

18th September, 2012

**BOVIS LEND LEASE PTY LTD
30 THE BOND, HICKSON ROAD
MILLERS POINT, NSW 2000**

Attn: Grant

**Re: 3 Murray Rose Avenue, Olympic Park
Water Management Plan**

Further to the Authority's requirements we hereby submit for your approval our proposed Water Management Plan for the above property.

Our intention for Water Management for this particular site is as follows:

Stormwater discharge.

All stormwater including basement carpark subsoil pumpout system is treated on site before discharging into the street stormwater system. The street stormwater system is further treated via gross pollutant traps located further downstream before discharging into ponds that have vegetated marsh zones for further filtration of the stormwater.

Sewer discharge.

The street sewer main will discharge to the sewer main on Benelong Road. The SOPA's WRAMS system does further reduce the flow to sewer through some sewer mining from the sewer mains.

Potable water

The WRAMS system is then supplied back to the site as non potable water for use in the cooling towers, toilet flushing (low flow urinals and W/C's), irrigation supply and external hose taps. Based on the building next door as it is approximately the same size and was just completed, we have based the following calculations and assumptions for the WRAMS daily water usage:

Approximately 1200 people / population for building use.

Average daily toilet and urinal flushing - 12,600 litres

Average daily cooling tower water usage - 20,800 litres

Average daily irrigation water usage – 750 litres

With the above items connected to the WRAMS system we are able to reduce the domestic water demand by 34 k/l per day. In addition, high WELS rated taps and shower fittings along with water efficient landscaping also contribute to the significant reduction in potable water usage for the site.

We trust the above information is sufficient for your approval, however, should you require further information or wish to discuss any matter regarding the above design intent please do not hesitate to contact the undersigned.

Yours faithfully

J & M GROUP PTY LTD

A handwritten signature in black ink, appearing to read 'Malcolm Clarke', written in a cursive style.

MALCOLM CLARKE

Director

STORMWATER CONCEPT

FOR

3 MURRAY ROSE AVENUE

SYDNEY OLYMPIC PARK, NSW

| LEGEND | |
|--------|---------------------------|
| | : STORMWATER DRAINAGE |
| | : SUB-SOIL DRAINAGE |
| | : CONTINUATION OF SERVICE |
| | : STORMWATER PIT |
| | : SEALED STORMWATER PIT |
| | : RAINWATER OUTLET |
| | : PLANTER BOX OUTLET |
| | : SUBSOIL CLEAROUT |
| | : LINE SIZE REDUCER |
| | : DOWNPIPE |
| | : OVERFLOW PATH |
| | : CONTOUR LINES |
| | : BOUNDARY |
| HP | : HIGH POINT |
| RL | : RELATIVE LEVEL |
| IL | : INVERT LEVEL |
| SSRM | : SUB-SOIL RISING MAIN |
| RDP | : ROOF DOWNPIPE |
| BDP | : BALCONY DOWNPIPE |
| SDP | : SIPHONIC DOWNPIPE |

