Illoura Place

Stormwater Management Report

Prepared for:	**Altis Bulky Retail Pty Ltd as trustee for Altis ARET Sub Trust 20 ("Altis")**
Date:	**27th October 2021**
Prepared by:	**Miqueas Moreno**
Ref:	**301350263**

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Stantec

Revision

Site Address:	28 Elizabeth Street, Liverpool NSW 2170
Real Property Description:	Lot 1, DP 1261270
Proposed Development:	Residential Redevelopment
Client:	Altis Bulky Retail Pty Ltd as trustee for Altis ARET Sub Trust 20 ("Altis")
Local Authority	Liverpool City Council
Authority Reference #:	N/A
Stantec Reference:	301350263 SWMP_004

Renata Tracey
Civil Project Engineer
For and on behalf of
Stantec Australia Pty Ltd

Revision	Date	Comment	Prepared By	Approved By
A	15.07.2021	Draft DA Issue	MMM	RET
B	26.07.2021	DA Issue	MMM	RET
C	10.08.2021	DA Issue	MMM	RET
D	27.10.2021	DA Issue	MMM	RET

Contents

1. Introduction

Stantec have been commissioned by Altis to prepare this Stormwater Management Plan (SMP) in support of the Development Application for the proposed development at 28 Elizabeth Street, Liverpool NSW. The site's real address is Lot 1, DP 1261270.

This SMP outlines the conceptual DA level stormwater design for the proposed development.

This SMP illustrates that the proposed development complies with Liverpool City Council's requirements, Australian Rainfall and Runoff, Australian Standards and best engineering practise.

The purpose of this SMP is to evaluate the quantity and quality of stormwater associated with the proposed development plan so as to demonstrate to Council that an appropriate stormwater management strategy has been adopted.

The SMP specifically addresses the following items for both the construction and operational phases of the development:

- Stormwater runoff volumes (Stormwater Quantity);
- Existing Stormwater quality treatment measures (Stormwater Quality);
- Erosion and Sedimentation Control;
- Water Sensitive Urban Design (WSUD) measures.

The following will be achieved with the correct application of this SMP report:

- Appropriate standards to be maintained on all aspects of stormwater within the site,
- Pollution control to be maintained,
- Establishment of a unified, clear and concise stormwater management strategy.

2. Existing Site Characteristics

2.1 Property Detail

The proposed development forms part of the site with the following property details:

Address: 28 Elizabeth Street, Liverpool NSW 2170

Total Site Area: 3,610m² (0.361 Ha)

The proposed development involves the construction of a high-rise mixed use residential building with basements and terraces. The proposed development can be seen on the design drawings in Appendix A of this report.

The overall site is bounded by:

- Elizabeth Street to the North
- George Street to the West
- 150 George Street to the South
- Vacant lots to the East

Refer to locality plan in Figure 1 below.

Figure 1: Site Location Plan (Source: Nearmap 2021)

2.2 Topography

The pre-development site consists of a recently demolished lot with concrete slabs throughout. The site currently falls to the north-east. The site has a high point in the centre west at RL14.32 m, and a low point in the north east at RL 12.94 m. The average slope across the site is approximately 1%.

2.3 Stormwater Catchments

The surrounding area has been investigated to determine the likely impact of existing external stormwater catchments on the proposed site. The site is largely surrounded by developed properties and roads so it is expected there will be no external catchments from outside the property boundaries of the site.

2.4 Existing Stormwater Infrastructure

There are two existing stormwater pits within the site that date from the previous development which are currently connecting to the kerb inlet pit located at the corner of Elizabeth Street and George Street. There is also believed to be an underground stormwater culvert that runs beneath the site of 1350 mm diameter, however, it is not clear if this is a redundant or current utility. Investigations are been undertaken now so the treatment of this is yet to be confirmed.

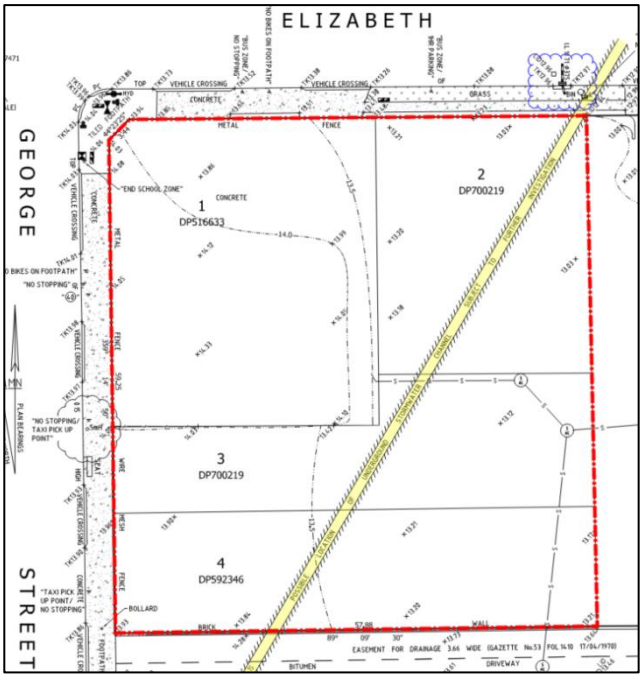


Figure 2 - Existing Stormwater Infrastructure

2.5 Existing Stormwater Discharge

After the demolitions of the previous building the existing drainage infrastructure has become redundant. The current drainage of the site is via overland flow to the existing stormwater pit on Elizabeth St clouded in blue in Figure 2 above.

3. Local Authority Requirements

Design requirements for stormwater management on the site have been set out in Liverpool City Council Development Control Plan (DCP). These requirements are summarised in the sections below.

3.1 Stormwater Conveyance Requirements

Table 1 displays the design storm Average Recurrence Interval (ARI) as outlined within Liverpool City Council DCP requirements for the design of stormwater runoff conveyance systems. It is noted that in order to adhere to council guidelines of current Australians Standards and best practice, this report refers to Annual Exceedance Probability (AEP) in lieu of Average Recurrence Interval (ARI).

Design Parameter	Design Storm	Conveyance Method
Minor Drainage System	20 yr ARI (5% AEP)	In Ground (Piped)
Major Drainage System	100 yr ARI (1% AEP)	Overland

Table 1 - Stormwater Drainage Serviceability

Where overland flow is used to convey the 1% AEP event, 300mm freeboard shall be provided to adjacent habitable floor levels. Note that where overland flow is not available (i.e. in sunken areas), best engineering practice suggests the piped system should be designed to convey the major storm event.

Considering the majority of onsite drainage will consist of building pipework, it is proposed to design the system with enough capacity to cater for the 1% AEP event.

3.2 On Site Detention Requirements

Liverpool's DCP and On-site Stormwater Detention Policy states that on site detention systems (OSD) are required to ensure there is no adverse effect on downstream properties for all storm events up to and including the 1% AEP event.

3.2.1 Existing Site Catchment and Conditions

The existing site conditions have been determined using SixMaps satellite imagery as shown in Figure 3. The site boundary is denoted by the red border and assumed permeable surface areas are shaded in yellow.

Figure 3: Existing Site Conditions (source: SixMaps)

3.2.2 Hydraulic Parameters

The table below outline the hydraulic parameters used to stablish the pre-development condition in DRAINS:

Table 2: Hydraulic Parameter for Drains

Site area [m^2]	% Impervious	Time of Concentration [min]	% Pervious	Time of Concentration [min]	Design Storm [AEP]	Pre-Developed Discharge (PSD) [l/s]
3610	60	10	40	5	20%	96
					10%	116
					5%	132
					2%	149
					1%	164

3.3 Water Pollutant Reduction Targets

Liverpool's DCP states that all new commercial developments must establish their own stormwater improvement devices to meet the following water quality outcomes:

Pollutant	Load Reduction Objective
Gross Pollutants (>5 mm)	90%
Total Suspended Solids (TSS)	85%
Total Phosphorus (TP)	65%
Total Nitrogen (TN)	45%

Table 3 - Stormwater Quality Targets

4. Flood Impact Assessment

When considering a new development, it is important to assess the impact of existing flooding on the proposed development and also the impact of the proposed development on existing or potential flooding both upstream and downstream of the development.

4.1 Existing Flooding

A Section 10.7 planning certificate was lodged in the council website to determine whether the site was in a flood prone area. In response to the query, council issued a document stating that the site was not affected by mainstream flooding (Appendix D).

In further investigations, Stantec reviewed Liverpool City Council's 'Liverpool CBD Floodplain Management Study' and note that whilst the site is not affected by flooding, Elizabeth Street to the north is flood effected in the 100 Yr ARI (1% AEP) flood event as shown in Figure 4 below.

Figure 4 - 100 Yr ARI Flood Extents (Source: Liverpool CBD Flood Study)

In further discussion with the authorities, Council's floodplain engineer confirmed that local overland flow was expected in the vicinity of the site however, this was fully contained within the road.

4.2 Flooding Requirements

4.2.1 Flood Drainage Constraints

The tailwater level is a hydraulic condition immediately downstream of a given hydraulic structure, flow path or system which represent a key constraint in the design of the system itself.

The Tailwater level for the connection point of the proposed drainage network has been considered equal to the top of the kerb in the major storm event as result of the existing local overland flood expected in the area.

4.2.2 Flood Planning Level

Liverpool's DCP states that 300mm freeboard must be given to habitable floor levels above the 1% AEP flood event. Stantec under agreement with council's floodplain engineer, have therefore assumed a 1% AEP flood level equal to the top of kerb along all surrounding roads. 300mm freeboard has been provided across site from these points to ensure the minimum required freeboard is met as per the DCP. This has been demonstrated in the plan attached to Appendix C.

Please note, the OSD tank as highlighted in blue is situated on Level 1.

5. Stormwater Conveyance

This section of the report discusses the systems proposed to allow for stormwater to be conveyed across the site to the legal point of discharge.

As discussed in section 3.1 of this report, council have set minimum design parameters for the flows they require to be conveyed through the in ground drainage system and what they will allow to be conveyed in a controlled manner overland across the site.

5.1.1 In Ground Drainage

The in-ground drainage has been designed to meet the following criteria:

- In the minor design storm event (5% AEP) there will be no surcharging of the in-ground drainage system and;
- In the major design storm event (1% AEP) there will be no uncontrolled discharge from the site onto neighbouring properties. Note that where overland flow paths are unavailable, the piped network shall be designed to not surcharge in the major storm.

Surface runoff from the path and surrounding landscapes areas will be directed to stormwater inlet structures using the design topography of these elements. The inlet structures have been designed to adequately convey the surface runoff into the in-ground drainage network.

Roof runoff will be conveyed via downpipes into the on-site detention (OSD) tank located at level one, which connects to the ground floor drainage system. Ground flows will bypass the OSD system and be conveyed underground to a flow splitter which will divert the low flows to a storm filter chamber. The treated flow from filter chamber and the high flows that bypass the system will be directed to the boundary pit which connects to legal point of discharge.

5.2 Legal Point of Discharge

The legal point of discharge for the proposed development will be located at the north east corner of the site to the existing kerb inlet pit at Elizabeth Street.

6. Stormwater Attenuation

As discussed in section 3.2 the attenuation of stormwater discharge from the site will be provided in accordance with Liverpool City Council's DCP.

For the post development scenario, it has been considered that the site is fully impervious and at least 70% of the total site area will be directed to the OSD tank. A 20 m^3 above ground OSD tank which will be situated in the south west portion of site fitted with a 210 mm orifice plate as control device.

The proposed stormwater attenuation measure has been calculated in DRAINS, and results in the following discharges from site:

Design Storm (AEP	Pre Developed Discharge (PSD) [l/s]	Post Developed Discharge (PSD) [l/s]
20%	96	96
10%	116	108
5%	132	122
2%	149	138
1%	164	150

Table 4: Detention Tank Results

As can be seen in the table above, the stormwater attenuation measures proposed for the site has been proven effective in meet the council requirements.

7. Water Quality Treatment

As discussed in section 3.3 of this report Liverpool City Council has set targets for the reduction of water borne pollution being conveyed from the site through the stormwater drainage system.

This section of the report describes the existing Stormwater Quality Improvement Devices (SQID's) and the effectiveness of the treatment system in achieving the reduction targets set by council for the proposed development.

7.1 Potential Pollutants

There are a wide range of potential stormwater pollutant sources which occur from urbanised catchments, many which can be managed through appropriate stormwater quality treatment. Typical urban pollutants may include:

- Atmospheric deposition
- Erosion (including that from subdivision and building activities)
- Litter and debris
- Traffic emissions and vehicle wear
- Animal droppings
- Pesticides and fertilisers
- Application, storage and wash-off of car oil, detergents and other household and commercial solvents and chemicals
- Solids accumulation and growth in stormwater systems
- Weathering of buildings

These pollutants in urban stormwater can be placed into various categories as follows:

- Suspended Solids
- Litter
- Nutrients such as Nitrogen and Phosphorous
- Biological oxygen demand (BOD) and chemical oxygen demand (COD) materials
- Micro-organisms
- Toxic organics
- Trace metals
- Oils and surfactants

While only the key pollutants will be examined within the modelling, the stormwater Quality Improvement Devices implemented are expected to assist in reducing a wide range of pollutants. For example, heavy metals are commonly associated with, and bound to fine sediments thus, reducing the discharge of fine sediment during the construction and operational phases will also reduce the discharge of heavy metals to existing stormwater systems.

7.2 Pollutant Reduction System

In order to achieve the pollutant reduction targets specified in section 3.3 of this report a series of treatment devices are proposed with together form a treatment train.

