Engineering Services and Infrastructure Report

Prepared for: Brisbane Housing Company Attention: Emma Moller and Greg Coghlan Date: 19/01/2023 Prepared by: Katherine Leggett Ref: 301050151-BRI-C-ER

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PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL



Approval no:DEV2023/1367Date:21 September 2023



Revision

Revision	Date	Comment	Prepared By	Approved By
A	28/11/2022	Draft Engineering Services Report	KJL	HS
В	12/01/2023	Engineering Services Report	KJL	MSP
С	19/01/2023	Final Engineering Services Report	KJL	MSP

Site Address:

Real Property Description: Proposed Development: Client: Local Authority: Authority Reference #: Stantec Reference: Proposed Lot 3 on Drawing No:18-0765P-02 Version S Sheet 2 of 2 dated 22 June 2022, Part of 70 Park Road, Yeronga Part of Lot 3 on SP300888 Proposed Affordable Residential Development (multiple dwellings 4+ storeys) Brisbane Housing Company Economic Development Queensland PDA Area within Brisbane City Council N/A 301050151-BRI-C

Klepett

Katherine Leggett RPEQ 27100 For and on behalf of Stantec Pty Ltd

Reviewed by Mike Prior Principal Project Manager

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Design with community in mind

1. Introduction

Stantec have been commissioned by Brisbane Housing Company to prepare this Engineering Services and Infrastructure Report for the proposed residential development. The development is proposed to be situated over part of 70 Park Road, Yeronga. The Parent Lot's Real Property Description is Lot 3 on SP300888, noting that the parent lot is subject to a Reconfiguration of Lot to create separately titled lots. The lot created for the Brisbane Housing Company development is described by the metes and bounds as proposed Lot 3 on Drawing No:18-0765P-02 Version S Sheet 2 of 2 dated 22 June 2022 (Refer Appendix A).

The purpose of this report is to outline the provision of existing services to the site and demonstrate the principles which will be adopted with regards to the proposed development and the need for Earthworks, Roadworks, Water, Sewer, Underground Power, and Stormwater Management. This Engineering Services and Infrastructure Report specifically addresses the site's existing characteristics in a preliminary format, with reference to the following:

- Site topography and vegetation;
- Roadways and site access;
- Flooding and overland flow;
- Environmental considerations;
- Stormwater infrastructure;
- Water infrastructure;
- Sewerage infrastructure;
- Electrical infrastructure;
- Communications infrastructure; and
- Gas network infrastructure.

The existing services information, existing site characteristics and environmental considerations have been retrieved from and informed by a variety of resources, as outlined below.

- Yeronga Priority Development Area Development Scheme (dated August 2019);
- Economic Development Queensland PDA Guideline No. 13 for Engineering standards (dated September 2017);
- Economic Development Queensland PDA Guideline No. 15 for *Protection from flood and storm tide inundation* (dated May 2015);
- EDQ Compliance Assessment documentation for Parkside Yeronga PDA:
 - Parkside Yeronga Site Based Stormwater Management Plan, prepared by Stantec (reference 301048272-RE-02_D, dated 07/07/2022);
 - Parkside Yeronga Flood Assessment, prepared by Water Technology (reference 22020120_Yeronga_PDA_R01-V02, dated 08/07/2022);
- BCC City Plan and associated interactive mapping showing zones and overlays;
- BCC Interactive Flood Awareness Map;
- Brisbane City Council Flood Check Property Reports; and
- Brisbane River Catchment Flood Study, as referenced in the Preliminary Approval documentation for Parkside Yeronga PDA.

The proposed development is to be assessed against the Yeronga Priority Development Area Development Scheme August 2019, unless amended by the Preliminary Approval Framework under Economic Development Queensland (EDQ) Development Application Ref: DEV2021/1221. The Preliminary Approval Framework (DEV2021/1221) was approved by EDQ with conditions on 3 May 2022.



1.1 Constraints

Key constraints for the proposed development include the following:

Confirmation on as-constructed services levels cannot be obtained until the Parkside Yeronga PDA subdivision works
has been fully designed, constructed and quality assurance documentation obtained. As such, the proposed
development levels as well as the servicing strategy outlined in this report has been generally based on the
information contained within the Parkside Yeronga PDA Compliance Assessment response - Supporting Civil
Drawings (Refer Appendix C). Where verbal or written advice has been made available on specific elements, these
have been utilised to inform the engineering approach.



2. Existing Site Characteristics

2.1 Property Details

Address:	Proposed Lot 3 on Drawing No:18-0765P-02 Version S Sheet 2 of 2 dated 22 June 2022, Part of 70 Park Road, Yeronga		
Real Property Description:	Part of Lot 3 SP300888 (noting a subdivision is proposed)		
Proposed Lots in Subdivision:	Future Lot 3		
Total Site Area:	3.1230 Ha (Parent Lot)		
Subject Application Area:	0.1968 Ha		

The proposed future development lots are included within parent Lot 3 (on SP300888), which forms The Parkside Yeronga Priority Development Area (PDA). The Parkside Yeronga PDA has an approved Development Approval for the PDA site for a Material Change of Use and Reconfiguration of a Lot Application. The proposed residential dwellings developed by Brisbane Housing Company is to be located on Lot 3 – refer to Figure 1 below.