- NOTES:**
1. MAIN STORMWATER DRAINS SHALL FALL AS NOTED. HOWEVER, ALL OTHER BRANCH DRAINS SHALL HAVE A MINIMUM GRADE OF 1%.
 2. STORMWATER DRAINS SHALL BE RUBBER RING JOINTED FRC (CLASS 2) OR RCP OF EQUIVALENT CLASS. PIPES OF SIZE LESS THAN 300mm SHALL BE DWV GRADE PVC WITH SOLVENT CEMENT JOINTS.
 3. PITS LOCATED IN DRIVEWAY AREAS SHALL BE EQUAL TO CI & D CAST IRON GRATES AND FRAMES - TYPE D.
 4. STORMWATER PITS TO LANDSCAPED AND PEDESTRIAN AREAS SHALL BE EQUAL TO CI & D CAST IRON GRATES AND FRAMES - TYPE A.
 5. ALL WORKS SHALL BE CARRIED OUT TO THE REQUIREMENTS OF THE RELEVANT COUNCIL / AUTHORITY, AS 3500.3, AS 2032, AS 3996 AND AS 3725.
 6. ALL LARGE CONCRETE PIT & TANK STRUCTURES POURED ON SITE SHALL HAVE FINAL STRUCTURE DESIGN APPROVED BY AN ACCREDITED STRUCTURAL ENGINEER.
 7. THE SUB SOIL PUMP OUT PIT SHALL HAVE AN AUDIBLE ALARM, INITIATED IN THE EVENT THAT BOTH PUMPS FAIL.