7.2.1 Water Treatment Modelling

In order to demonstrate that the proposed treatment train meets the required reduction targets, pollutant reduction modelling is proposed using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) Software program Version 6.3 by eWater CRC. Pollutant export rates are currently only available for Total Suspended Solids (TSS), Total Nitrogen (TN), Total Phosphorous (TP) and Gross Pollutants (GP). Therefore only quantitative modelling for TSS, TN, TP & GP has been undertaken using MUSIC.

Modelling has only been undertaken on the post-development proposal with SQID's installed so as to demonstrate the percentage reduction for each pollutant type.

It is proposed that an 8 m^2 storm filter chamber with 8 x 690mm psorb filter cartridges, installed at the discharge of the site in the north-east will allow council's water pollutant reduction targets to be met, as displayed in FIGURE below. A Rainwater tank will collect water from the roof of the structure and be used to water the terrace gardens to further help meet pollutant reduction targets.

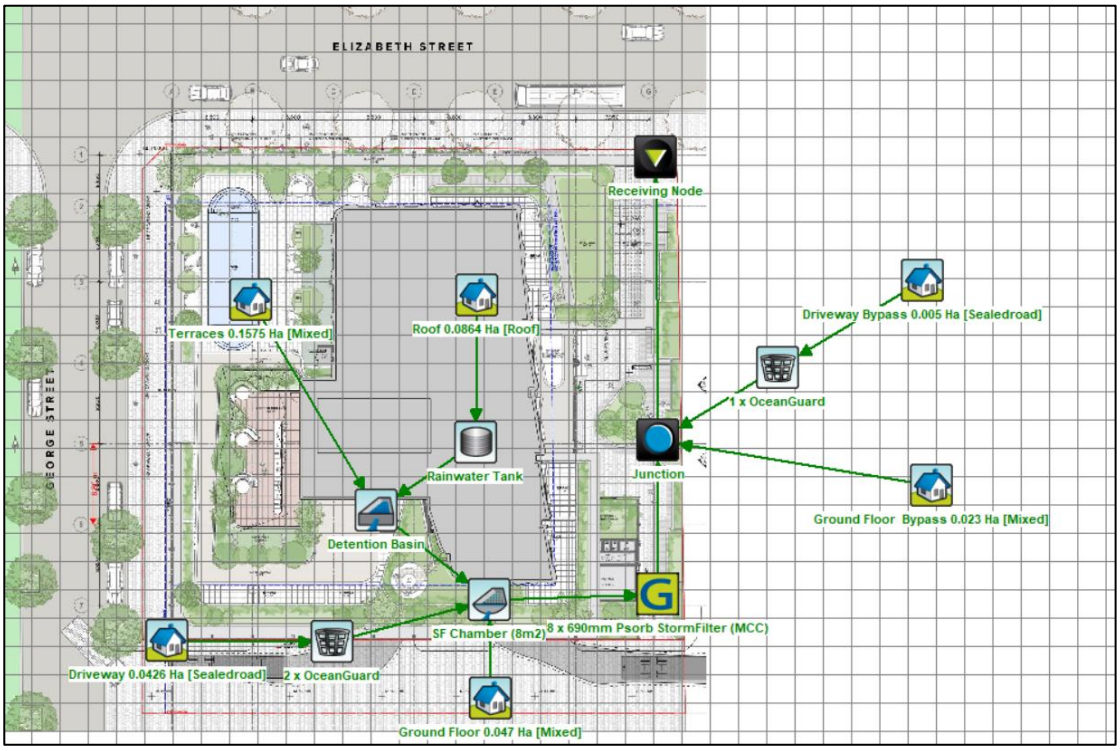
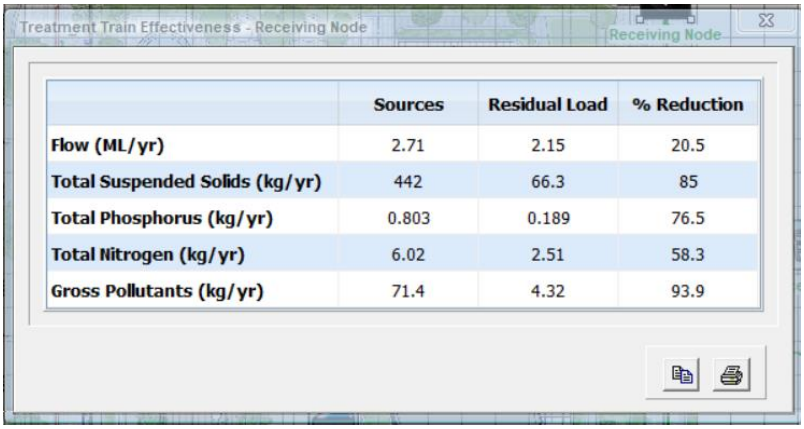


Figure 5 – MUSIC Model



	Sources	Residual Load	% Reduction
Flow (ML/yr)	2.71	2.15	20.5
Total Suspended Solids (kg/yr)	442	66.3	85
Total Phosphorus (kg/yr)	0.803	0.189	76.5
Total Nitrogen (kg/yr)	6.02	2.51	58.3
Gross Pollutants (kg/yr)	71.4	4.32	93.9

Figure 6 – MUSIC Results

Pollutant	Load Reduction Objective	Total Site Reduction
Gross Pollutants (>5 mm)	90%	93.9%
Total Suspended Solids (TSS)	85%	85.0%
Total Phosphorus (TP)	65%	76.5%
Total Nitrogen (TN)	45%	58.3%

Table 4 - Music Results vs Reduction Targets

As can be seen in the table above, the MUSIC model shows that the stormwater treatment requirements are achieved.

8. Erosion & Sedimentation Control

Landcom have published a design guide entitled “Managing Urban Stormwater - Soils and Construction” which is regarded as the standard to which erosion and sedimentation control should be designed to within NSW.

The control of erosion and sedimentation describes the measures incorporated during and following construction of a new development to prevent the pollution and degradation of the downstream watercourse.

A Soil and Water Management Plan has been prepared as part of the development application documentation and is included in Appendix B of this report.

Stormwater Drainage Infrastructure Inlets

Risk:

- Sediment from the construction site washing into the existing stormwater drainage inlet infrastructure.

Consequence:

- The sediment will then be conveyed into the downstream waterbody by stormwater runoff, contaminating the waterbody.
- The sediment will build up blocking the stormwater infrastructure and preventing stormwater conveyance to the downstream waterbody and impacting drainage upstream.

Mitigation:

- Sandbag protection will be installed surrounding all existing stormwater drainage infrastructure inlets to prevent sediment entering the system.

Maintenance:

- Frequent inspection of the sandbags to ensure they are arranged in a manner that prevents sediment from accessing the drainage system. If sediment is building up on the sandbags they should be cleared of sediment and re-established.

Construction Exit Protection

Risk:

- Spoil such as soil being conveyed from the site on the wheels of vehicles.

Consequence:

- Spoil being tracked onto the public road corridors where it is then washed into the existing stormwater drainage infrastructure and is then washed downstream polluting the downstream waterbody.
- Spoil being tracked onto the public road creating dangerous driving conditions for other road users.

Mitigation:

- A shaker grid and wash down facility will be installed at all exits from the construction site. All vehicles leaving the site will have their wheels washed down and pass over the shaker grid to remove any spoil collected on their wheels and retaining the spoil on site.

Maintenance:

- Frequent inspection of the shaker grid to ensure it is clean and still functioning.

Downstream Site Boundaries

Risk:

- Rainfall runoff falling on the site collecting sediment from the construction site and conveying it overland onto downstream properties and waterbodies.

Consequence:

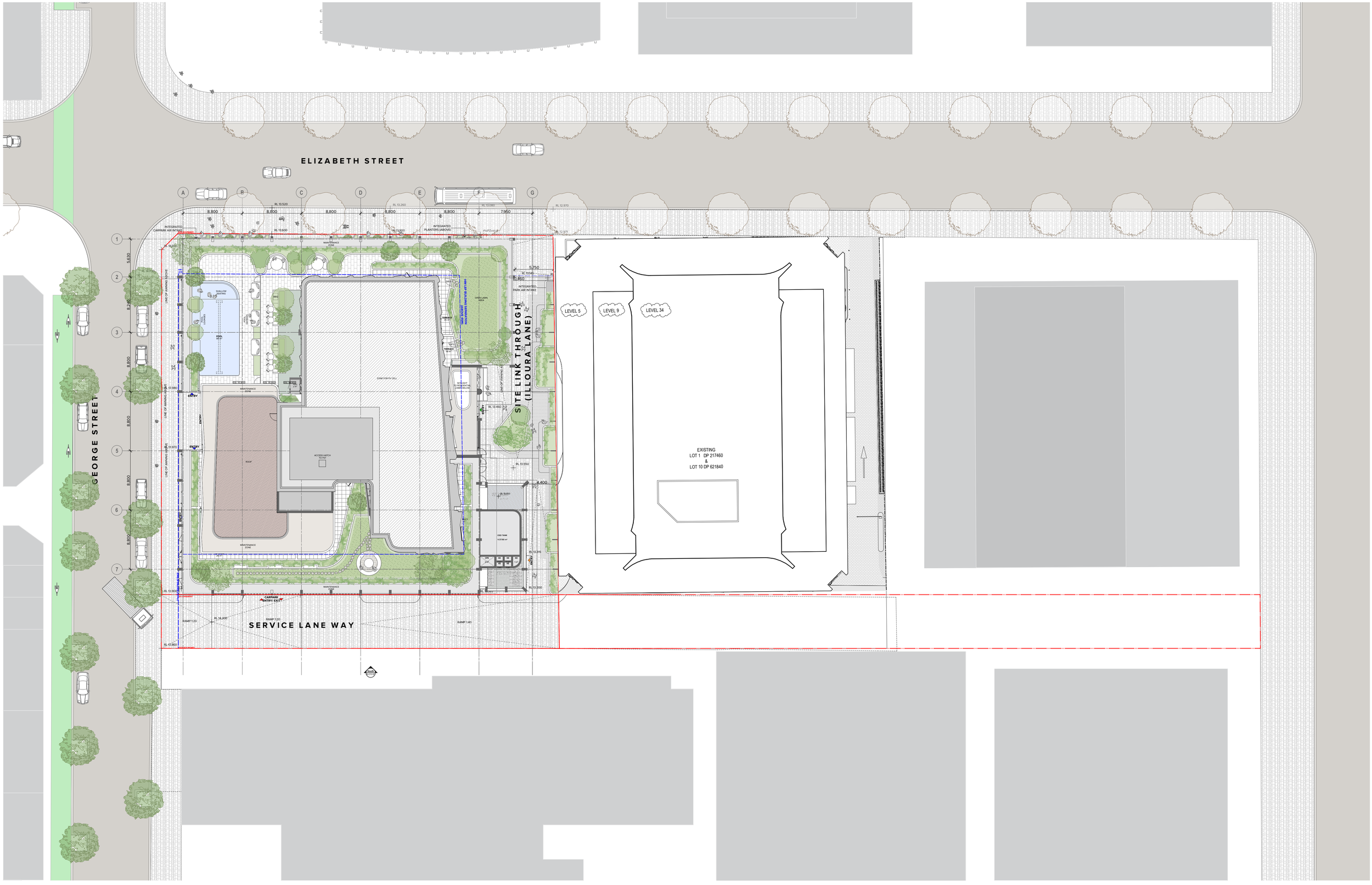
- Sediment discharge polluting downstream properties and waterbodies.

Mitigation:

- Installation of sediment fences on all downstream boundaries of the site to collect sediment and prevent it discharging onto downstream properties or waterbodies.

Maintenance:

- Regular inspection of the sediment fences to ensure they are functioning correctly and are intact.
- If sediment build up is present it should be removed to ensure correct functionality of the fences.



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DLCS Quality Endorsed Company ISO 9001:2015, Registration Number 20476
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MURDOCH PROJECTS

Rev	Date	Approved by	Revision Notes
A	29.06.21	JMC	Pre-DA Package

Project Title
28 Elizabeth Street, Liverpool
28 Elizabeth Street Liverpool NSW 2170 Australia

Drawing Title
Siteworks
Site Plan

Scale: 1:250 @A1, 50%@A3
Status: For Information
Project No.: 20089
Dwg No.: DA-010-011
Drawn by: SE
Rev: A
North

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LEGEND

- BOUNDARY
- 12 CONTOUR
- TOP OF KERB
- LIP OF KERB
- FENCE
- TOP BANK
- TOE BANK
- BRICK RETAINING WALL
- WINDOW
- ADJOINING PROPERTY HOUSE
- FL 16.10 FINISH FLOOR LEVEL
- 24.06TW 22.64BW TOP & BOTTOM WINDOW HEIGHTS
- SV STOP VALVE
- HYD HYDRANT
- POWER POLE
- SMH SEWER MANHOLE
- LP LAMP
- TL TRAFFIC LIGHTS
- VC VEHICLE CROSSING
- PX PRAM CROSSING
- TREE
- Photo 1 DENOTES PHOTO NUMBER (SEE SHEET 4 FOR DETAILS)