Based on the approved Parkside Yeronga PDA Masterplan, the future land uses surrounding Lot 3 generally incorporates Public Open Space and Stormwater Infrastructure to the North (Lots 4 & 5), future Retirement Facility and Aged Care Living (Lot 7), and residential townhouse developments (Lots 6 & 22).



Figure 1 – Site Location Aerial (Source: Nearmap, dated 19 September 2022)

2.2 Existing Site Conditions

The proposed site originally formed part of the Yeronga TAFE site until it closed in 2010. All former TAFE buildings and driveways were cleared by late-2019, leaving the parent lot in its current form as vacant land. Based on Nearmap imagery, the ground surface is generally stabilised by a combination of existing vegetation which has remained post-demolition activities, grass cover spreading over the site and a polymer surface binder. The contour levels used within the Lot 3 area to inform the engineering strategy within this report has been based on the Yeronga PDA Compliance Assessment Response Supporting Civil Drawings established by Stantec dated 08/07/2022 – refer to Appendix C.

2.3 Topography

The Parkside Yeronga PDA Compliance Assessment response - Supporting Civil Drawings (Refer Appendix C) will form the basis of assumption of the 'existing' surface levels of the areas within and immediately adjacent to Lot 3 only.

The cut and fill profile noted within the concept plans (Refer Appendix A) reflect the proposed basement bulk pad level for the development, driveway levels, a retaining solution along the basement extents (which interfaces with the adjoining property and roads) and a resultant batter to the property boundary. Until such time as the Parkside Yeronga PDA earthworks levels and property boundary positions have been finalised and the proposed adjacent development in Lot 22 becomes further defined, design refinement is expected to occur within Lot 3.



3. Vehicular and Pedestrian Site Access

The residential (multiple dwelling) development proposed by Brisbane Housing Company will have street frontage along Maidenhair Place (to be constructed as part of the Yeronga PDA subdivision works) and Park Road. A new crossover and driveway access will be provided along Maidenhair Place to service the development.

As part of the proposed Yeronga PDA wider subdivision works, a min 1.5m wide footpath will be constructed on either side of Currawong Crescent and Maidenhair Place, and through the Public Open Space area within the adjoining Lot 4. These footpaths provide pedestrian connectivity throughout the wider Yeronga PDA subdivision as well as well as the existing footpath amenity in Park Road and Villa Street.

For further information regarding vehicle and pedestrian access arrangements, refer to the Traffic Engineering Report.



4. Flooding and Overland Flow

4.1 Flooding

BCC Interactive Mapping 2014 (Refer Figure 2 for an extract of the mapping), BCC Interactive Flood Awareness Map and Floodwise property searches indicate that the subject site is currently affected by inundation associated with Brisbane River flooding and overland flow paths. However, it should be noted that the extent of this mapping reflects the site levels defined as the existing case, being the operational Yeronga TAFE facility, and not the levels proposed at the completion of the PDA subdivision bulk earthworks.

Refer to Appendix B for the BCC Floodwise Property Report.

The overlay mapping (shown in Figure 2 below) relating to the flooding affecting the Yeronga PDA site is defined as Flood Planning Area 5 in the BCC Interactive Mapping and the 0.2% AEP (1 in 500-year) event in the BCC Flood Awareness mapping. The proposed development usage for the Brisbane Housing Company lot is residential (multiple dwellings 4+ storeys), which is a compatible land use type under Flood Planning Area 5, as defined in Table 8.2.11.3.C within the BCC City Plan 2014.

The Parkside Yeronga SBSMP contained within the EDQ Compliance Assessment response documentation nominates that the 0.2% AEP river flooding approximately correlates to RL11.8mAHD. The proposed Parkside Yeronga PDA development is proposed to be generally filled during the subdivision development stage, with flood storage maintained at the Northern area by completing compensatory cut/fill activities. Therefore, the area expected to be impacted by FPA5 will change from that shown in the BCC Mapping.

The minimum development levels recommended by the Parkside Yeronga PDA Documentation have been extracted and provided below within Table 1 and are shown in grey text. The minimum development levels recommended are indicative of the 1% AEP design event plus the relevant freeboard requirements.

Use	Min Level (mAHD) (Freeboard)	Proposed Lot 3 Levels
NCC Class 1-4 building – habitable room	8.91m (500mm)	RL12.80mAHD (ground floor)
NCC Class 1-4 building – basement entry	8.41m (0mm)	Circa RL10.98mAHD
		Basement level RL9.20mAHD

Table 1 – Minimum Development Levels

The adjoining EDQ subdivision cul-de-sac is at circa RL11mAHD and the proposed development basement access ramp is proposed at circa RL10.98mAHD. Given the proposed subdivision earthworks levels and proposed development basement level of Lot 3 will be below RL11.8mAHD, the development site basement is expected to be impacted by the 0.2% AEP flood event. It is noted that the flooding expected by the 0.2% AEP flood event will be limited to the basement only, and will not affect the habitable ground floor level which is at a level of RL12.80mAHD. As shown by Table 2, the basement levels however are in compliance with the applicable planning requirements contained in the BCC City Plan 2014, and those specified by the flood risk recommendations contained within the Parkside Yeronga PDA Documentation (Refer Appendix C).