 8. AT THE COMPLETION OF THE WORKS PROVIDE A "WORK AS EXECUTED" PLAN OF THE STORMWATER DRAINAGE AND DETENTION SYSTEM. THE PLAN SHALL BE PREPARED AND CERTIFIED BY THE REGISTERED SURVEYOR AND SHOW ALL PIPE SIZES, INVERTS, PIT COVER AND BASE LEVELS AND ALL DETENTION TANK DIMENSIONS, SURFACE LEVELS AND THE ORIFICE PLATE SIZE.
 9. PITS SHALL BE CI & D PRECAST CONCRETE OR APPROVED EQUAL WITH EXTENSION RISERS AS REQUIRED. PITS SHALL BE BEDDED ON A 50mm LAYER OF 4:1 CEMENT MORTAR AND BACKFILLED WITH EXCAVATED MATERIAL IN 200mm THICK COMPACTED LAYERS TO FINISHED SURFACE LEVEL.
 10. COVERS TO PITS LOCATED WITHIN PAVED AREAS SHALL BE CAST IN WITH THE CONCRETE POUR. ALL OTHER PIT COVERS SHALL BE PROVIDED WITH A 150mm CONCRETE SURROUND.
 11. PROVIDE TO EACH STORMWATER PIT A 1m LONG SECTION OF SUB-SOIL DRAINAGE, LAID WITHIN THE UPSTREAM TRENCH.
 12. PROVIDE 25mm DIAMETER GALVANIZED STEP-IRONS AT INTERVALS OF 300mm WHERE THE INTERNAL DEPTH OF THE PIT EXCEEDS 1200mm.

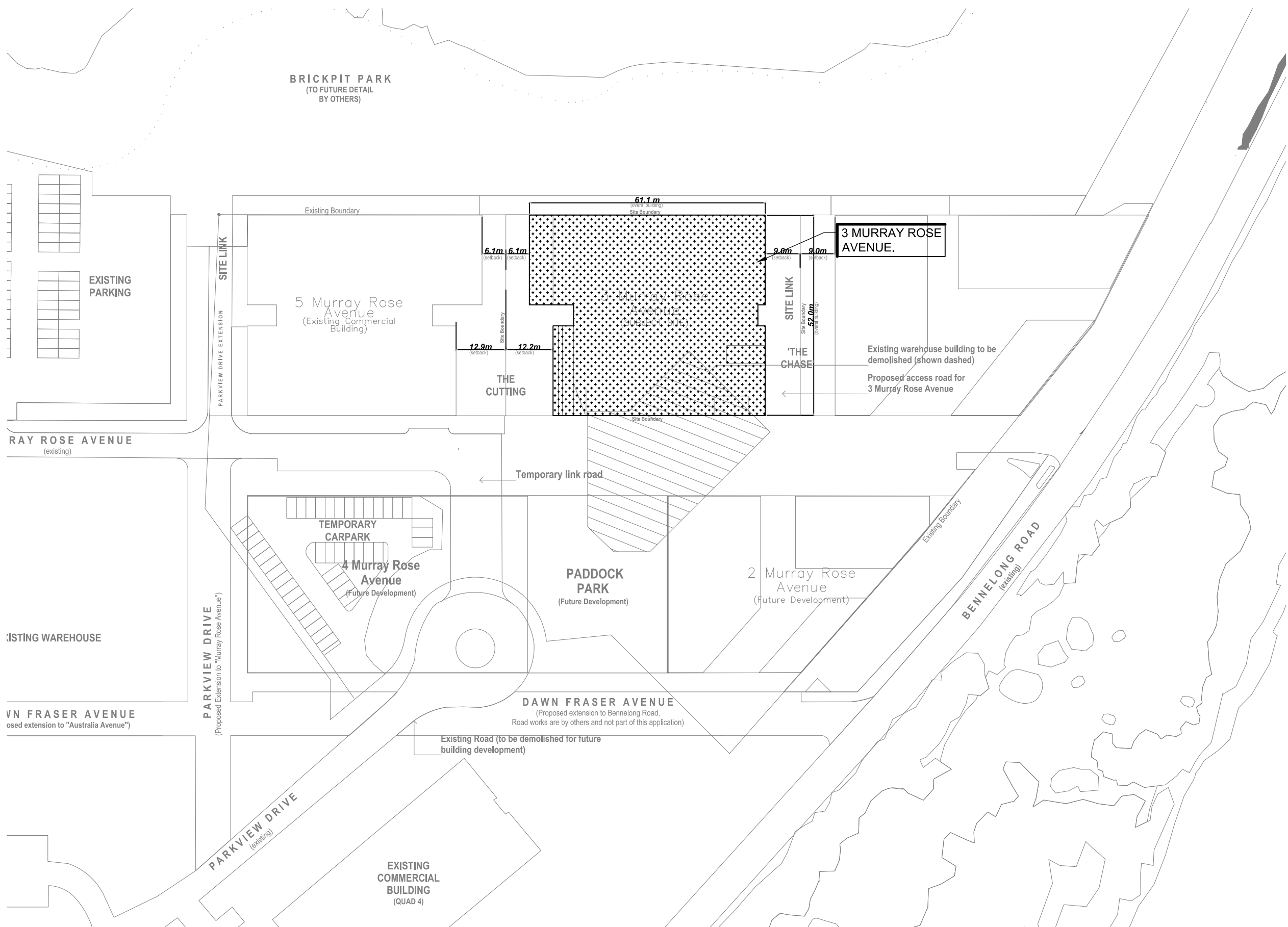
DESIGN CRITERIA:

TOTAL SITE AREA 3983 m²
STORM INTENSITY USED 180 mm/hr - 5 min / 20 year storm

INTERNAL DRAINAGE PIPE SIZING CALCULATIONS WAS BASED ON THE INTENSITY FROM A 20 YEAR STORM EVENT.

DRAWING SCHEDULE

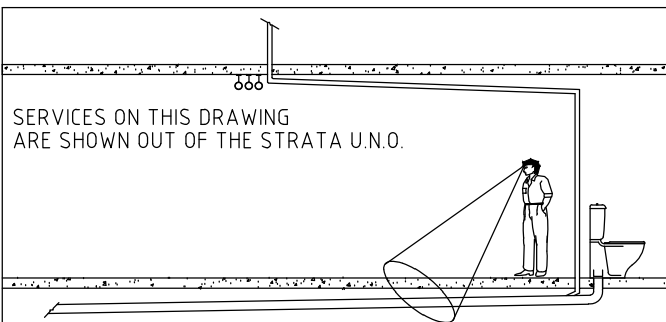
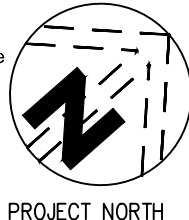
| DRAWING No. | DRAWING TITLE |
|-------------|--------------------------------------|
| H5500 | COVERSHEET, LEGEND & NOTES |
| H5501 | SITE PLAN |
| H5502 | BASEMENT LEVEL 3 STORMWATER DESIGN |
| H5503 | BASEMENT LEVEL 2 STORMWATER DESIGN |
| H5504 | BASEMENT LEVEL 1 STORMWATER DESIGN |
| H5505 | LOWER GROUND FLOOR STORMWATER DESIGN |
| H5506 | UPPER GROUND FLOOR STORMWATER DESIGN |
| H5507 | LEVEL 1 & 2 STORMWATER DESIGN |
| H5508 | LEVEL 3 & 4 STORMWATER DESIGN |
| H5509 | PLANT LEVEL STORMWATER DESIGN |
| H5510 | ROOF LEVEL STORMWATER DESIGN |



LOCATION PLAN - 1:1000

FOR APPROVAL

Contractor is to verify all dimensions on site.
Report discrepancies to the engineer for decision before
proceeding with the work.
Work to figured dimensions, do not scale drawings.
This drawing is copy right and must not be used or
copied without authority.
All setbacks shall be to latest architectural drawings.



| QUALITY CONTROL | | | |
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| DATE | DWG No | REV | DATE |
| DISCIPLINE | | | |
| ARCHITECTURAL | | | |
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| HYDRAULIC | | | |
| FIRE | | | |
| NAME | | | |
| SIGNED | | | |

| REV | DESCRIPTION | DATE |
|-----|--------------|----------|
| A | PRELIMINARY | 03.08.12 |
| B | FOR APPROVAL | 05.09.12 |

CLIENT
BOVIS LEND LEASE
30 THE BOND, 30 HICKSON ROAD
MILLERS POINT, NSW 2000.
PH: (02) 9236 6111.