SURVEY MARKS				
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TS10793 (ALL SAINTS)	308246.145E	6 244 756.199		SCIMS
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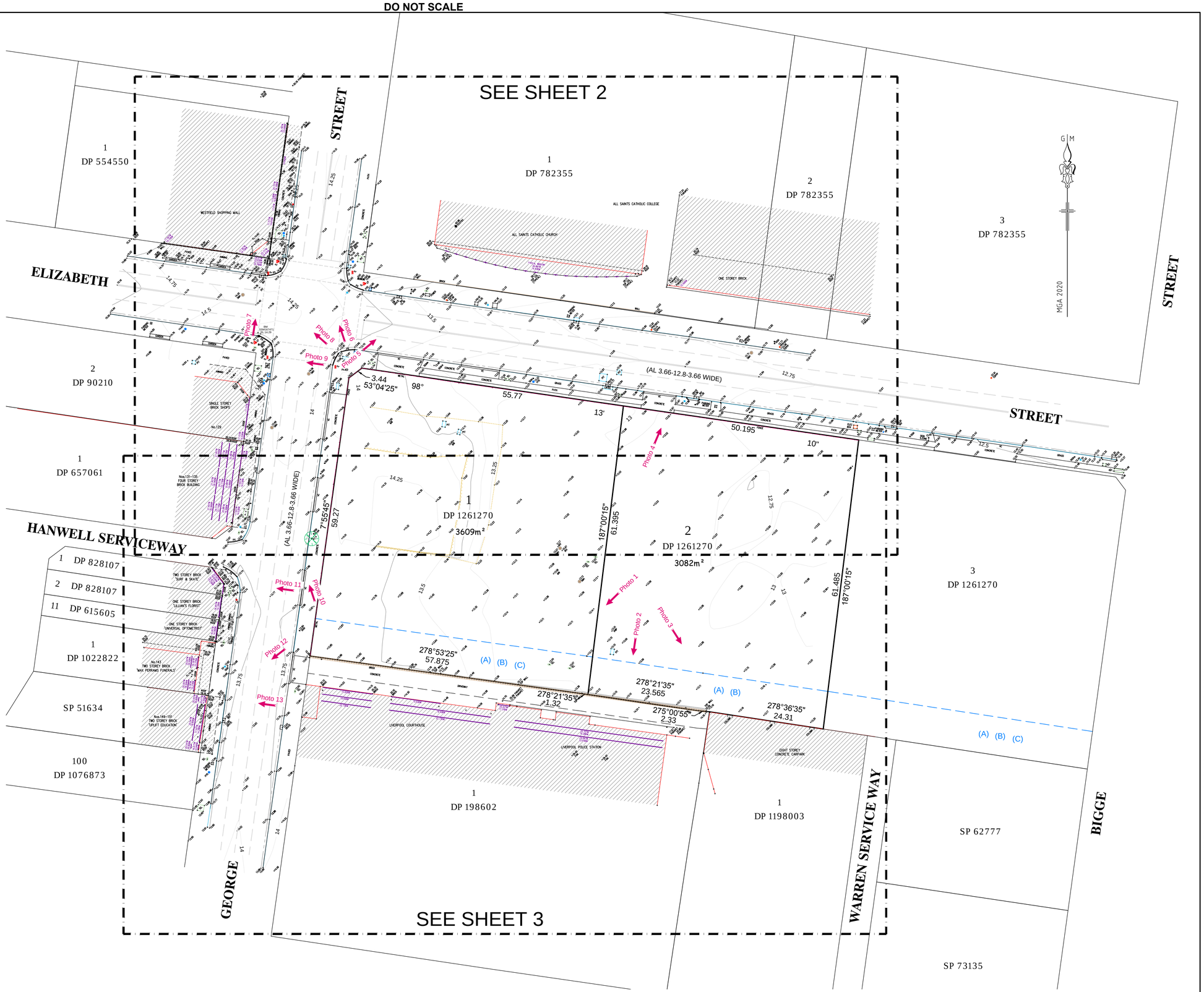

(A) DENOTES RIGHT OF WAY 8 WIDE & VARIABLE WIDTH (LIMITED IN HEIGHT & DEPTH) (DP 1249574)

(B) DENOTES EASEMENT FOR SERVICES 8 WIDE & VARIABLE WIDTH (LIMITED IN HEIGHT & DEPTH) (DP 1249574)

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EASEMENT FOR SERVICES 8 WIDE & VARIABLE WIDTH (LIMITED IN STRATUM) (DP 1249574)

Revision	Amendment or reason for issue	Issue date	Drawn by	Authorised

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Surveyor J.H.	Date 25.2.2021	Drawing Title	LOTS 1 & 2 IN DP 1261270 28 ELIZABETH STREET LIVERPOOL
Date of Survey -	Drawn P.S.		
Height Datum AHD71	Designed		
Origin PM 61501 RL:18.314	Checked C.J.		
Horiz. Datum MGA2020	Approved Registered Surveyor	Scale 400 @ A1, 800 @ A3	Drawing Status DETAIL & CONTOUR SURVEY

Project No.	Drawing No.	Sheet	Revision
KF113609	DETAIL	1 Of 4	

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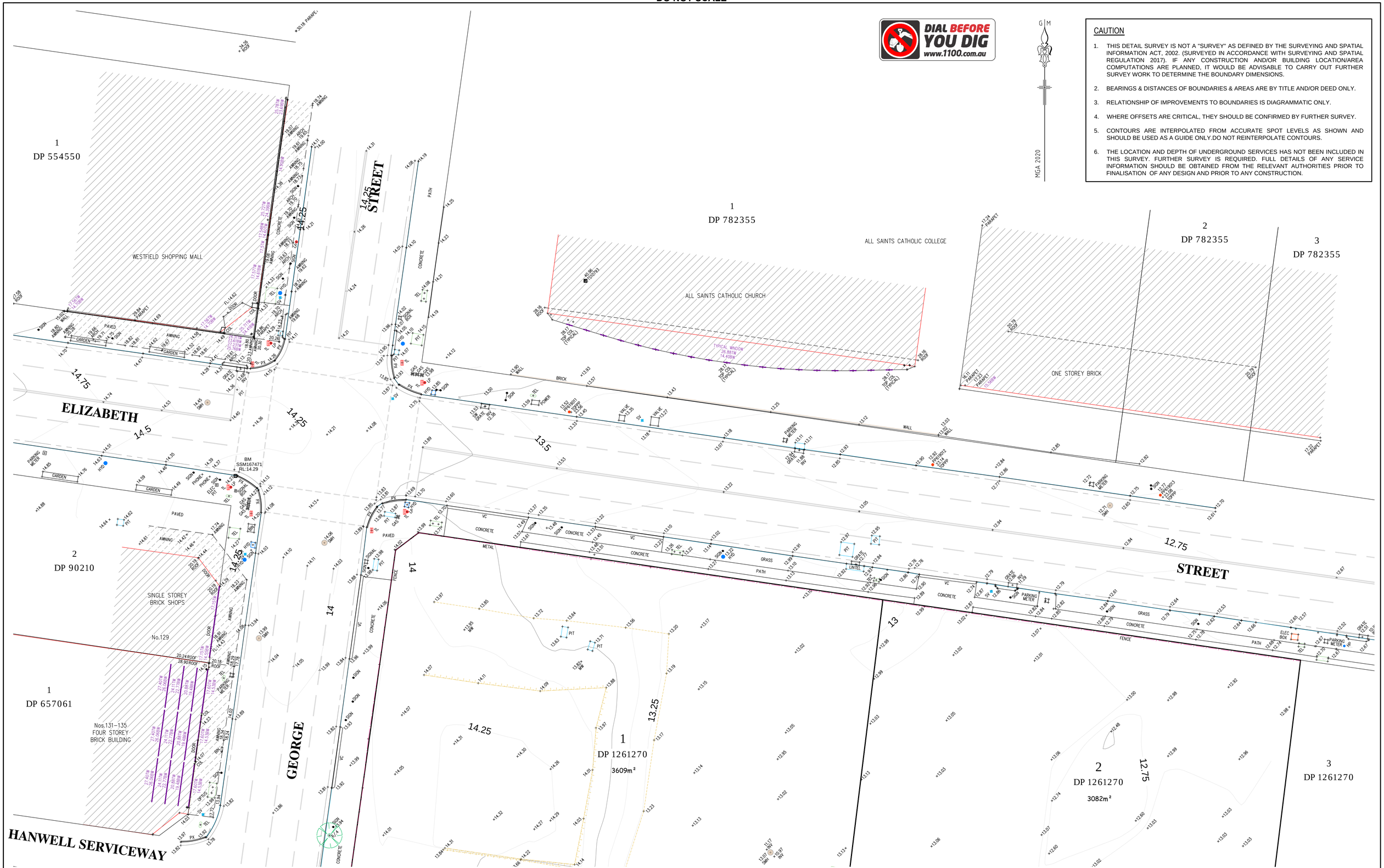

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Surveyor J.H.	Date 25.2.2021	Drawing Title	**LOTS 1 & 2 IN DP 1261270 28 ELIZABETH STREET LIVERPOOL**
Date of Survey -	Drawn P.S.		
Height Datum AHD71	Designed		
Origin PM 61501 RL: 72.23	Checked C.J.		
Horiz. Datum MGA2020	Approved Registered Surveyor	Scale 200 @ A1, 400 @ A3	Drawing Status DETAIL & CONTOUR SURVEY

Project No. **KF113609**
Drawing No. **DETAIL**
Sheet 2 Of 4
Revision

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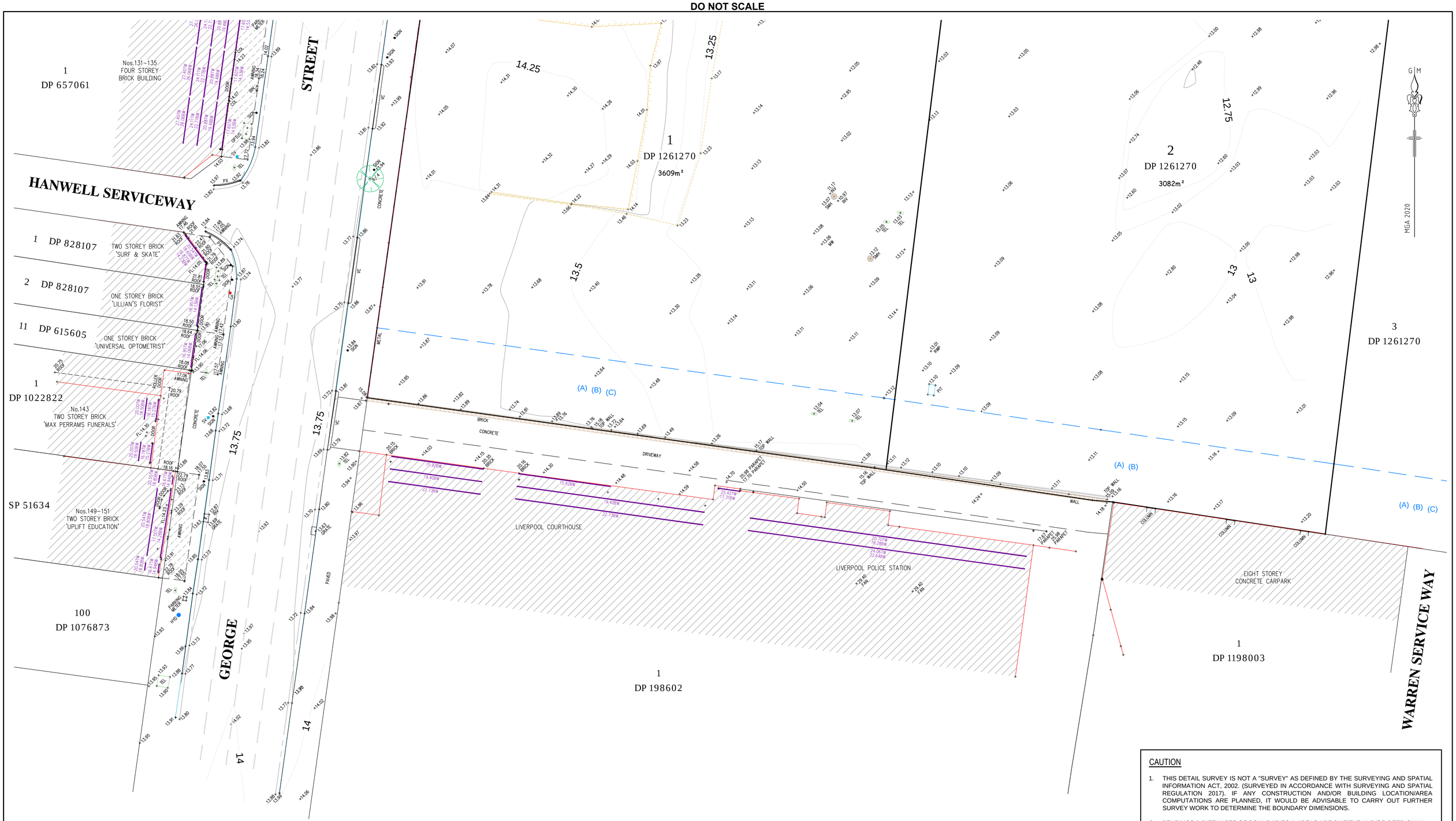

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CAUTION

1. THIS DETAIL SURVEY IS NOT A "SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002. (SURVEYED IN ACCORDANCE WITH SURVEYING AND SPATIAL REGULATION 2017). IF ANY CONSTRUCTION AND/OR BUILDING LOCATION/AREA COMPUTATIONS ARE PLANNED, IT WOULD BE ADVISABLE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.
2. BEARINGS & DISTANCES OF BOUNDARIES & AREAS ARE BY TITLE AND/OR DEED ONLY.
3. RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY.
4. WHERE OFFSETS ARE CRITICAL, THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.
5. CONTOURS ARE INTERPOLATED FROM ACCURATE SPOT LEVELS AS SHOWN AND SHOULD BE USED AS A GUIDE ONLY.DO NOT REINTERPOLATE CONTOURS.
6. THE LOCATION AND DEPTH OF UNDERGROUND SERVICES HAS NOT BEEN INCLUDED IN THIS SURVEY. FURTHER SURVEY IS REQUIRED. FULL DETAILS OF ANY SERVICE INFORMATION SHOULD BE OBTAINED FROM THE RELEVANT AUTHORITIES PRIOR TO FINALISATION OF ANY DESIGN AND PRIOR TO ANY CONSTRUCTION.