The connectivity of the underground stormwater drainage is proposed to be cognisant of the applicable flood events defined under Flood Planning Area 5, and the flood recommendations contained within the Parkside Yeronga PDA Documentation (Refer Appendix C). There will be no stormwater outlet openings within the basement area nor any wall openings, unsealed services penetrations or mechanical ventilation ducts below the nominated 8.91mAHD level to ensure the 1% AEP storm event does not enter the basement area.







4.2 Overland Flow Path

As discussed in the SBSMP contained within the Parkside Yeronga PDA Compliance Assessment response (Refer Appendix C), the existing overland flow path shown in the BCC Interactive Mapping (Refer Figure 3) will be addressed at the PDA subdivision level, with the construction of an overland flow channel running along the Eastern side of the parent lot boundary (and subsequent Eastern boundary of proposed Lots 6, 7 & 10) and the upgrading the underground stormwater pipe network from Villa Street through to the rail corridor culvert.

The design of this overland flow channel is such that its formation caters for all events up to and including the 1% AEP storm with a minimum of 300mm freeboard, including sensitivity analysis regarding the extent of upstream blockage of pits within Villa Street. As such, Lot 3 will not be impacted by this overland flow.



Figure 3 – Overlay Mapping for Overland Flow (Source: BCC Interactive Mapping)



5. Environmental Considerations

5.1 Acid Sulfate Soils

Acid Sulfate Soils are typically encountered in Holocene sediment and below 5m AHD. The proposed development site is located within the BCC overlay for Potential and Actual Acid Sulfate Soils.

The Parkside Yeronga PDA SBSMP indicates that acid sulfate soils testing was completed on site, with acidic soils encountered. The acidic soils were not considered to be acid sulfate soils, and as such, no Acid Sulfate Soils Management Plan is proposed.



Figure 4 – BCC Overlay for ASS (Source: BCC Interactive Mapping)

5.2 Erosion and Sediment Control

An Erosion Hazard Assessment has been performed for the proposed development and is attached in Appendix D.

The site was assessed to be a medium Erosion and Sediment Control risk. The medium risk was triggered by:

- Land disturbance greater than 1000m²
- The presence of a slope greater than 5% that is longer than 3m

Soil testing has been undertaken for the development to inform the basement retention design. Depending on the construction methodology, additional Geotech testing may be required to determine the Emersion Class of the soil during the detailed design phase to inform the proposed erosion and sediment control methodology.

A Conceptual Erosion and Sediment Control (ESC) Management Plan will be required at construction to demonstrate that the proposed development can accommodate the necessary devices to mitigate the sediment and erosion risks associated with the construction phase of the development, and to appropriately mitigate the upstream catchments impacting on the site during the construction phase. The plan will be prepared with reference to the International Erosion Control Association (IECA) Best Practice Erosion and Sediment Control. Prior to works commencement on-site, the ESC Plans will be reviewed, amended, and endorsed by a Certified Professional in Erosion and Sediment Control (CPESC).



6. Stormwater Infrastructure

A legal point of discharge for Lot 3 is proposed to be established as part of the Parkside Yeronga PDA subdivision, located in Maidenhair Place.

Each Lot will be provided with a connection to the municipal stormwater network via a pit / maintenance hole arrangement, with the stormwater network generally falling in a Northerly direction and discharging to a subdivision wide bioretention basin in Lot 5.

The bioretention basin is proposed to treat stormwater runoff from all proposed lots and roadways within the Parkside Yeronga PDA. Given the stormwater quality mitigation of the proposed residential (multiple dwelling) development is being catered for at a subdivisional level, no on-site treatment measures are proposed.

A Parkside Yeronga PDA SBSMP was prepared by Stantec for the purpose of supporting the Preliminary Approval application for the Yeronga PDA (Refer Appendix C). As discussed in the Yeronga PDA SBSMP, the percent impervious area in the post development phase (being a fully developed PDA area) is not greater than the pre-development condition, being the Yeronga TAFE. Given that the indicative masterplan indicates that the percent impervious area is not increased, the stormwater flow at the rail line will be non-worsening from predevelopment conditions upon completion of the PDA subdivision works. As such, no stormwater detention mitigation is proposed at a site development level or within the wider PDA.

As discussed in Section 4 above, an overland flow path will be constructed along the Eastern boundary of the parent Lot. The levels proposed within the overland flow channel will be designed in accordance with the Parkside Yeronga PDA Preliminary Approval documentation, which nominates that the channel will have 300mm freeboard above the stormwater water level contained within the channel in a 1% AEP event with a 50% blockage factor applied to the underground stormwater network in accordance with the requirements contained within QUDM. In the 1% AEP events with blockage factors of 100% applied to the underground stormwater network, upstream stormwater runoff will be contained within the channel, but will exceed the 300mm freeboard allowed for in the 50% blockage case. As such, Lot 3 will not be impacted by this overland flow.

A single connection to the municipal stormwater network will be provided in the North-East corner of Lot 3, via Maidenhair Place. The private stormwater network will be designed to accommodate storm events up to 5% AEP events. Flows in excess of 5% AEP events will be directed to Maidenhair Place as surface flows.

Further information on site stormwater requirements has been provided in the Site Based Stormwater Management Plan prepared by Stantec to support Brisbane Housing Company's Development Application for Lot 3.