ARCHITECT
TURNER + ASSOCIATES ARCHITECTS
LEVEL 1, 410 CROWN STREET
SURRY HILLS, NSW 2010
PH: (02) 8668 0000 FAX: (02) 8668 0088

PROJECT
PARKVIEW PLACE - BUILDING B
3 MURRAY ROSE AVENUE, SYDNEY OLYMPIC PARK

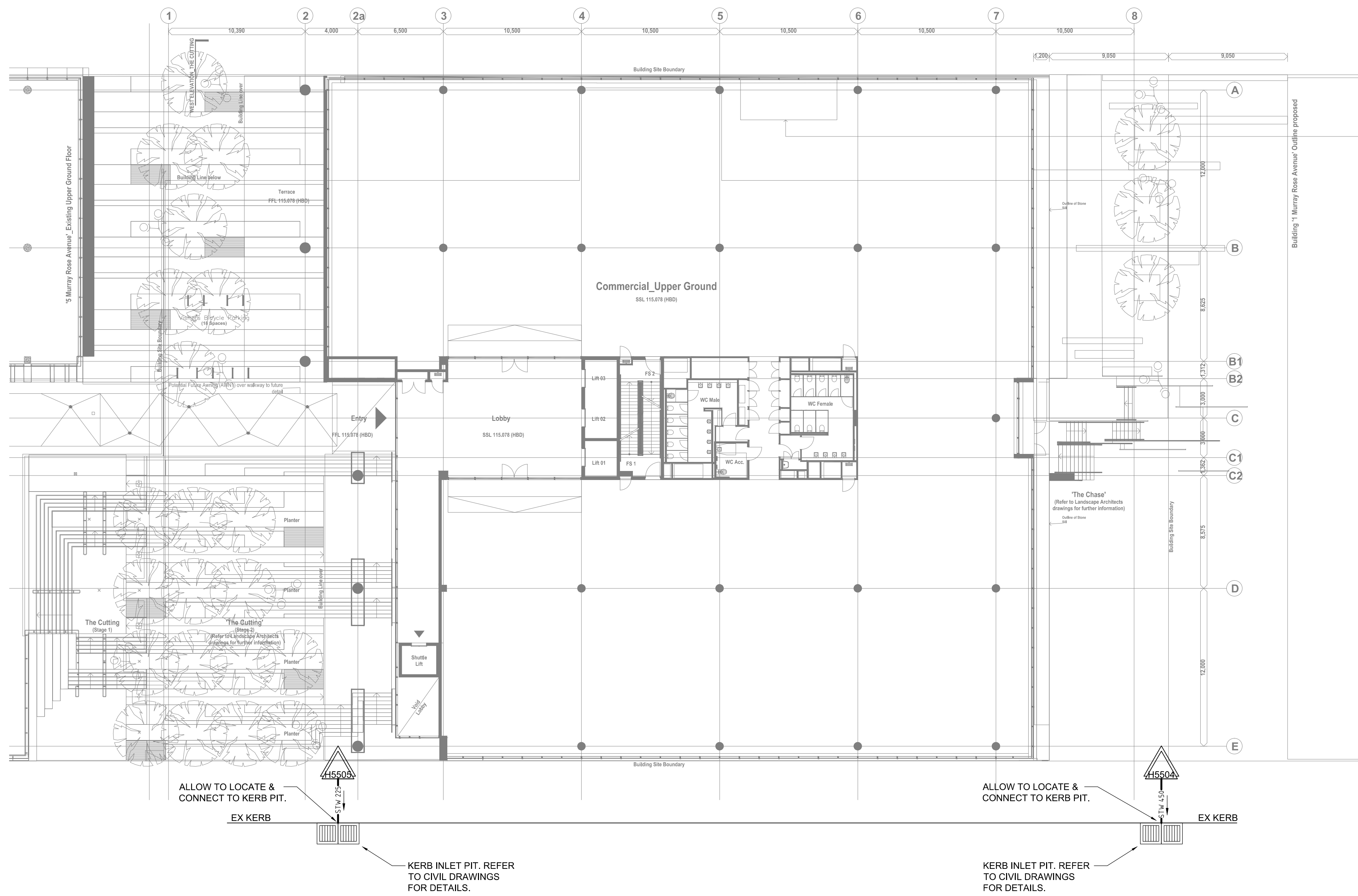
J & M GROUP

UNIT 7 43-51 COLLEGE ST
GLADESVILLE 2111
TEL: 9879 3144
FAX: 9879 3244

J & M GROUP PTY LTD
HYDRAULIC & FIRE SERVICES CONSULTANTS