Revision	Amendment or reason for issue	Issue date	Drawn by	Authorised

KFW INFRASTRUCTURE PROFESSIONALS

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Surveyor J.H.	Date 25.2.2021	Drawing Title	Project No. KF113609
Date of Survey -	Drawn P.S.	LOTS 1 & 2 IN DP 1261270 28 ELIZABETH STREET LIVERPOOL	Drawing No. DETAIL
Height Datum AHD71	Designed		Sheet 3 Of 4 / Revision
Origin PM 61501 RL: 72.23	Checked C.J.		
Horiz. Datum MGA2020	Approved Registered Surveyor	Scale 200 @ A1, 400 @ A3 / Drawing Status DETAIL & CONTOUR SURVEY	

FILENAME: D:\Jobs\KFW\KF113609 28 ELIZABETH STREET LIVERPOOL (1126)270) - Detail Survey\KF113609 28 Elizabeth Street, Liverpool Detail 25.3.21.dwg
PLOTTED BY : hn

DO NOT SCALE

PHOTO 1

PHOTO 2

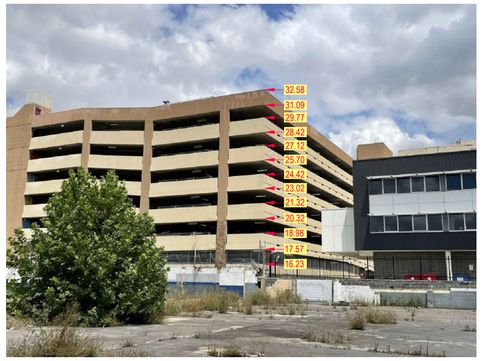

PHOTO 3

PHOTO 4

PHOTO 5

PHOTO 6

PHOTO 7

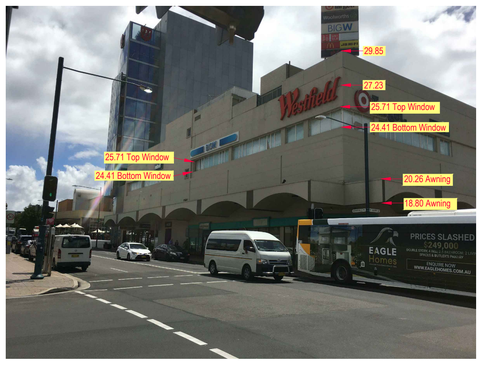

PHOTO 8

PHOTO 9

PHOTO 10

PHOTO 11

PHOTO 12

PHOTO 13

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FILENAME: D:\Jobs\KFW\KF113609 28 ELIZABETH STREET LIVERPOOL (1261270) - Detail Survey\KF113609 28 Elizabeth Street, Liverpool Detail 25.3.21.dwg
PLOTTED BY : hn

Appendix B Civil Drawings

CIVIL ENGINEERING WORKS

LOCALITY PLAN

SCALE 1:1000

DRAWING REGISTRY	
DRAWING NUMBER	DRAWING TITLE
CI-000-01	COVER SHEET
CI-007-01	GENERAL NOTES
CI-070-01	EROSION AND SEDIMENT CONTROL PLAN
CI-076-01	EROSION AND SEDIMENT CONTROL DETAILS
CI-400-01	ROAD CONCEPT PLAN
CI-402-01	REAR LANE - SECTIONS
CI-520-01	STORMWATER MANAGEMENT PLAN
CI-526-01	STORMWATER DRAINAGE - DETAILS - SHEET 1
CI-526-02	STORMWATER DRAINAGE - DETAILS - SHEET 2

ALTIS BULKY RETAIL PTY LTD as trustee for Altis ARET Sub 20
CLIENT

ILLOURA PLACE, LIVERPOOL
PROJECT

Stantec

301350263
PROJECT No

CI-000-01
DRAWING No

B
REV

GENERAL NOTES

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
3. ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METRES, UNO (UNLESS NOTED OTHERWISE).
4. NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.
5. ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
6. EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
7. CAD FILES / DTM FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).

SITEWORKS NOTES

1. ORIGIN OF LEVELS:- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO STANTEC.
3. CONTRACTOR TO CONFIRM ALL CBR VALUES PRIOR TO COMMENCEMENT OF WORKS.
4. MAKE SMOOTH CONNECTION WITH EXISTING WORKS.
5. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
6. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
7. PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
8. ASPHALTIC CONCRETE SHALL CONFORM TO RMS. SPECIFICATION R116.
9. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS. FORM 3051 (UNBOUND), RMS. FORM 3052 (BOUND) COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1.
   FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 BASECOURSE MATERIAL PLACED.
10. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS. FORM 3051, 3051.1 AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1 FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 OF SUB-BASE COURSE MATERIAL PLACED.
11. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH RMS. FORM 3051 AND 3051.1 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF STANTEC.
12. SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THIS SHALL BE CLEARLY INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED.
13. WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (eg. ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF THESE WORKS.

SURVEY NOTES

THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN SHOWN AS PER THE TOPOGRAPHIC SURVEY RECEIVED ON 04/03/2020 FILE 40144DT, AS INVESTIGATED BY LTS LOCKLEY. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT STANTEC.

CONCRETE NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
2. CONCRETE QUALITY ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

ELEMENT	AS 3600 F'c MPa AT 28 DAYS	SPECIFIED SLUMP	NOMINAL AGG. SIZE
VEHICULAR BASE	32	60	20
KERBS, PATHS, AND PITS	25	80	20

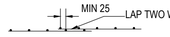
- CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL
- PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379.

3. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY STANTEC.
4. CLEAR CONCRETE COVER TO ALL REINFORCEMENT FOR DURABILITY SHALL BE 40mm TOP AND 70mm FOR EXTERNAL EDGES UNLESS NOTED OTHERWISE.
5. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS, PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.
6. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED AND CURED IN ACCORDANCE WITH R.M.S. SPECIFICATION R83.
7. REINFORCEMENT SYMBOLS:
   N DENOTES GRADE 450 N BARS TO AS/NZS 4671 GRADE N
   R DENOTES 230 R HOT ROLLED PLAIN BARS TO AS/NZS 4671
   SL DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS/NZS 4671

   NUMBER OF BARS IN GROUP — BAR GRADE AND TYPE
   17 N 20 250
   NOMINAL BAR SIZE IN mm — SPACING IN mm

   THE FIGURE FOLLOWING THE FABRIC SYMBOL SL IS THE REFERENCE NUMBER FOR FABRIC TO AS/NZS 4671.

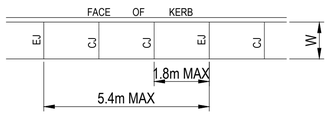
8. FABRIC SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING DETAIL:



JOINTING NOTES

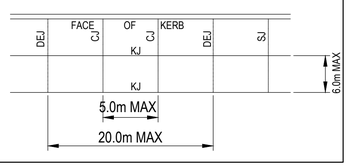
PEDESTRIAN PAVEMENT JOINTS

1. ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS. (U.N.O)
2. EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 5.4m CENTRES.
3. CONTRACTION JOINTS ARE TO BE LOCATED AT A MAX. SPACING OF 1.8m
4. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
5. PEDESTRIAN PAVEMENT JOINT DETAIL:



VEHICULAR PAVEMENT JOINTS

6. ALL VEHICULAR PAVEMENTS TO BE JOINTED AS FOLLOWS. (U.N.O)
7. CONTRACTION JOINTS SHOULD GENERALLY BE LOCATED AT A MAX OF 5.0m CENTRES WITH DOWELED EXPANSION JOINTS AT MAX 20.0m CENTRES
8. VEHICULAR PAVEMENT JOINT DETAIL.



KERBING NOTES

1. ALL CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 25 MPa U.N.O IN REINFORCED CONCRETE NOTES.
2. ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON 100mm GRANULAR BASECOURSE COMPACTED TO MINIMUM 95% MODIFIED DRY DENSITY (AS 1289 5.2.1).
3. EXPANSION JOINTS (E.J) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 12m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
4. WEAKENED PLANE JOINTS TO BE MIN 3mm WIDE AND LOCATED AT 3m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
5. BROOMED FINISH TO ALL RAMPED AND VEHICULAR CROSSINGS. ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
6. IN THE REPLACEMENT OF KERB AND GUTTER :- EXISTING ROAD PAVEMENT IS TO BE SAWCUT 900mm U.N.O FROM THE LIP OF GUTTER. UPON COMPLETION OF THE NEW KERB AND GUTTER NEW BASECOURSE AND SURFACE TO BE LAID 600mm WIDE U.N.O.
7. EXISTING ALLOTMENT DRAINAGE PIPES ARE TO BE BUILT INTO THE NEW KERB AND GUTTER WITH 100mm DIA HOLE.
8. EXISTING KERB AND GUTTER IS TO BE COMPLETELY REMOVED WHERE NEW KERB AND GUTTER IS SHOWN.

PROPOSED SERVICES NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH RELEVANT SERVICE AUTHORITY DOCUMENTATION AND CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE.
2. THE CONTRACTOR SHALL ATTEND, MANAGE & SUPERVISE THE PROVISION OF PUBLIC UTILITY SERVICES TO THE WORKS GENERALLY AS INDICATED ON THE SERVICES PLANS, NOTING THAT PRIOR & DURING CONSTRUCTION THE PUBLIC UTILITY AUTHORITIES WILL FINALISE THEIR DOCUMENTATION TO CONSTRUCTION ISSUE STANDARD.
3. THE CIVIL CONTRACTOR (TRENCH PROVIDER) IS TO ARRANGE ON SITE MEETING WITH ALL SERVICE AUTHORITIES PRIOR TO THE INSTALLATION OF CONDUITS.
4. THE CIVIL CONTRACTOR TO CO-ORDINATE INSTALLATION OF ELECTRICITY, GAS,TELECOMMUNICATION, WATER AND SEWER SERVICES.
5. ELECTRICITY, GAS AND TELECOMMUNICATION SERVICES ARE TO BE LAID FOLLOWING THE INSTALLATION OF STORMWATER, SEWER AND WATER SERVICES AND KERB AND GUTTER.
6. ALL UTILITY AUTHORITY REPRESENTATIVES TO INSPECT ROAD CROSSINGS PRIOR TO SEALING.
7. ALL ELECTRICAL ROAD CROSSINGS TO BE CLASS 6 (ORANGE) uPVC CONDUITS.
8. ALL GAS ROAD CROSSINGS TO BE uPVC GREY SEWER GRADE CONDUITS.
9. ALL STREET POLES TO BE POSITIONED THE APPROPRIATE DISTANCE FROM FACE OF KERB TO FACE OF POLE ACCORDING TO THE CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE. CONTRACTOR TO ALLOW TO EXCAVATE AND BACKFILL TRENCH GENERALLY IN ACCORDANCE WITH NOTE 2.
10. ALL SERVICE PIT COVERS AND MARKERS ARE TO BE LAID WHOLLY WITHIN THE CONCRETE FOOTPATH. CONTACT SUPERINTENDANT SHOULD DIFFICULTIES ARISE.

TELSTRA - DUTY OF CARE NOTE

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY.
THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS.

EROSION AND SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS

1. THE SITE SUPERINTENDENT/ENGINEER WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED.
2. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
   2.1. LOCAL AUTHORITY REQUIREMENTS
   2.2. EPA REQUIREMENTS
   2.3. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
3. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
4. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
5. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

6. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
   6.1. INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
   6.2. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
   6.3. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN
   6.4. INSTALL SEDIMENT TRAPS AS SHOWN ON PLAN.
7. UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

8. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
9. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

10. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
11. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
12. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
13. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

OTHER MATTERS

13. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
14. ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
    14.1. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
    14.2. ENSURING THAT NOTHING IS NAILED TO THEM
    14.3. PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
    14.4. ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
    14.5. A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
    14.6. CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