The connectivity of the underground stormwater drainage is proposed to be cognisant of the applicable flood events defined under Flood Planning Area 5.



7. Water Infrastructure

The proposed development is within the Urban Utilities service connection area.

As part of the proposed infrastructure outlined within the Yeronga PDA Preliminary Approval documentation, a new water reticulation network is proposed to service the wider subdivision – refer to Appendix C.

The likely connection point to service Lot 3 will be via the DN180 PE water main located in the Western verge of East Street. A single DN100 water property connection and master meter arrangement (with fire and domestic servicing to be metered separately) will be provided via the municipal DN180 water main in Maidenhair Place to service the development, with the new connection to be metered in accordance with current Urban Utilities standards and guidelines. Liaison with EDQ's Parkside Yeronga Development Team has occurred to ensure the service connection sizes and locations are appropriate to service the demands of the development.

Confirmation of the constructed water main position and details will be available after subdivision design and construction works have been completed, and quality assurance documentation provided.

Given the PDA subdivision has been designed to cater for the proposed land usage as a residential development (up to 6 storeys), it is considered that there is adequate capacity in the water main infrastructure to service Lot 3.



8. Sewerage Infrastructure

The proposed development is within the Urban Utilities service connection area.

As part of the proposed infrastructure outlined within the Yeronga PDA Preliminary Approval documentation, a new gravity sewer reticulation network is proposed to service the wider subdivision – refer to Appendix C.

A connection to the new sewer infrastructure is to be in accordance with Urban Utilities standards and via a direct application to Urban Utilities. Confirmation of constructed sewer property connection position and levels is required to ensure the required site serviceability is achieved via the gravity sewer network in accordance with the SEQCode. The property connection levels will be available after subdivision detailed design and construction works have been completed, and quality assurance documentation provided.

Given the PDA subdivision infrastructure will be designed to cater for the proposed land usage as residential development (up to 6 storeys), it is considered that there is adequate capacity in the sewer main infrastructure to service the proposed development.

A single DN160 sewer property connection will be provided via the municipal DN160 gravity sewer main in the North-Western corner of the lot.



9. Electrical and Communications Infrastructure

The local electricity authority is Energex.

Communications networks surrounding the wider PDA area are NBN, Telstra, Pipe networks and Optus, so it is envisioned a communications connection will be supplied by one of these providers.

We understand that the electrical and communications design for the Parkside Yeronga PDA development is currently underway, and it is anticipated that the power supply and communications requirements for each development will be taken into consideration in the subdivision design stage.

A proposed Padmount Transformer will be located on the South-Eastern corner of the lot to service the proposed development. This will be constructed as part of the wider PDA subdivision works, and will not form part of Lot 3.



10. Gas Network Infrastructure

The Parkside Yeronga Conceptual Engineering Services Report contained within the Preliminary Approval documentation states that the EDQ will engage with the gas provider to confirm the ability and commercial viability of providing a gas reticulation and connections to the proposed development. We understand that it is at the discretion of EDQ as to whether they enter into an agreement with the gas supplier.

Therefore, it is not yet able to be confirmed if a gas reticulation network or connections will be constructed as part of the proposed PDA development.

Regardless if a connection is provided to Lot 3 under the PDA development, Brisbane Housing Company do not wish to connect to the gas network.



11. Conclusion

This Services and Infrastructure Report has been prepared for the proposed residential development on future Lot 3, which is part of the Parkside Yeronga PDA site at 70 Park Road, Yeronga.

The report has demonstrated a servicing solution to ensure that all services will be available to the development of Lot 3 upon completion of the PDA subdivision works.

A separate Site Based Stormwater Management Plan has been prepared by Stantec to support the Development Application for the development of Lot 3.



Appendix A Proposed Development Layout

Documents included in this Appendix include:

- Proposed Plan of Reconfiguration (Drawing No:18-0765P-02 Version S Sheet 2 of 2 dated 22 June 2022);
- Architectural drawings prepared by Ultra Linea Architecture; and
- Concept civil engineering drawings prepared by Stantec.







Gross area of subject land	2.8 ha
Area of open space (Lots 4, 5, 8 and Emt 3)5	479m²
Area of Development (Lots 21, 22, 3, 6, 7 & 10)1.8	59 ha
Area of New Road 4	052m²
Length of New Road	263m
Number of proposed lots	9
Number of existing lots	1

DRAWING NO.	VERSION
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DATE DRAWN	SHEET NO.
22-06-2022	2 of 2



DEVELOPMENT SUMMARY

SITE DETAILS

70 PARK RD, YERONGA
QLD 4104
Lot 3 on SP300888
1968m ²
BRISBANE CITY

DEVELOPMENT DETAILS

SITE COVER (ABOVE 4th FLOOR): DEEP PLANTING: COMMUNAL OPEN SPACE:				1012 177m 235m	m² (51.4%) ʰ² (8.9%) ʰ²(12%)		
PARKING D	PARKING DETAILS						
BICYCLE PARKING			94 SPACES				
RESIDENT F VISITOR PAI TOTAL :	SIDENT PARKING:36 SPACES (46%)SITOR PARKING:12 SPACES (15%) TAL:48 SPACES (61%)				ES (46%) ES (15%) E S (61%)		
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GROUND	4 R		3	<u>6</u> 1	1		