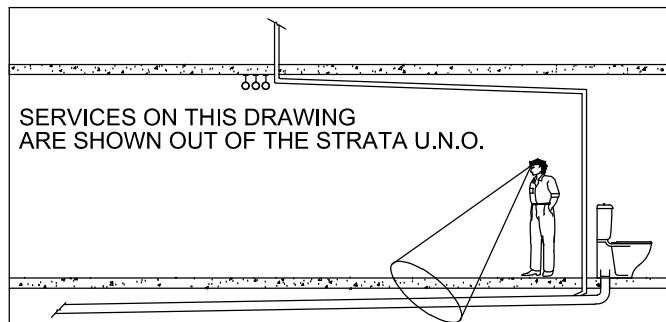
DRAWING TITLE
HYDRAULIC SERVICES
COVERSHEET, LEGEND & NOTES

| | | | |
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| SCALE | DRAWN | CHECKED | DATE |
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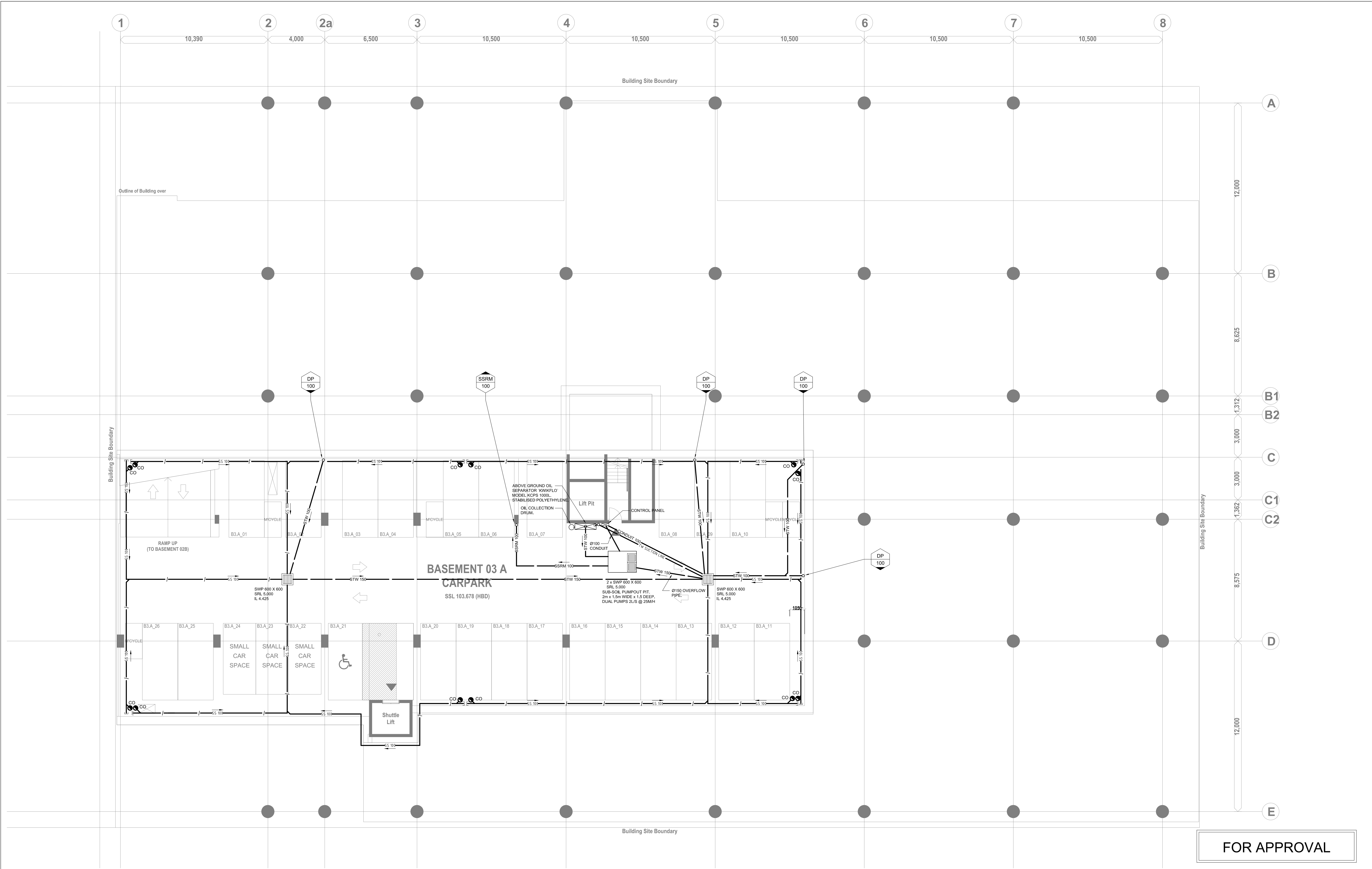
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GROUP**