STORMWATER DRAINAGE NOTES

1. ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.
2. PIPES 300 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '3' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
3. PIPES UP TO 300 DIA SHALL BE SEWER GRADE uPVC WITH SOLVENT WELDED JOINTS.
4. EQUIVALENT STRENGTH VCP OR FRC PIPES MAY BE USED.
5. ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE GRADE 6. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
6. PIPES TO BE INSTALLED TO TYPE HS3 (ROAD) HS2 (LOTS) SUPPORT IN ACCORDANCE WITH AS 3725 (2007) IN ALL CASES BACKFILL TRENCH WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
7. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 (2006) AND AS/NZS 3500 3.2 (2010).
8. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY STANTEC.
9. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
10. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED uPVC SEWER GRADE PIPE IS TO BE USED.
11. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
12. GRATES AND COVERS SHALL CONFORM TO AS 3996.
13. ALL INTERNAL PIT DIMENSIONS TO CONFORM TO AS3500.3 TABLE 7.5.2.1
14. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
15. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS.
16. THE CONTRACTOR IS TO ORGANISE AND STAGE CONSTRUCTION WORK AND UNDERTAKE ANY DIVERSION WORKS TO ENSURE THE EXISTING DRAINAGE IS ABLE TO CONVEY ALL STORMWATER FLOWS THAT MAY OCCUR DURING THE PERIOD OF THE CONSTRUCTION WORKS.
17. ANY DAMAGE TO THE WORKS DUE TO STORMWATER FLOWS OR FLOODING DURING THE CONSTRUCTION PERIOD IS AT THE CONTRACTOR'S RISK.
18. SETOUT POINTS FOR STORMWATER STRUCTURES ARE AS INDICATED IN THE DRAWINGS UNLESS OTHERWISE NOTED.
19. ALL PAVED SURFACE LEVELS AND GRADES TO BE COORDINATED WITH GULLY PIT LEVELS TO ENSURE NO UNDRAINED AREAS OCCUR.
20. THE SIDES OF ALL PIPE TRENCH EXCAVATIONS DEEPER THAN 1.0m SHALL BE FULLY SUPPORTED AT ALL TIMES AND HAVE APPROPRIATE EDGE PROTECTION.
21. ALL NEW PIPES TO BE LAID IN AN UPSTREAM DIRECTION. THE LINE, LEVEL AND LOCATION OF EXISTING SERVICES CROSSING THE LINE OF THE PROPOSED STORMWATER PIPE SHALL BE DETERMINED BY EXCAVATION PRIOR TO THE LAYING OF THE PIPE. IF CONFLICT IS APPARENT, THE ENGINEER SHALL BE NOTIFIED AND INSTRUCTIONS AS TO WHETHER THE EXISTING SERVICE IS TO BE ADJUSTED OR THE PROPOSED PIPE INVERT ALTERED WILL BE ISSUED.
22. PIPE BEDDING, HAUNCH AND BACKFILL TO BE AS SHOWN ON THE CIVIL DETAILS DRAWINGS AND THE CIVIL SPECIFICATION.
23. SUBSOIL DRAINAGE PIPES TO BE SLOTTED PIPE AND FILTER SOCK CLASS 1000 TO AS2439 PART 1 LAID AT PREFERABLE MINIMUM GRADE 1 IN 100 OR ABSOLUTE MINIMUM 1 IN 200 WHERE LIMITED BY OUTFALL LEVELS.
24. STORMWATER STRUCTURES ARE TO BE CONSTRUCTED PERPENDICULAR TO THE INCOMING PIPEWORK UNLESS OTHERWISE NOTED.
25. PRECAST COMPONENTS SHALL BE CONNECTED BY MEANS OF EPOXY OR CHEMICAL GROUTED BARS OF THE SAME DIAMETER AND SPACING AS THE SMALLER BARS IN THE RESPECTIVE COMPONENTS.
26. PRE-CAST PITS MUST HAVE LIFTING ANCHORS.
27. WORKING LOADS ARE THOSE DUE TO FILL MATERIAL AND STANDARD HIGHWAY VEHICLES AS PER AS3725. CONSTRUCTION LOADS HAVE NOT BEEN ALLOWED FOR.
28. ALL EXPOSED EDGES ON STORMWATER PITS TO BE ROUNDED TO 5mm RAD. UNO.

EARTHWORKS

1. LEVELS

1.1 THE PROPOSED EARTHWORKS DEPICTED ON STANTEC PLANS IS INDICATIVE ONLY AND SHOULD NOT BE USED FOR DETAILED LEVELS. THE ARCHITECT'S PLANS AND THE LANDSCAPE ARCHITECT'S PLANS TAKE PRECEDENCE IN THE EVENT OF ANY DISCREPANCY.

1.2 PROPOSED LEVELS SHOW THE FINISHED SURFACE INCLUDING TOPSOIL, PAVEMENTS AND THE LIKE, UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS.

1.3 BULK EARTHWORKS PLANS SHOW EARTHWORKS TO SUIT THE 'BOTTOM OF STRUCTURAL PAD' LEVEL. THIS IS BASED ON THE ARCHITECT'S FINISHED FLOOR LEVELS AND AN ASSUMED SLAB THICKNESS. REFERENCE SHOULD BE MADE TO THE ARCHITECTURAL PLANS AND STRUCTURAL PLANS FOR ACTUAL LEVELS.

2. GEOTECHNICAL VERIFICATION

2.1 THE CONTRACTOR SHALL ENGAGE A QUALIFIED GEOTECHNICAL INSPECTION AND TESTING AUTHORITY TO PERFORM LEVEL 2 INSPECTION AND TESTING SERVICES AS DEFINED BY AS3798 . PRIOR TO PRACTICAL COMPLETION THE LEVEL 2 CONSULTANT SHALL PROVIDE A REPORT THAT VALIDATES EARTHWORKS (INCLUDING ROADWORKS AND TRENCH EXCAVATION AND BACKFILL) HAVE BEEN PERFORMED IN ACCORDANCE AND COMPLY WITH COUNCIL STANDARDS.

3. CLEARING

3.1 CLEARING MUST BE SUPERVISED BY A SUITABLY QUALIFIED ECOLOGIST ENGAGED BY THE CONTRACTOR, WHO SHOULD ADVISE ON BEST PRACTICE CLEARING PROTOCOLS FOR THE MANAGEMENT OF ANY HOLLOW BEARING TREES.

3.2 THE CONTRACTOR SHALL CLEAR VEGETATION AND DEBRIS FROM WITHIN THE SITE BOUNDARY TO THE SATISFACTION OF THE LEVEL 2 CONSULTANT, EXCEPT FOR VEGETATION SHOWN AS RETAINED.

4. TOPSOIL

4.1 TOPSOIL SHALL BE STRIPPED FROM THE SITE TO THE SATISFACTION OF THE LEVEL 2 CONSULTANT.

4.2 TOPSOIL SHALL BE SCREENED AND STOCKPILED ON SITE FOR RESPREADING.

4.3 TOPSOIL SHALL BE RESPREAD TO A DEPTH OF 150MM TO ALL VERGES, BERMS, BATTERS AND REGRADED AREAS.

4.4 SHOULD THERE BE A SHORTAGE OF TOPSOIL ON SITE, THE CONTRACTOR SHALL ALLOW FOR A REDUCED TOPSOIL THICKNESS TO ENSURE THAT THERE IS NO FUTURE REQUIREMENT TO IMPORT TOPSOIL.

4.5 THE CONTRACTOR SHALL DISPOSE EXCESS TOPSOIL OFF SITE.

5. GENERAL EARTHWORKS

5.1 THE CONTRACTOR SHALL IMPORT FILL WHERE THERE IS A SHORTFALL OF MATERIAL ON SITE. EXCESS CUT SHALL BE DISPOSED OFF SITE.

6. TOLERANCES

6.1 COMPLETED EARTHWORKS LEVELS SHALL BE WITHIN +50MM TO -0MM OF THE DESIGN LEVELS.

REV	DESCRIPTION	DRAWN	APP'D	DATE
B	ISSUED FOR DA	MMM	RET	26/07/21
A	DRAFT DA	MMM	RET	16/07/21

DRAWN:	MDR
DESIGNED:	MMM
VERIFIED:	RET
APPROVED FOR TENDER:	
APPROVED FOR CONSTRUCTION:	

ALTIS PROPERTY PARTNERS

ARCHITECT/CLIENT

ILLOURA PLACE,
28 ELIZABETH STREET,
LIVERPOOL

PROJECT

GENERAL NOTES

TITLE

Stantec

MGA mAHD

APPROVAL
NOT FOR CONSTRUCTION

1:1000	301350263	CI-007-01	B
SCALE @ A1	PROJECT No	DRAWING No	REV

DATE PLOTTED: 27/10/2021 3:14:37 PM BY: MORENO, MIQUEAS

PUMP WATER TO EXISTING STORMWATER LINE
PRIOR MEETING WATER QUALITY REQUIREMENTS

ALL SITE RUNOFF DURING CONSTRUCTION
TO BE DIRECTED TO SEDIMENT BASIN

ERECT SEDIMENT FENCE ALONG SITE BOUNDARY

STOCKPILE LOCATION SHOWN INDICATIVELY ONLY.
LOCATION TO BE DEFINED BY CONTRACTOR ON SITE

1
DP 1261270
3609m²

2
DP 1261270
3082m²

LEGEND

- PROPOSED SITE BOUNDARY
- VEHICLE SHAKEDOWN DEVICE
- PROPOSED SILT FENCE
- SANDBAG PIT PROTECTION
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- SEDIMENT BASIN
- INDICATIVE STOCKPILE LOCATION

NOTE:

REFER DRAWING CI-076-01 FOR EROSION AND SEDIMENT CONTROL DETAILS

1:200 2 0 2 4 6 8 10 A1
1:400 A3

REV	DESCRIPTION	DRAWN	APP'D	DATE
B	ISSUED FOR DA	MMM	RET	26/07/21
A	DRAFT DA	MMM	RET	16/07/21

DRAWN:	MDR
DESIGNED:	MMM
VERIFIED:	RET
APPROVED FOR TENDER:	
APPROVED FOR CONSTRUCTION:	

ALTIS PROPERTY PARTNERS

ARCHITECT/CLIENT

ILLOURA PLACE,
28 ELIZABETH STREET,
LIVERPOOL

PROJECT

EROSION AND SEDIMENT CONTROL PLAN

TITLE

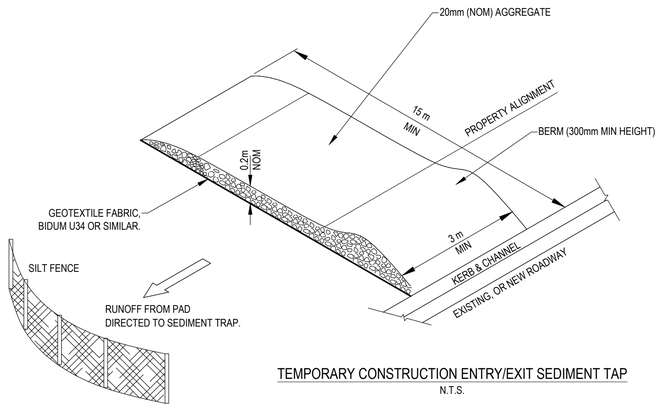
Stantec

MGA mAHD

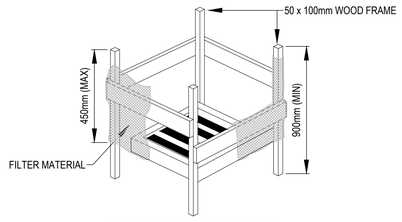
APPROVAL
NOT FOR CONSTRUCTION

SCALE @ A1	PROJECT No	DRAWING No	REV
1:200	301350263	CI-070-01	B

CAD FILE: 301350263-CI-070-01.DWG

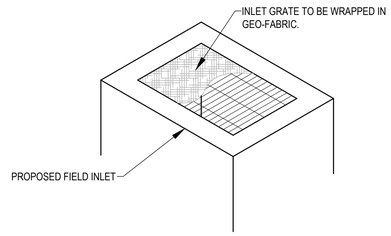


TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TAP
N.T.S.

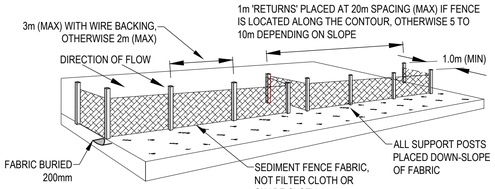


FABRIC DROP INLET PROTECTION WITH SPILL-THROUGH WEIR

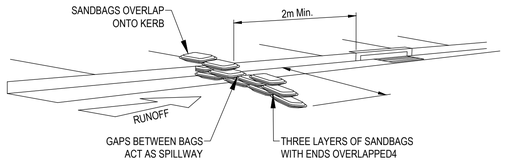
FIELD INLET PROTECTION
N.T.S.



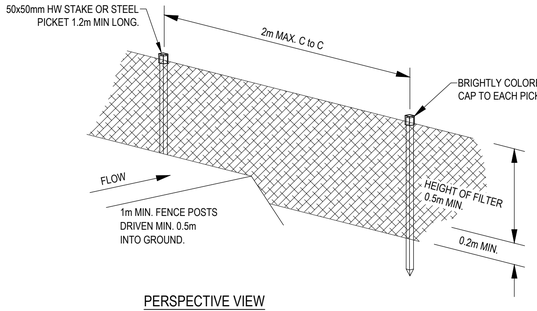
FIELD INLET SEDIMENT CONTROL
N.T.S.



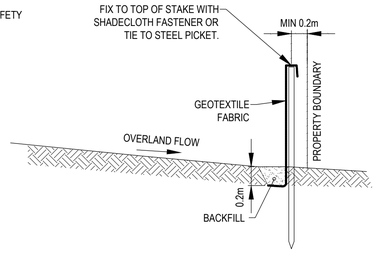
INSTALLATION OF SEDIMENT FENCE
N.T.S



SANDBAG KERB INLET SEDIMENT TRAP
N.T.S.

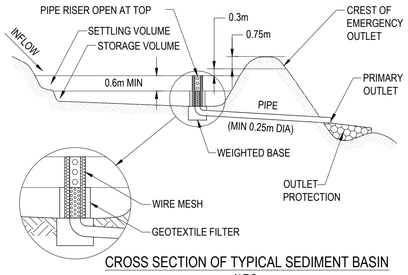


PERSPECTIVE VIEW



TYPICAL SECTION

SEDIMENT FENCE DETAIL
N.T.S.



CROSS SECTION OF TYPICAL SEDIMENT BASIN
N.T.S.