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2 ND FLOOR	6 R		4	7 1	1 1
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GROUND	4 R		3	<u>6</u> 1	1
BASEMENT	41 R 19 V	36 R 12 V			
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CLIENT

BRISBANE HOUSING COMPANY

PROJECT

AFFORDABLE HOUSING DEVELOPMENT PARK ROAD YERONGA,QLD

DRAWING

PLANS SITE PLAN

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BRISBANE HOUSING COMPANY

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AFFORDABLE HOUSING DEVELOPMENT PARK ROAD YERONGA,QLD

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PLANS ROOF PLAN

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BRISBANE HOUSING CORPORATION

PARKSIDE YERONGA - BHC - LOT 3



DRAWING INDEX		
DWG No.	DESCRIPTION	
301050151-BRI-C-DA01	COVER PAGE	
301050151-BRI-C-DA02	COMBINED SERVICES LAYOUT PLAN	
301050151-BRI-C-DA03	EARTHWORKS SHADING PLAN	

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- DRAWINGS ARE CONCEPTUAL ONLY AND ARE INTENDED FOR DEVELOPMENT APPROVAL PURPOSES ONLY.
 WHERE LEVELS OR SIZES OF ANY WORKS ARE SHOWN, THESE ARE INDICATIVE ONLY TO DEMONSTRATE THE CAPABILITY OF THE SERVICING OPTION PROPOSED AND ARE SUBJECT TO DETAILED DESIGN (OPERATIONAL WORKS DESIGN), THIS IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE LATEST VERSIONS OF THE AUTHORITY STANDARDS, AUSTRALIAN STANDARDS AND OTHER INDUSTRY REFERENCE DOCUMENTS AT TIME OF DESIGN.
 DRAWINGS ARE NOT INTENDED TO BE USED FOR TENDER, ESTIMATING OR CONSTRUCTION.
 THE PROVED SERVICING ARRANGEMENT HAS BEEN ESTABLISHED BASED ON THE PARKSIDE YERONGA PDA PRELIMINARY APPROVAL DOCUMENTATION.

LEGEND			
	EXISTING BOUNDARY		
	PROPOSED BOUNDARY		
	PROPOSED EASEMENT		
	PROPOSED RETAINING WALL		
D D	PROPOSED STORMWATER (CONSTRUCTED UNDER SUBDIVISION WORKS)		
W W	PROPOSED WATER (CONSTRUCTED UNDER SUBDIVISION WORKS)		
S S	PROPOSED SEWER (CONSTRUCTED UNDER SUBDIVISION WORKS)		
P	PROPOSED POWER (CONSTRUCTED UNDER SUBDIVISION WORKS)		
a	PROPOSED CONCRETE PAVEMENT		
	PROPOSED LANDSCAPING		

DRPORATION	Title CONCEPT	SERVICES LAY	OUT PLAN	
A - BHC				
ERONGA	Project No. 301050151	Auth. Ref.	Scale 1:250	
KJL HS HS 2022.11.28 Dwn. Dsgn. Chkd. YYYY.MM.DD	Revision B	Drawing No. 3010501	51-BRI-C-DA02	



GENERAL NOTES

- DRAWINGS ARE CONCEPTUAL ONLY AND ARE INTENDED FOR DEVELOPMENT APPROVAL PURPOSES ONLY. DRAWINGS ARE CONCEPTUAL DURY AND ARE INFOLDED FOR DEVELOPMENT APPROVAL PORPOSES ON UT. WHERE LEVELS OR SIZES OF ANY WORKS ARE SHOWN, THESE ARE INDICATIVE ONLY TO DEMONSTRATE THE CAPABILITY OF THE SERVICING OPTION PROPOSED AND ARE SUBJECT TO DETAILED DESIGN (OPERATIONAL WORKS DESIGN, THIS IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE LATEST VERSIONS OF THE AUTHORITY STANDARDS, AUSTRALIAN STANDARDS AND OTHER INDUSTRY REFERENCE DOCUMENTS AT TIME OF DESIGN.
- UP UESIGN. 3. DRAWINGS ARE NOT INTENDED TO BE USED FOR TENDER, ESTIMATING OR CONSTRUCTION. 4. THE PROPOSED SERVICING ARRANGEMENT HAS BEEN ESTABLISHED BASED ON THE PARKSIDE YERONGA PDA PRELIMINARY APPROVAL DOCUMENTATION.

EARTHWORKS NOTES

- THIS PRELIMINARY DESIGN DOES NOT PROVIDE DETAILED GUIDANCE ON THE FOLLOWING ELEMENTS WHICH ARE STILL TO BE RESOLVED IN FUTURE DETAILED DESIGN PHASES AND ARE THUS INDICATIVE ONLY AT THIS STAGE.