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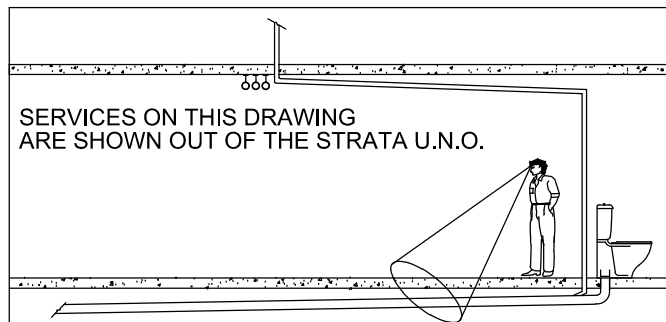
DRAWING TITLE
**HYDRAULIC SERVICES
SITE PLAN**

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| 1:200 | OC | MC | 05/09/12 |
| PROJECT No | DRAWING No | REVISION | |
| 1213 | H5501 | B | |



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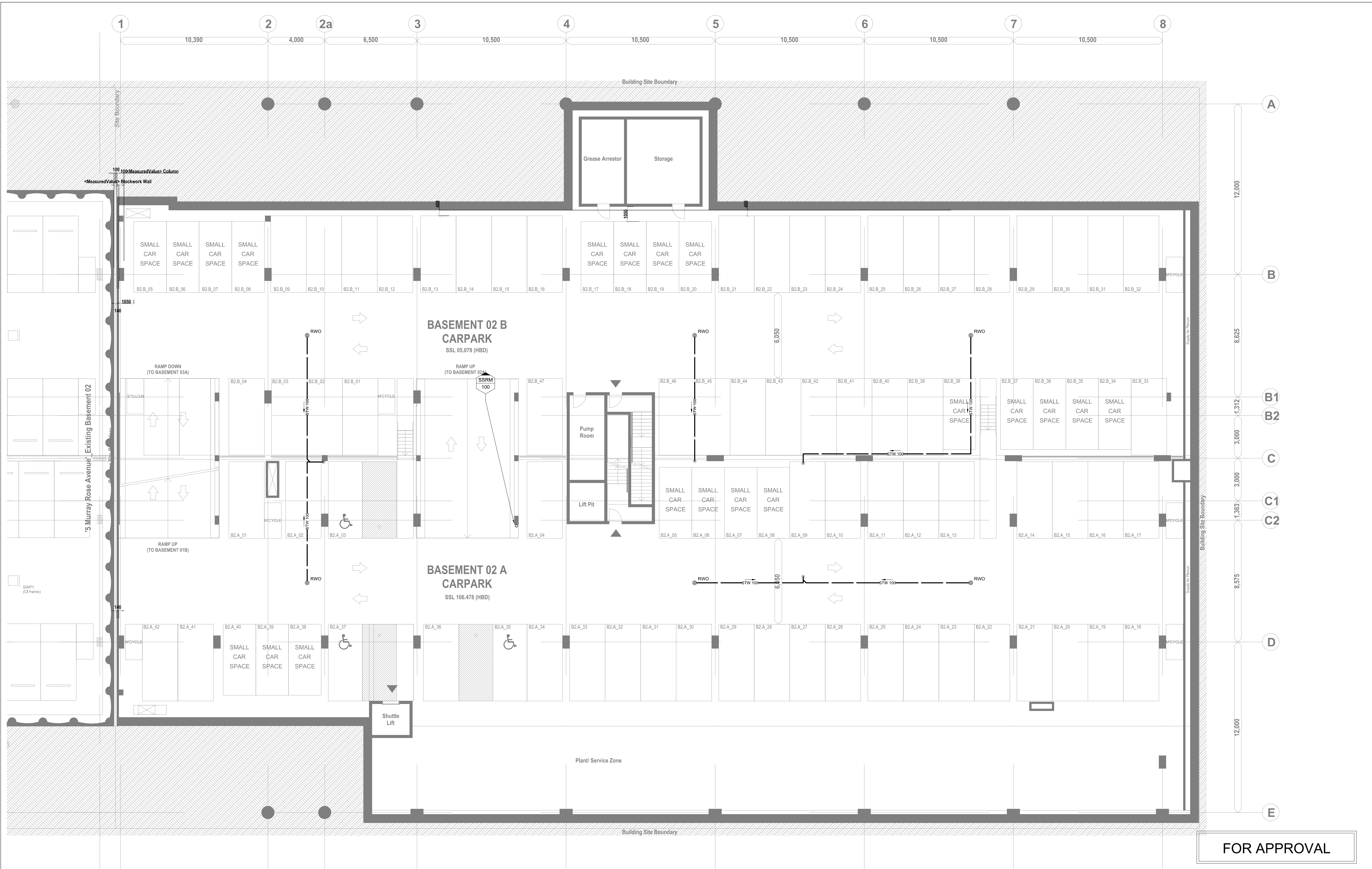
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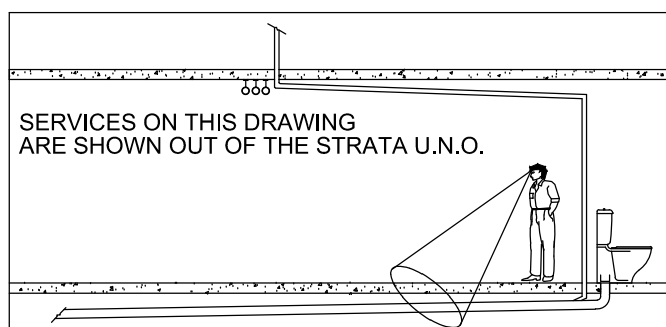
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DRAWING TITLE
**HYDRAULIC SERVICES
BASEMENT LEVEL 3 INGROUND
STORMWATER
DESIGN**