1:100 1 0 1 2 3 4 5 A1
1:200 A3

REV	DESCRIPTION	DRAWN	APP'D	DATE
B	ISSUED FOR DA	MMM	RET	26/07/21
A	DRAFT DA	MMM	RET	16/07/21

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DRAWN:	MDR
DESIGNED:	MMM
VERIFIED:	RET
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APPROVED FOR CONSTRUCTION:	

ALTIS PROPERTY PARTNERS
ARCHITECT/CLIENT

ILLOURA PLACE,
28 ELIZABETH STREET,
LIVERPOOL
PROJECT

EROSION AND SEDIMENT CONTROL DETAILS
TITLE

Stantec
MGA mAHD

APPROVAL
NOT FOR CONSTRUCTION

1:100	301350263	CI-076-01	B
SCALE @ A1	PROJECT No	DRAWING No	REV

DATE PLOTTED: 27/10/2021 3:16:17 PM BY: MORENO, MIQUEAS

LEGEND

- PROPOSED SITE BOUNDARY
- PROPOSED BUILDING
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- ON SITE DETENTION TANK FOR DETAIL REFER TO CI-526-02
- PROPOSED GRATED DRAIN

2
DP 1261270
3082m²

EWAY

SINGLE STOREY BRICK SHOPS No.129
Nos.131-135 FOUR STOREY BRICK BUILDING
'TWO STOREY BRICK 'SURF & SKATE'
ONE STOREY BRICK 'LILLIAN'S FLORIST'
ONE STOREY BRICK 'UNIVERSAL OPTOMETRIST'
No.143 TWO STOREY BRICK 'MAX PERRAMS FUNERALS'

BM SSM167471 RL 14.29

RAMP 1:40
RAMP 1:60
RAMP 1:20

CH 0.00 | TP 6.61 | CH 10.00 | CH 13.61 | CH 20.00 | TP 24.26 | CH 30.00 | TP 38.26 | CH 40.00 | TP 49.32 | CH 50.00 | CH 59.13

5.0% | -1.2% | -1.7% | -0.2% | -1.3% | 1.1% | -4.2% | -2.0% | 1.0% | -1.9% | -1.1%

13.707m | 13.330m | 13.470m | 13.550m

3 402-01 | 4 402-01 | 1 402-01 | 2 402-01

LIVERPOOL COURTHOUSE | LIVERPOOL POLICE STATION

1:200 2 0 2 4 6 8 10 A1
1:400 A3

REV	DESCRIPTION	DRAWN	APP'D	DATE
C	ISSUED FOR COORDINATION	HAL	RET	27/10/21
B	ISSUED FOR COORDINATION	MMM	RET	13/10/21
A	ISSUE FOR DA	COP	RET	10/08/21

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APPROVED FOR CONSTRUCTION:	

ALTIS PROPERTY PARTNERS
ARCHITECT/CLIENT

ILLOURA PLACE,
28 ELIZABETH STREET,
LIVERPOOL
PROJECT

ROAD CONCEPT PLAN
TITLE

Stantec
MGA mAHD

APPROVAL
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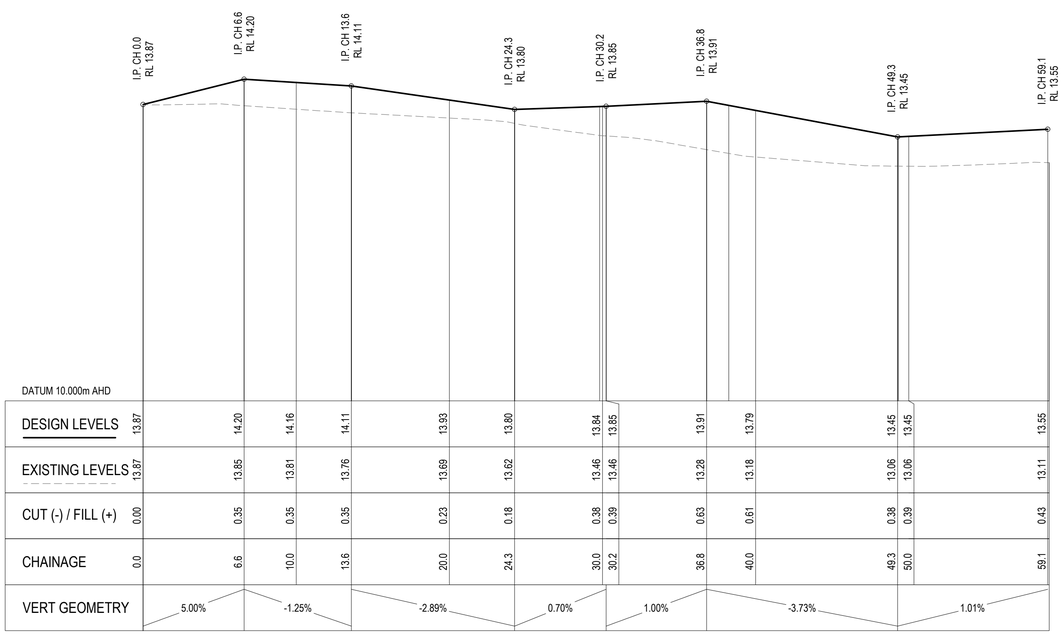
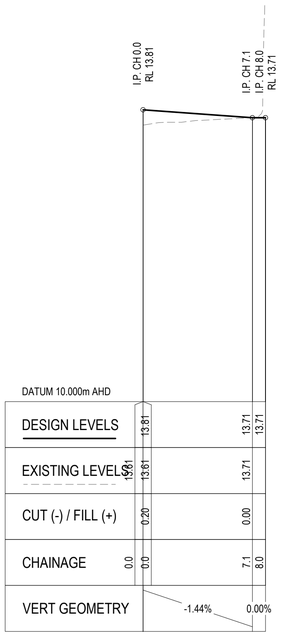
1:200	301350263	CI-400-01	C
SCALE @ A1	PROJECT No	DRAWING No	REV



HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:40



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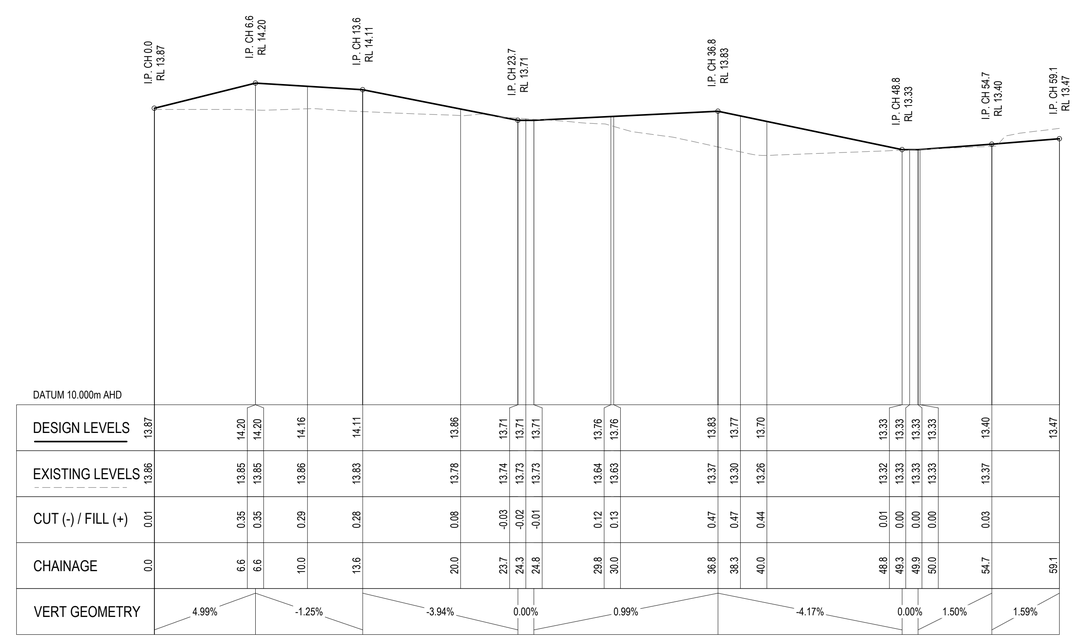
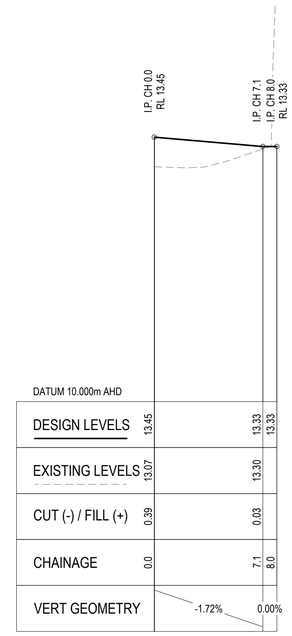


HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:40



HORIZONTAL SCALE 1:200
VERTICAL SCALE 1:40

1:200 2 0 2 4 6 8 10 A1
1:400 A3
HORIZONTAL

1:40 0.4 0 0.4 0.8 1.2 1.6 2 A1
1:80 A3
VERTICAL

REV	DESCRIPTION	DRAWN	APP'D	DATE
C	ISSUED FOR COORDINATION	HAL	RET	27/10/21
B	ISSUED FOR COORDINATION	MMM	RET	13/10/21
A	ISSUE FOR DA	COP	RET	11/08/21

CAD FILE: 301350263-CI-402-01.DWG

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APPROVED FOR CONSTRUCTION:	

ALTIS PROPERTY PARTNERS

ARCHITECT/CLIENT

PROJECT: ILLOURA PLACE, 28 ELIZABETH STREET, LIVERPOOL

TITLE: REAR LANE - SECTIONS

Stantec

APPROVAL
NOT FOR CONSTRUCTION

MGA	mAHD	SCALE @ A1	PROJECT No	DRAWING No	REV
		1:200	301350263	CI-402-01	C

DATE PLOTTED: 27/10/2021 3:18:02 PM BY: MORENO, MIQUEAS

LEGEND

- PROPOSED SITE BOUNDARY
- PROPOSED BUILDING
- PROPOSED STORMWATER PIPE
- EXISTING STORMWATER PIPE
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- ON SITE DETENTION TANK FOR DETAIL REFER TO CI-526-02
- PROPOSED GRATED DRAIN

MAKE SMOOTH CONNECTION TO EXISTING KERB INLET PIT

8m² FILTER CHAMBER FITTED WITH 8x690mm FILTER CARTRIDGES

HIGH FLOW BYPASS

FLOW SPLITTER

ALL PODIUM DRAINAGE TO BE COLLECTED AND DIVERTED TO FLOW SPLITTER

20m³ OSD TANK AT LEVEL 1

LINEAR DRAIN + PIT INSERT

KERB INLET PIT + PIT INSERT

KERB INLET PIT + PIT INSERT

JUNCTION PIT

2
DP 1261270
3082m²

EWAY

SINGLE STOREY BRICK SHOPS No.129

Nos.131-135 FOUR STOREY BRICK BUILDING

'TWO STOREY BRICK' 'SURF & SKATE'

'ONE STOREY BRICK' 'LILLIAN'S FLORIST'

'ONE STOREY BRICK' 'UNIVERSAL OPTOMETRIST'

No.143 'TWO STOREY BRICK' 'MAX PERRAMS FUNERALS'

LIVERPOOL COURTHOUSE

LIVERPOOL POLICE STATION

1:200 2 0 2 4 6 8 10 A1
1:400 A3

REV	DESCRIPTION	DRAWN	APP'D	DATE
C	ISSUED FOR COORDINATION	HAL	RET	27/10/21
B	ISSUED FOR DA	MMM	RET	26/07/21
A	DRAFT DA	MMM	RET	16/07/21

CAD FILE: 301350263-CI-520-01.DWG

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VERIFIED:	RET
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APPROVED FOR CONSTRUCTION:	

ALTIS PROPERTY PARTNERS

ARCHITECT/CLIENT

ILLOURA PLACE,
28 ELIZABETH STREET,
LIVERPOOL

PROJECT

STORMWATER MANAGEMENT PLAN

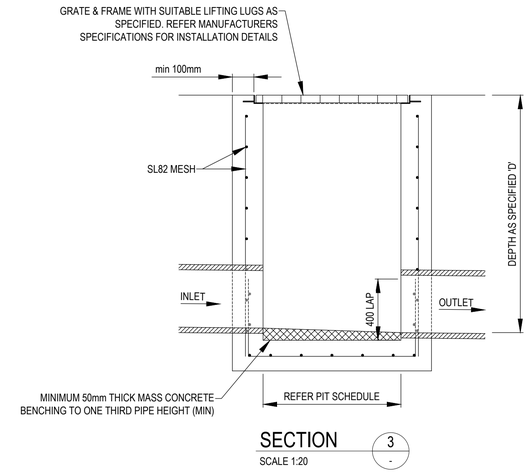
TITLE

Stantec

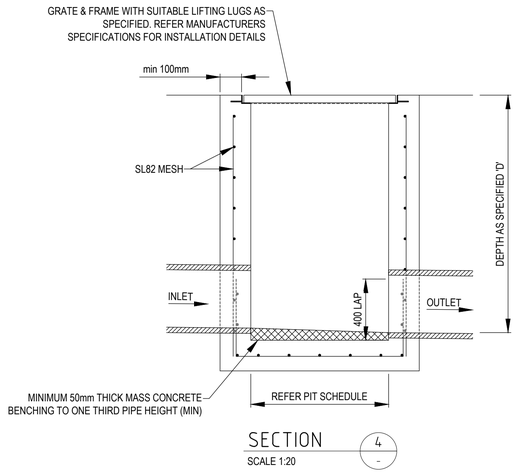
MGA mAHD

APPROVAL
NOT FOR CONSTRUCTION

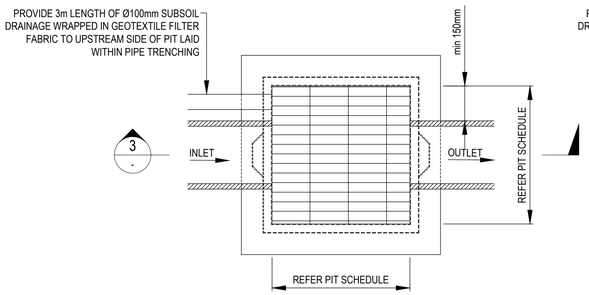
1:200	301350263	CI-520-01	C
SCALE @ A1	PROJECT No	DRAWING No	REV



