighbourhood park, connection of Spark Lane to the existing railway/substation access adjacent the western boundary, temporary road and bus turning loop (as detailed on the section on Drawing 2001193C SK01 [P5]). There will also be fill placed on concrete slabs (which form basement carparking levels) that are constructed during Stage 1 works. The design CBR value for the existing ground is 12% (as noted in the Douglas Partners Report 72148 January 2011).

A bund is proposed to be constructed to protect the temporary entrance to Building 6 basement. The bund will protect the temporary basement entrance to the PMF level. This protection level means that flood warning alarms and designated evacuation routes are not required for the basement.

The Smart Civil Concept Plan report indicates that Potential Acid Sulphate Soil (PASS) has been found at various locations and depths across the Discovery Point site. The depth of excavation for Stage 1 would indicate that it is not likely that PASS will be encountered, however if any material is suspected to be PASS then the material should be tested on site. Management of any PASS that might be encountered will be dealt with in a Acid Sulphate Soils Management Plan, which should be prepared prior to construction in accordance with the Concept Plan Statement of Commitments.

Sediment and Erosion control measures will be implemented during construction. The design of these measures will be in accordance with the Landcom “Blue Book”. An appropriate Soil and Water Management Plan is to be developed prior to construction.