- RETAINING WALLS
 RETAINING WALLS
 BULLDING INTERFACES
 DETAILED GRADING DESIGN
 STEPS IN THE EARTHWORKS MODEL ARE REFLECTIVE OF WHERE BUILDING WALLS ARE LOCATED. IT SHOULD BE NOTED HOWEVER PURTHER RETAINING STRUCTURES ARE LIKELY REQUIRED UPON DETAILED DESIGN AND FURTHER COORDINATION WITH LANDSCAPE CONSULTANTS. ALL PROPOSED BUILDING WALLS ARE LOCATED. IT SHOULD BE NOTED HOWEVER PURTHER RETAINING STRUCTURES ARE LIKELY REQUIRED UPON DETAILED DESIGN AND FURTHER COORDINATION WITH LANDSCAPE CONSULTANTS. ALL PROPOSED BUILDING WALLS ARE NOT SHOWN FOR CLARITY. REFER TO STRUCTURE. AND ARCHTECTURAL PLANS FOR THESE DETAILS.
 BULK EARTHWORKS SHOWN DO NOT CONSIDER THE STAGING OF WORKS OR THE POTENTIAL NEED FOR TEMPORARY WORKS (C. G. BATTERS, WORKING PLATFORMS, SEDIMENT PONDS, ETC).
 BULK EARTHWORKS SHOWN DOES NOT ALLOW FOR ROAD PAVEMENT REQUIREMENTS, LIFT SHAFTS, TRENCH EXCAVATION SPOIL, SERVICES, ROAD BOX, BUILDING FOOTINGS, FOOTPATHS, LANDSCAPE PAVEMENTS, GRADEM AREAS, OR TOPOIL. THE EARTHWORKS DO ACCOUNT FOR AN ASSUMED BUILDING SLAB THICKNESS.
 EARTHWORKS VOLUMES EXCLUDE ANY SITE SOL REMEDIATION AND/OR REPLACEMENT.
 THE VOLUMES PROVIDED ARE HIGHLY INDICATIVE ONLY. AS THE ACTUAL FINISHED SURFACE THAT WILL BE PRESENT UPON SITE OCCUPATION IS CURRENTLY UNKNOWN. THE EXISTING SURFACE HAS BEEN BASED ON THE TOPOGRAPHY INCLUDED IN THE PARKSIDE YERONGA PDA COMPLIANCE ASSESSMENT DOCUMENTATION.

EARTHWORKS VOLUMES

TOTAL CUT -2535.494m³ TOTAL FILL 183.372m³ TOTAL BALANCE -2352.123m³ HIGHLY INDICATIVE VOLUME ONLY: • ASSUMES BULK PAD LEVELS AS SHOWN, AND BATTERING BETWEEN ALL OTHER AREAS. • EXISTING SURFACE LEVEL HAS BEEN BASED ON THE PARKSIDE YERONGA PDA COMPLIANCE ASSESSMENT DOCUMENTATION, WHICH MAY NOT FORM THE ACTUAL FINISHED SURFACE THAT WILL BE PRESENT UPON SITE OCCUPATION.			
LEGEND			
	EXISTING BOUNDARY		
	PROPOSED BOUNDARY		
	PROPOSED EASEMENT		
28.10	PROPOSED CONTOURS		
<u> </u>	EXISTING CONTOURS		

PROPOSED RETAINING WALL

PROPOSED STORMWATER (CONSTRUCTED UNDER SUBDIVISION WORKS)

- PROPOSED WATER (CONSTRUCTED UNDER SUBDIVISION WORKS)
- PROPOSED SEWER (CONSTRUCTED UNDER SUBDIVISION WORKS)
- PROPOSED POWER (CONSTRUCTED UNDER SUBDIVISION WORKS)

CUT/FILL LEGEND

AREA OF CUT DEPTH >2.5m
AREA OF CUT DEPTH 2m - 2.5m
AREA OF CUT DEPTH 1.5m - 2m
AREA OF CUT DEPTH 1m - 1.5m
AREA OF CUT DEPTH 0.5m - 1m
AREA OF CUT DEPTH 0.05m - 0.5m
AREA OF FILL DEPTH 0.05m - 0.5m
AREA OF FILL DEPTH 0.5m - 1m
AREA OF FILL DEPTH 1m - 1.5m
AREA OF FILL DEPTH 1.5m - 2m
AREA OF FILL DEPTH 2m - 2.5m
AREA OF FILL DEPTH >2.5m

DRPORATION	EARTHWO	rks shading	PLAN - LOT 3
A - BHC			
ERONGA	Project No. 301050151	Auth. Ref.	Scale 1:250



Appendix B Authority Flood Report





Brisbane City Council FloodWise Property Report



Dedicated to a better Brisbane

THIS REPORT IS FOR BUILDING AND DEVELOPMENT PURPOSES ONLY

The FloodWise Property Report provides property or lot-based flood information for building and development requirements. This report provides information on estimated flood levels, habitable floor level requirements and more technical information on the four sources of flooding: river, creek / waterway, storm tide and overland flow. Refer to the Useful Definitions section for a glossary of terms.

To find out more about how the contents of this report may affect building or development on this property, please visit www.brisbane.qld.gov.au/planning-building.For more general information about understanding your flood risk and how to prepare your property, family or business for potential flooding visit www.brisbane.qld.gov.au/beprepared

THIS IS A REPORT FOR:

Rateable Address: 70 PARK RD, YERONGA QLD 4104 Lot Details: L.3 SP.300888



EXPLANATION



m(AHD) - Metres Australia Height Datum. The level of 0.0m AHD is approximately mean sea level.