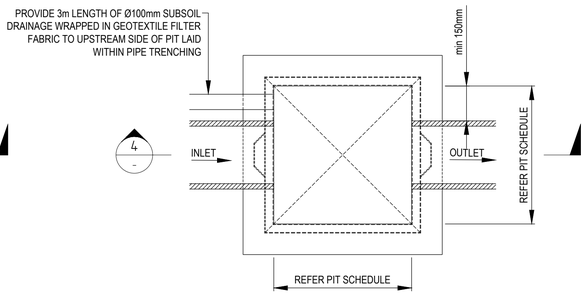
SECTION 3
SCALE 1:20



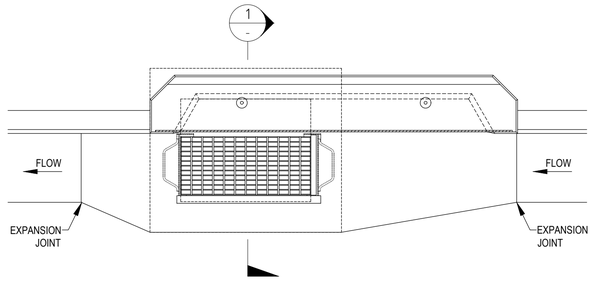
SECTION 4
SCALE 1:20



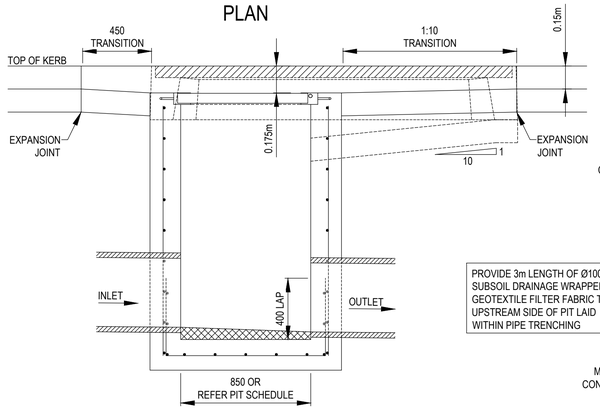
GRATED PIT PLAN
SCALE 1:20



JUNCTION PIT PLAN
SCALE 1:20

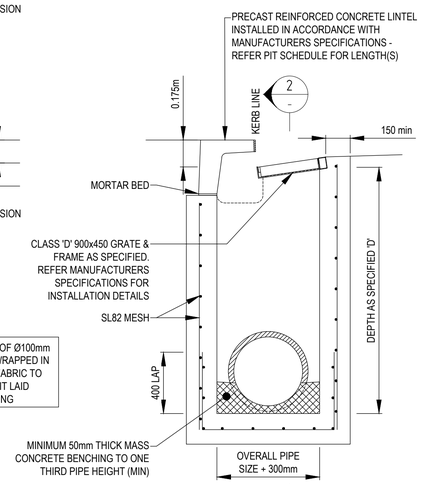


PLAN



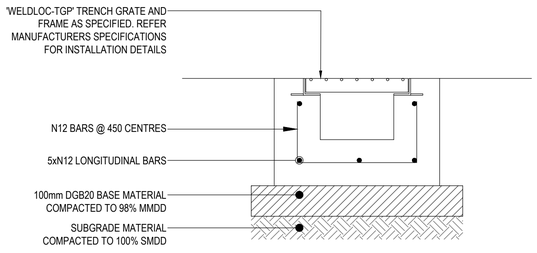
SECTION 2
SCALE 1:20

PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE WRAPPED IN GEOTEXTILE FILTER FABRIC TO UPSTREAM SIDE OF PIT LAID WITHIN PIPE TRENCHING



SECTION 1
SCALE 1:20

KERB INLET PIT
SCALE 1:20



GRATED TRENCH DRAIN
(SCALE 1:10)

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

REV	DESCRIPTION	DRAWN	APP'D	DATE
B	ISSUED FOR DA	MMM	RET	26/07/21
A	DRAFT DA	MMM	RET	16/07/21

CAD FILE: 301350263-CI-526-01.DWG

DRAWN:	MDR
DESIGNED:	MMM
VERIFIED:	RET
APPROVED FOR TENDER:	
APPROVED FOR CONSTRUCTION:	

ALTIS PROPERTY PARTNERS
ARCHITECT/CLIENT

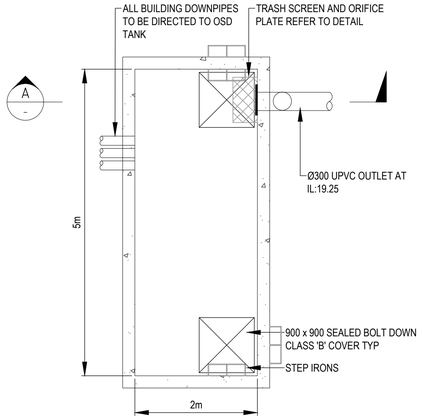
ILLOURA PLACE,
28 ELIZABETH STREET,
LIVERPOOL
PROJECT

STORMWATER DRAINAGE - DETAILS - SHEET 1
TITLE

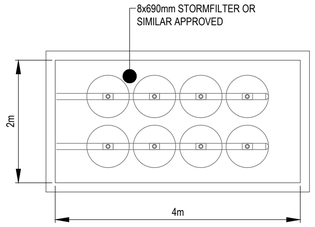
Stantec
MGA mAHD

APPROVAL
NOT FOR CONSTRUCTION

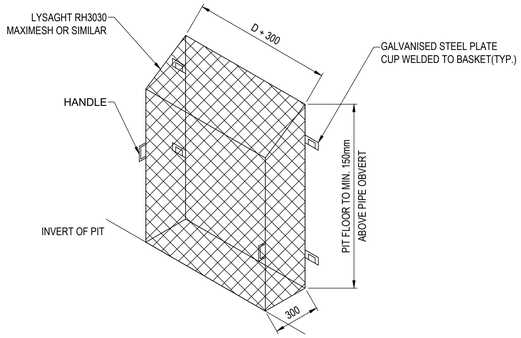
1:20	301350263	CI-526-01	B
SCALE @ A1	PROJECT No	DRAWING No	REV



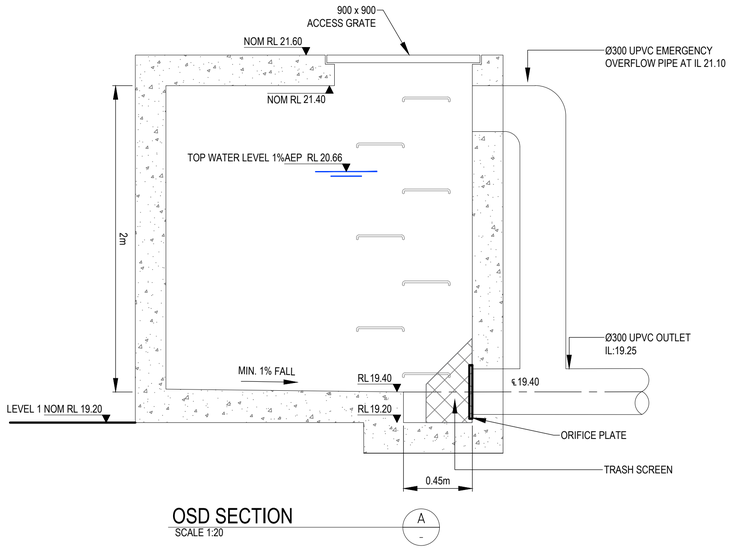
OSD TANK PLAN
SCALE 1:50



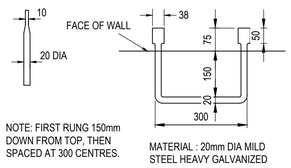
FILTRATION CHAMBER
SCALE 1:50



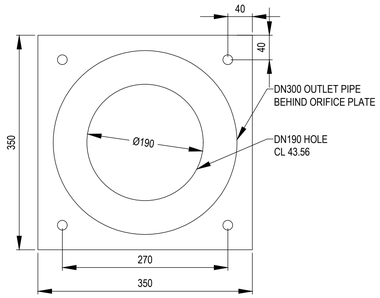
SCREEN MESH DETAIL
N.T.S.



OSD SECTION
SCALE 1:20



STEP IRONS FOR DRAINAGE PITS
N.T.S.



OSD ORIFICE PLATE DETAIL
SCALE 1:5

1:50 0.5 0 0.5 1 1.5 2 2.5 A1
1:100 A3

REV	DESCRIPTION	DRAWN	APP'D	DATE
B	ISSUED FOR DA	MMM	RET	26/07/21
A	DRAFT DA	MMM	RET	16/07/21

DRAWN:	MDR
DESIGNED:	MMM
VERIFIED:	RET
APPROVED FOR TENDER:	
APPROVED FOR CONSTRUCTION:	

ALTIS PROPERTY PARTNERS

ARCHITECT/CLIENT

ILLOURA PLACE,
28 ELIZABETH STREET,
LIVERPOOL

PROJECT

STORMWATER DRAINAGE - DETAILS - SHEET 2

TITLE

Stantec

APPROVAL
NOT FOR CONSTRUCTION

MGA	mAHD	1:50	301350263	CI-526-02	B
		SCALE @ A1	PROJECT No	DRAWING No	REV

Appendix C Freeboard Plan

ELIZABETH STREET

GEORGE STREET

SITE BOUNDARY

6M DCP SETBACK (STREET SETBACK + ABOVE PODIUM)

2.5m DCP SETBACK (STREET SETBACK + ABOVE PODIUM)

8m EASEMENT

SERVICE LANE WAY

ZONE FOR ARTWORK

THROUGH-SITE LINK

BUILDING OVER

MIN. 6000 SETBACK

10416 SETBACK

VEHICLE DROP OFF

TK 14.03

TK 13.98

TK 13.97

TK 13.90

TK 13.86

TK 13.52

TK 13.26

TK 13.08

TK 12.97

RETAIL 1C

RETAIL 1B

RETAIL 1A

RETAIL 2

RETAIL 3

POTENTIAL AMENITIES WITHIN RETAIL TENANCIES

POTENTIAL RETAIL ACTIVATION TO COMMERCIAL LOBBY

COMMERCIAL LOBBY

RESIDENTIAL LOBBY

LOBBY LOUNGE AREA

MAILBOXES

CONCIERGE

CONCIERGE/ADMIN

PARCEL ROOM

BOH

BOH / SERVICES CORRIDOR

RESIDENTIAL LOADING LOBBY

RESI BULKY GOODS

COMM & RET WASTE & RECYCLING

COMM & RET FOOD WASTE

GARBAGE COLLECTION ZONE

SUBSTATION CHAMBER

GAS METER

LOADING DOCK

CARPARK ENTRY / EXIT

COMM. BICYCLE PARKING 60 BIKES

CPE

BOOSTER

FCR

F&B STORE

LOBBY

AMENITIES

OFFICE / LUGGAGE

RECEPTION

HOTEL OFFICE

ELEC COMHYD

KITCHEN

ACCESS

SERVICE

EGRESS

HOTEL

COMMERCIAL LIFT

CAFE

RETAIL

COMMERCIAL LOBBY

RESI LOBBY

BANQUET STORE

CONSOLIDATION STORE

SECURITY OFFICE

STAFF STAIR

STAIR 2

HOTEL BINS

HIGHRISE LIFTS

BIN LOADING

HOIST

BUILDING MANAGER

MECH

SUBSTATION

RECEIVING OFFICE

TOWER EGRESS

EGRESS 1

LEVEL 1 RAMP

SECURE LINE

OSD TANK 1 OVER

RAMP TO B1

RAMP FROM B1

STORMWATER PIT

Grated Drained (Under Planter)

GENERAL ARRANGEMENT PLANS LEGEND

NOTE: WHERE NOMINATED ON DRAWINGS OR SCHEDULES A NUMERICAL SUFFIX INDICATES MULTIPLE TYPES I.E. BAL1=BALUSTRADE TYPE 1, ETC. REFER TO ARCHITECTURAL SCHEDULES FOR FURTHER INFORMATION

AC	AIR CONDITIONING
AHD	AUSTRALIAN HEIGHT DATUM
AH	ACCESS HATCH
AP	ACCESS PANEL
AWN	AWNING
BT	BATHROOM
B1,2...	BEDROOM 1, BEDROOM 2, ETC.
BT	BATHROOM
BAL	BALUSTRADE
BKS	BICYCLE STORAGE
BY	BALCONY
CLD	CLADDING
CLNR	CLEANER STORE
COF	CONCRETE OFF FORM
D	DINING
E	ENTRY
ELEC	ELECTRICAL SERVICES
EN	ENSUITE
EXH	EXHAUST
FCR	FIRE CONTROL ROOM
FHR	FIRE HOSE REEL
FIP	FIRE INDICATOR PANEL
FEP_01,02...	FIRE EGRESS PASSAGE NO.1, 2, ETC.
FS1, 2...	FIRE STAIR NO.1, 2, ETC.
GBR	GARBAGE ROOM
GBC	GARBAGE CHUTE
GC	GLASS CLEAR
GD	GLASS, DECORATIVE
GHR	GARBAGE HOLDING ROOM
H	HYDRAULIC SERVICES
K	KITCHEN
L1, 2...	LIFT NO.1, 2, ETC.
L	LIVING
LY	LAUNDRY
LV	LOUVRE
M	MECHANICAL SERVICES
MV	MECHANICAL VENT
P	PANTRY
PF	PAINT FINISH
RF	REFRIGERATOR
RL	RELATIVE LEVEL TO AHD
S	STORE
SCN	SCREEN
SSL	STRUCTURAL SLAB LEVEL
ST_01	STAIR NO.1, 2, ETC.
TYP.	TYPICAL
WC	WC

NOTES

CLIENT

Altis Bulky Retail Pty Ltd as trustee for Altis ARET Sub Trust 20
14/60 Castlereagh Street,
Sydney, NSW, 2000

ALTIS PROPERTY PARTNERS

LEGEND:
- RETAIL TENANCY ENTRY
- RESIDENTIAL LOBBY ENTRY
- COMMERCIAL LOBBY / EOT FACILITY ENTRY
- CARPARK ENTRY / EXIT

ILLOURA PLACE

Rev	Date	Approved by	Revision Notes
S1	20.10.21	JMC	Issued for Development Application

Project Title
Illoura Place
28 Elizabeth Street, Liverpool, NSW 2170, Australia

Drawing Title
GA Plans
Ground Level

Scale	Project No.	Drawn by	North
1:150 @A1, 50%@A3	20089	AP	
Status	Dwg No.	Rev	
Development Application	DA-110-009	S1	

TURNER

Level 7 ONE Oxford Street
Darlinghurst NSW 2010
AUSTRALIA

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F +61 2 8668 0088
turnerstudio.com.au

Appendix D Council Flood Information and Correspondence

Moreno, Miqueas

From: Zeaul Hoque <HoqueZ@liverpool.nsw.gov.au>
Sent: Thursday, 27 May 2021 10:34 AM
To: Moreno, Miqueas; Waliminipeli Siripala
Cc: Maruf Hossain; Tracey, Renata
Subject: RE: 32 Elizabeth Street & 148 George Street

Hi Siri

Please provide Miqueas the fee involved for acquiring a copy of Liverpool city centre DRAINS model for utilising it in their design.