SCALE 1:100
DRAWN OC
CHECKED MC
DATE 05/09/12
PROJECT No 1213
DRAWING No H5502
REVISION B



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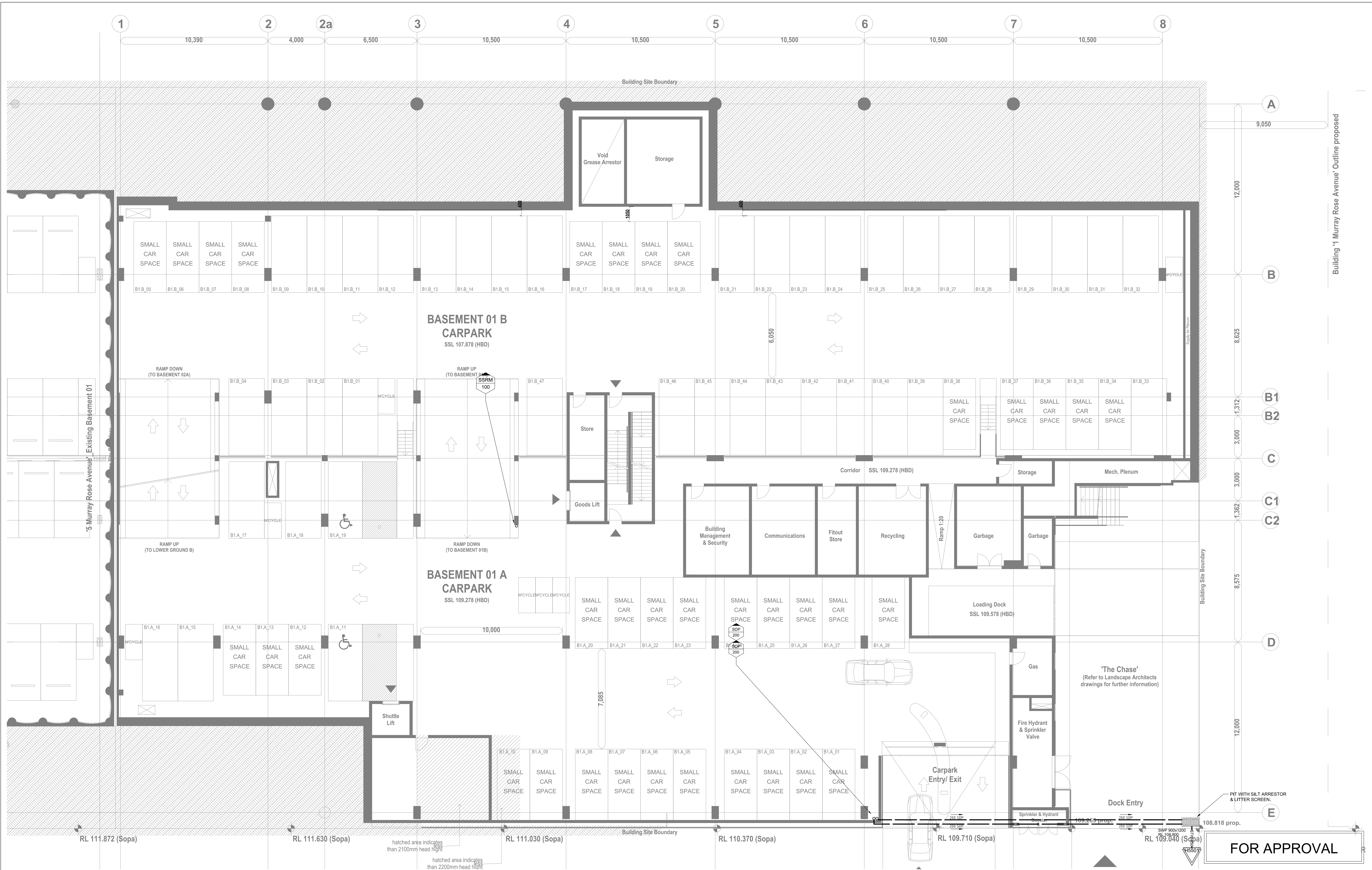
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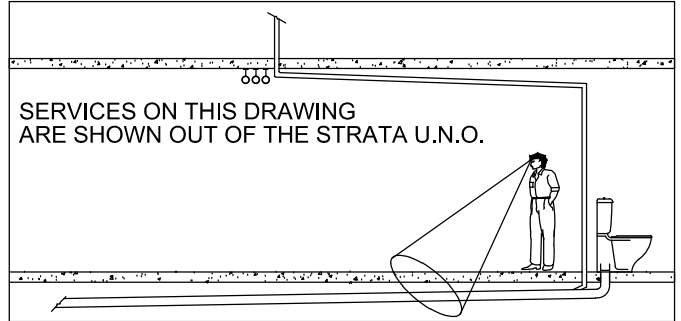
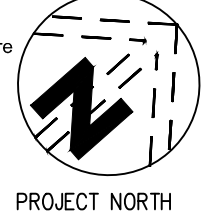
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DRAWING TITLE
**HYDRAULIC SERVICES
BASEMENT LEVEL 2
STORMWATER
DESIGN**

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| 1213 | H5503 | B | |



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| HYDRAULIC | | |
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Lend Lease

PROJECT
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| DRAWING TITLE | | | |
|--------------------|------------|----------|----------|
| HYDRAULIC SERVICES | | | |
| BASEMENT LEVEL 1 | | | |
| STORMWATER | | | |
| DESIGN | | | |
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| PROJECT No | DRAWING No | REVISION | |
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