Flood Levels - The Flood level bar chart above shows the possible flooding level and percentage chance of that level being reached or exceeded in any year. If an orange bar shows, it is the calculated January 2011 flood level at this address or lot. Refer to 'Useful Definitions' for further information.

Minimum Habitable Floor Level - Applies to residential development only. Please refer to Council's planning scheme to learn how this may affect you. If a property is in an overland flow path, or a large allotment, a minimum habitable floor level cannot be provided. Refer flood and planning development flags below.

Ground Levels- The green line above shows this property's approximate lowest and highest ground levels based on latest available information (2019 airborne laser survey) to Council. If you are building, please confirm with a surveyor.

For further information and definitions please refer to the Useful Definitions page

FLOOD AND PLANNING DEVELOPMENT FLAGS

DEVELOPMENT FLAG(S) This property may also be affected by one or more flood or property development overlays or flags. These include: OVERLAND FLOW PATH,LARGE ALLOTMENT

Please review the technical summary over page and refer to Council's planning scheme for further information.



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TECHNICAL SUMMARY

This section of the FloodWise Property Report contains more detailed flood information for this property so surveyors, builders, certifiers, architects and engineers can plan and build in accordance with Council's planning scheme. For more information about building and development in Brisbane please visit www.brisbane.qld.gov.au/planning-building or talk to a Development Assessment Planning Information Officer via Council's Contact Centre on (07) 3403 8888.

THIS IS A REPORT FOR:

Rateable Address: 70 PARK RD, YERONGA QLD 4104

Lot Details: L.3 SP.300888

PROPERTY INFORMATION (Summary)

The following table provides a summary of flood information for this property. More detailed flood level information is provided in the following sections of this report.

PROPERTY SUMMARY	LEVEL (mAHD)
Minimum Ground Level	4.6
Maximum Ground Level	22.2
Min Habitable Floor Level	Contact Council
Residential Flood Level (RFL)	8.3
Residential Flood Level Source	RIVER
Flooding may also occur from	RIVER, OVERLAND FLOW

ESTIMATED PEAK FLOODING LEVELS

The table below displays the peak estimated flood levels by probability for this property. Estimated flood level data should be used in conjunction with applicable planning scheme requirements - Refer to Flood Planning Development Information.

Note that the overland flow flooding level maybe higher than the levels below from other sources.

DESCRIPTION	LEVEL (mAHD)	SOURCE
20% AEP	N/A*	
5% AEP	N/A*	
2% AEP	N/A*	
1% AEP	8.3	RIVER
January 2011	7.8	RIVER
DFL	6.7	RIVER
RFL	8.3	RIVER

* Council does not hold flood levels for this probability event.

FLOOD PLANNING DEVELOPMENT INFORMATION

This section of the FloodWise Property Report contains information about Council's planning scheme overlays. Overlays identify areas within the planning scheme that reflect distinct themes that may include constrained land and/or areas sensitive to the effects of development.

FLOOD OVERLAY CODE

The Flood overlay code of Council's planning scheme uses the following information to provide guidelines when developing properties. The table below summarises the Flood Planning Areas (FPAs) that apply to this property. Development guidelines for the FPAs are explained in Council's planning scheme, which is available from www.brisbane.qld.gov.au/planning-building.

FLOOD PLANNING AREAS (FPA)				
RIVER	CREEK/WATERWAY	OVERLAND FLOW		
FPA5		Applicable		
COASTAL HAZARD OVERLAY CODE				

There are currently no Coastal Hazard Overlays that apply to this property.

PROPERTY DEVELOPMENT FLAGS

Overland Flow Path - Mapping indicates this property may be located within an overland flow path. Overland flow flooding usually occurs when the capacity of the underground piped drainage system is exceeded and/or when the overland flow path is blocked. It is recommended you consult a Registered Professional Engineer of Queensland to determine this property's habitable floor level and flooding depth. Please refer to Council's planning scheme for further information.

Large Allotment - This property is either a Large Allotment of over 1000 square metres or is located within a Large Allotment. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across the site. For more information or advice, it is recommended you engage a Registered Professional Engineer of Queensland.



Brisbane City Council FloodWise Property Report



Dedicated to a better Brisbane

Useful Definitions

Australian Height Datum (AHD) - The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.

Annual Exceedance Probability (AEP) - The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.

Defined Flood Level (DFL) - The DFL for Brisbane River flooding is a level of 3.7m AHD at the Brisbane City Gauge based on a flow of 6,800 m³/s.

Maximum and Minimum Ground Level - Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

Minimum Habitable Floor Level - The minimum level in metres AHD at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family and rumpus rooms) must be constructed.

Council's Planning Scheme - The City Plan (planning scheme) has been prepared in accordance with the Sustainable Planning Act as a framework for managing development in a way that advances the purpose of the Act. In seeking to achieve this purpose, the planning scheme sets out the Council's intention for future development in the planning scheme area, over the next 20 years.

Residential Flood Level (RFL) - Residential flood level (RFL) for the Brisbane River flooding equates to the 1% Annual Exceedance Probability flood level.

Rateable Address - A Lot or Property may have more than one street address. The address shown on this report is the address used by Council for the Lot or property selected.

Property - A property will contain 1 or more lots. The Multiple Lot Warning is shown if you have selected a property that contains multiple lots.