Thanks for the help on this.

Hi Miqueas

Yes, the overland flow will be contained within the road and the FPL varies along the site.

Please contact my colleague, Siri for the fee and procedures involved in acquiring a copy of the DRAINS model.

Kind Regards

Zeaul Hoque
Floodplain Engineer

LIVERPOOL CITY COUNCIL

02 8711 7747 | | HoqueZ@liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 3 Hoxton Park Rd Liverpool, NSW 2170, Australia
www.liverpool.nsw.gov.au

From: Moreno, Miqueas <Miqueas.Moreno@stantec.com>
Sent: Thursday, 27 May 2021 9:50 AM
To: Zeaul Hoque <HoqueZ@liverpool.nsw.gov.au>
Cc: Maruf Hossain <HossainM@liverpool.nsw.gov.au>; Tracey, Renata <renata.tracey@stantec.com>
Subject: RE: 32 Elizabeth Street & 148 George Street

Hi Zeaul,

Thank you for your time yesterday on the phone.

As per our discussion, the latest flood map is confirming that the overland flow will be fully contained within the road and as so the FPL will vary along the site being this defined as the adjacent Top of Kerb + 300 mm.

Can you please advise how can we access the existing DRAINS model and how much will be the cost for it?

Kind Regards,

Miqueas Moreno
Civil Engineer

Direct: +61 2 8484 7096
Miqueas.Moreno@stantec.com

Stantec Australia Pty Ltd
Level 6, Building B, 207 Pacific Hwy
St Leonards
New South Wales 2065

From: Zeaul Hoque <HoqueZ@liverpool.nsw.gov.au>
Sent: Wednesday, 26 May 2021 15:46
To: Moreno, Miqueas <Miqueas.Moreno@stantec.com>
Cc: Maruf Hossain <HossainM@liverpool.nsw.gov.au>; Tracey, Renata <renata.tracey@stantec.com>
Subject: RE: 32 Elizabeth Street & 148 George Street

Hi Miqueas

I'm sorry that you couldn't reach me.

The 14.3m FFL does not apply for the entire site as the flood level varies. Please find the 1% AEP flood levels in the attached map and use it for your design.

Please contact me if you need any further clarification.

Kind Regards

Zeaul Hoque
Floodplain Engineer

LIVERPOOL CITY COUNCIL

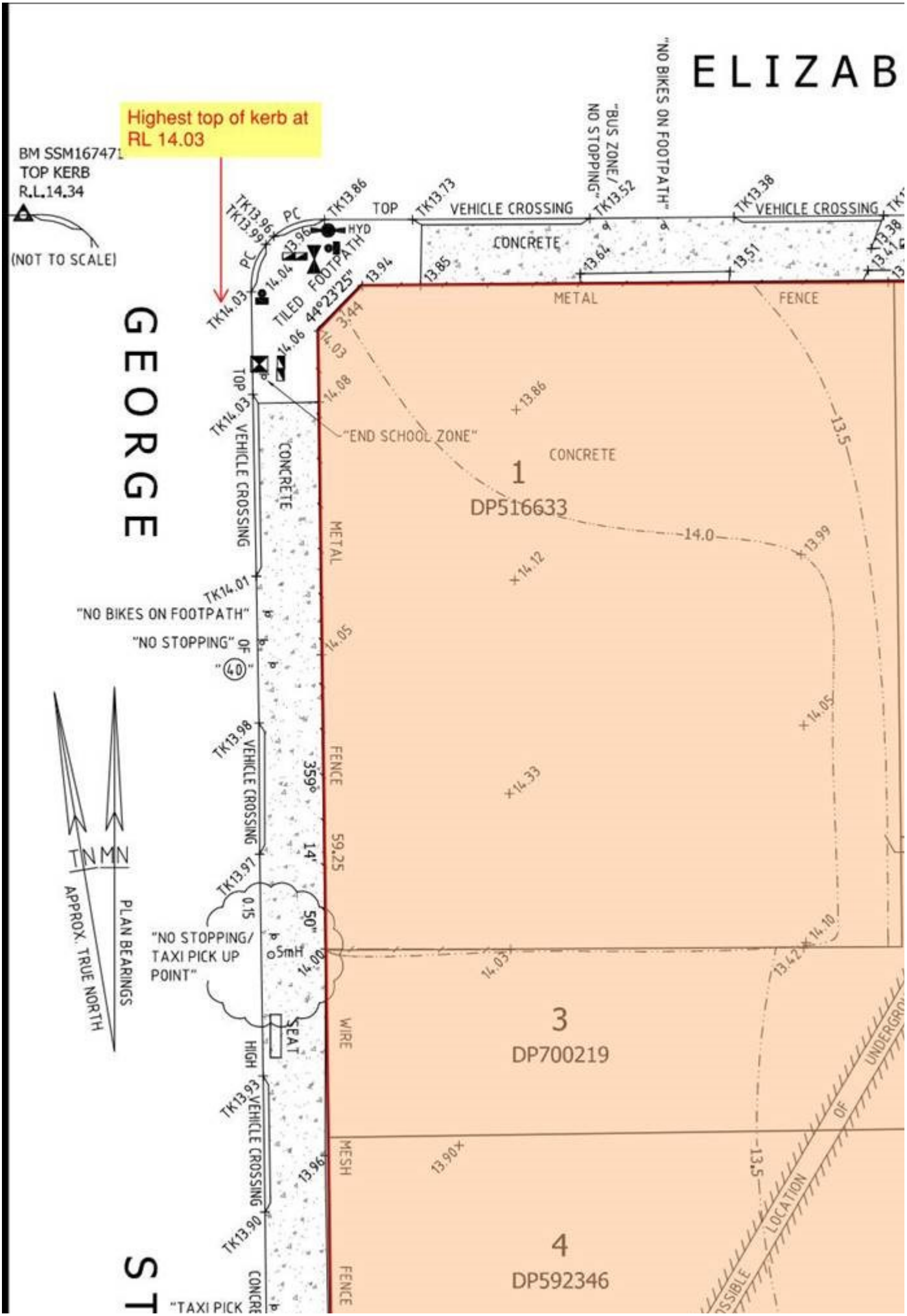
02 8711 7747 | | HoqueZ@liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 3 Hoxton Park Rd Liverpool, NSW 2170, Australia
www.liverpool.nsw.gov.au

From: Moreno, Miqueas <Miqueas.Moreno@stantec.com>
Sent: Wednesday, 26 May 2021 3:19 PM
To: Zeaul Hoque <HoqueZ@liverpool.nsw.gov.au>
Cc: Maruf Hossain <HossainM@liverpool.nsw.gov.au>; Tracey, Renata <renata.tracey@stantec.com>
Subject: RE: 32 Elizabeth Street & 148 George Street

Hi Zeaul,

I just called but I could not get through.

I was looking at some of the levels around the site and I found that there is a 1 m level difference on the top kerb levels along Elizabeth Street. I just wanted to clarify if the FFL of 14.30 will apply to the entire site or we can make a provision of a 300mm freeboard with respect to the adjacent level of the kerb as the overland flow is fully contained within the road.


Highest top of kerb at RL 14.03
BM SSM167471
TOP KERB
R.L.14.34
(NOT TO SCALE)
ELIZAB
GEORGE
"NO BIKES ON FOOTPATH"
"BUS ZONE/ NO STOPPING"
TOP
VEHICLE CROSSING
CONCRETE
FOOTPATH
TILED
METAL
FENCE
"END SCHOOL ZONE"
1
DP516633
"NO BIKES ON FOOTPATH"
"NO STOPPING" OF
"NO STOPPING/ TAXI PICK UP POINT"
SEAT
HIGH
WIRE
MESH
3
DP700219
4
DP592346
TRUE NORTH
APPROX.
PLAN BEARINGS
LOCATION
OF
UNDERGRO
FENCE

I have attached the survey plan for your reference.

Please let me know if you require any clarification.

Regards,

Miqueas Moreno
Civil Engineer

Direct: +61 2 8484 7096
Miqueas.Moreno@stantec.com

Stantec Australia Pty Ltd
Level 6, Building B, 207 Pacific Hwy
St Leonards
New South Wales 2065

From: Moreno, Miqueas
Sent: Friday, 14 May 2021 11:06
To: Zeaul Hoque <HoqueZ@liverpool.nsw.gov.au>
Cc: Maruf Hossain <HossainM@liverpool.nsw.gov.au>
Subject: RE: 32 Elizabeth Street & 148 George Street

Hi Zeaul,

Thank you for your email.

I just called you, but I could not get through when you get the chance can you please give me a call my number is 0449 690 740.

Regards,
Miqueas

From: Zeaul Hoque <HoqueZ@liverpool.nsw.gov.au>
Sent: Tuesday, May 11, 2021 11:04 AM
To: Moreno, Miqueas <Miqueas.Moreno@stantec.com>
Cc: Maruf Hossain <HossainM@liverpool.nsw.gov.au>
Subject: RE: 32 Elizabeth Street & 148 George Street

Hi Miqueas

Thanks for your flooding enquiry in relation to the proposed development at the subject site. Please find below the requested information.

- Overland flooding is contained within the road and the flood level in the vicinity of the site is 14m AHD. Therefore, the required minimum building floor level is 14.3m AHD (1% AEP flood Plus 300mm freeboard).
- OSD will be required to maintain the post-development flow to pre-development level.
- On-site water quality treatment facilities shall be provided to ensure that stormwater runoffs leaving the site comply with Council's water quality standards. The treatment facilities shall capture all gross pollutants and liquid contaminants from the stormwater before discharging it to downstream point. Water quality treatment works shall be designed using MUSIC modelling software and the water quality treatment system performance shall be verified using Council's MUSIC link. Council's Development Control Plans (DCP), Part 1

General controls for all development, which is available at Council website provides the water quality targets.

- A stormwater trunk drainage line (I think you mentioned it in your email as an existing culvert) runs through the proposed development site. The existing trunk drainage line shall be preserved. So far I know, this trunk drainage line is a heritage item. If you plan to relocate this existing stormwater drainage line then please contact Council's Heritage Officer, Thomas Wheeler (Council's Call Centre 1300 36 2170 or email: WheelerT@liverpool.nsw.gov.au) to know the necessary requirements.

Please contact me if your need further clarification on the above.

Regards

Zeaul Hoque
Floodplain Engineer

LIVERPOOL CITY COUNCIL

02 8711 7747 | | HoqueZ@liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 3 Hoxton Park Rd Liverpool, NSW 2170, Australia
www.liverpool.nsw.gov.au

From: Maruf Hossain <HossainM@liverpool.nsw.gov.au>
Sent: Friday, 7 May 2021 10:52 AM
To: Zeaul Hoque <HoqueZ@liverpool.nsw.gov.au>
Subject: FW: 32 Elizabeth Street & 148 George Street

Hi Zea, could you please provide requested information.

1. Overland flood affectation and level.
2. WSUD – yes- provide water quality target
3. OSD - yes

Maruf Hossain
Coordinator Floodplain and Water Management

LIVERPOOL CITY COUNCIL

02 8711 7650 | 0419 985 217 | HossainM@liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 3 Hoxton Park Rd Liverpool, NSW 2170, Australia
www.liverpool.nsw.gov.au

From: Moreno, Miqueas <Miqueas.Moreno@stantec.com>
Sent: Friday, 7 May 2021 9:52 AM
To: Maruf Hossain <HossainM@liverpool.nsw.gov.au>
Cc: Tracey, Renata <renata.tracey@stantec.com>
Subject: RE: 32 Elizabeth Street & 148 George Street

Hi Maruf,

Thank you very much for your time early on the phone.

As discussed, we notice that the site is within an area subject to local drainage flooding as detailed by Liverpool CBD Floodplain Management Study (refer to attached flood maps)

- Can you please provide information about the flow depth around the boundary of the site.
- Given the conditions of the local drainage in the area, can you clarify if OSD and WSUD will be required for the site?
- I have attached a survey plan showing an existing culvert running through the site without an easement. As discussed can you please confirm that this a redundant utility?

Please let me know if you require any further information.

Regards,

Miqueas Moreno
Civil Engineer

Direct: +61 2 8484 7000
Miqueas.Moreno@stantec.com

Stantec Australia Pty Ltd
Level 6, Building B, 207 Pacific Hwy
St Leonards
New South Wales 2065

Stantec

Better Together, Even If We're Apart. Read more about Stantec's COVID-19 response, including remote working and business continuity measures.

Disclaimer

Design with
community in mind

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For more information please visit
www.stantec.com

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