Brisbane City Council's Online Flood Tools

Council provides a number of online flood tools:

- to guide planning and development
- to help residents and businesses understand their flood risk. and prepare for flooding.

Planning and Development Online Flood Tools

Council's online flood tools for planning and development purposes include:

- FloodWise Property Report
- Flood Overlay Code

For more information on Council's planning scheme and online flood tools for planning and development:

- phone 07 3403 8888 to talk to a Development Assessment Customer Liaison Officer
- visit www.brisbane.qld.gov.au/planning-building
- visit a Regional Business Centre.

Helping residents and businesses be prepared for flooding

Council has a range of free tools and information to help residents and businesses understand potential flood risks and how to be prepared. This includes:

- Flood Awareness Map
- Flooding in Brisbane A Guide for Residents Flooding in Brisbane A Guide for Businesses
- Early Warning Alert Service. Visit www.brisbane.qld.gov.au/earlywarning to register for email, home phone or SMS severe weather alert updates.

Note: The Flood Awareness Map shows four levels of flood likelihood from high likelihood (flooding is very likely to occur) through to very low likelihood (very rare and extreme flood events).

For more information on Council's online flood tools for residents and business:

- Visit www.brisbane.qld.gov.au/beprepared
- Phone (07) 3403 8888.



Brisbane City Council FloodWise Property Report



Dedicated to a better Brisbane

Disclaimer

- 1. Defined Flood Levels and Residential Flood Levels, and the Minimum Habitable Floor Levels are determined from the best available information to Council at the date of issue. These flood levels, for a particular property, may change if more detailed information becomes available or changes are made in the method of calculating flood levels.
- 2. Council makes no warranty or representation regarding the accuracy or completeness of a FloodWise Property report. Council disclaims any responsibility or liability in relation to the use or reliance by any person on a FloodWise Property Report.



Planning to build or renovate?

For information, guidelines, tools and resources to help you track, plan or apply for your development visit **www.brisbane.qld.gov.au/planning-building**

You can also find the Brisbane City Plan 2014 and Neighbourhood Plans as well as other information and training videos to help with your building and development plans.

Appendix C Preliminary Approval Documentation



Appendix D Erosion Hazard Assessment Form





BRISBANE CITY COUNCIL ABN 72 002 765 795

Erosion Hazard Assessment - June 2014

Brisbane City Council (BCC), Erosion Hazard Assessment form must be read in conjunction with the Erosion Hazard Assessment- Supporting Technical Notes (June 2014 or later version) for explanatory terms and Certification information.

What is an Erosion Hazard Assessment?

Soil erosion and sediment from urban development, particularly during construction activities, is a significant source of sediment pollution in Brisbane's waterways. The Erosion Hazard Assessment determines whether the risk of soil erosion and sediment pollution to the environment is 'low', 'medium' or 'high'.

When is the EHA required?

An Erosion Hazard Assessment form must be completed and lodged with BCC for any Development Application (ie MCU or ROL) that will result in soil disturbance OR Operational Works or Compliance Assessment Application for 'Filling' or Excavation.

Failure to submit this form during lodgement of an application may result in assessment delays or refusal of the application.

Privacy Statement

The personal information collected on this form will be used by Brisbane City Council for the purposes of fulfilling your request and undertaking associated Council functions and services. Your personal information will not be disclosed to any third party without your consent, unless this is required or permitted by law.

Assessment Details

- 1 Please turn over and complete the erosion hazard assessment.
- **2** Based on the erosion hazard assessment overleaf, is the site:

A 'low' risk site

Best practice erosion and sediment control (ESC) must be implemented but no erosion and sediment control plans need to be submitted with the development application. Factsheets outlining best practice ESC can be found at http://www.waterbydesign.com.au/factsheets

A 'medium' risk site

If the development is approved, the applicant will need to engage a Registered Professional Engineer (RPEQ) or Certified Professional in Erosion and Sediment Control (CPESC) to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy.

A 'high' risk site

If the development is approved, the applicant will need to engage a RPEQ and CPESC to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy. The plans and program will need to be certified by a CPESC.

3 Site Information and Certification

Application number (if known)

Site address

Part of 70 Park Road, Yeronga Q Postcode 4104

I certify that:

- I have made all relevant enquiries and am satisfied no matters of significance have been withheld from the assessment manager.



I am a person with suitable qualifications and/or experience in erosion and sediment control.

The Erosion Hazard Assessment was completed in accordance with the Erosion Hazard Assessment Supporting Technical Notes and the BCC Infrastructure Design Planning Scheme Policy.

- The Erosion Hazard Assessment accurately reflects the site's overall risk of soil erosion and sediment pollution to the environment.
- I acknowledge and accept that the BCC, as assessment manager, relies, in good faith, on this certification as part of its development assessment process and the provision of false or misleading information to the BCC constitutes an offence for which BCC may take punitive steps/ action against me/ enforcement action against me.

Certified by Print name

Katherine Leggett

Certifier's signature

Klegett

Date 28 / 11 / 2022

Table 1: Low Risk Test



Design with community in mind

Level 3, 52 Merivale Street

South Brisbane QLD 4101 Tel +61 7 3811 4500

For more information, please visit www.stantec.com

