



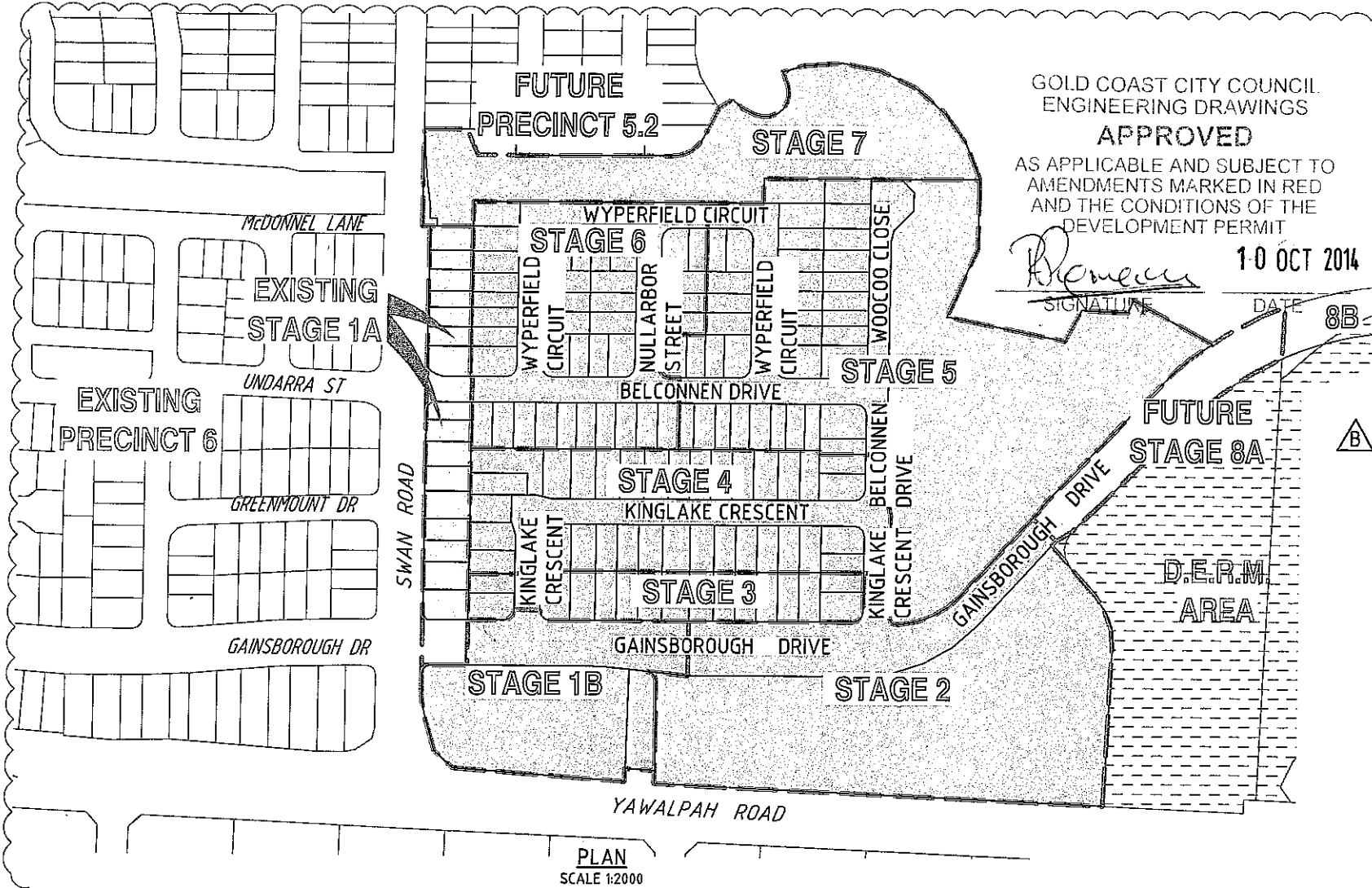
MIRVAC PACIFIC GAINSBOROUGH GREENS PRECINCT 5.1 STAGE 1B TO STAGE 7

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GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
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AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

R. Breen
SIGNATURE
10 OCT 2014
DATE



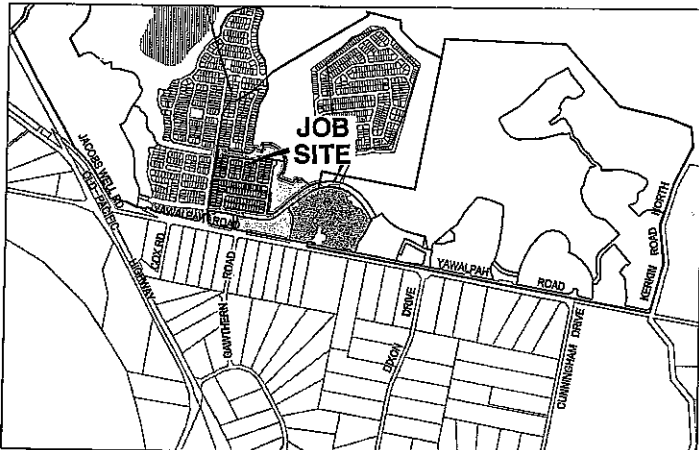
PLAN
SCALE 1:2000

R.P. DESCRIPTION
GAINSBOROUGH GREENS
PRECINCT 5.1,
YAWALPAH ROAD, PIMPAMA
LOT 1 ON SP261924

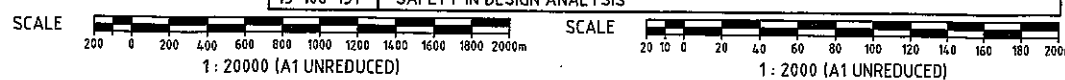
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YAWALPAH RD/KERKIN
RD

GENERAL NOTES

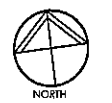
- ALL WORK SHALL BE JOINED NEATLY TO EXISTING CONSTRUCTION.
- WHERE REFERENCE IS MADE ON THESE DRAWINGS TO A KERB LINE, IT SHALL BE TAKEN TO MEAN THE KERB INVERT LINE.
- LEVELS FOR KERB AND CHANNEL CONSTRUCTION ARE SHOWN AT LIP OF CHANNEL UNLESS SHOWN OTHERWISE. RADIUS TO KERB INVERT LINE AT TURNOUTS OF ROADS SHALL BE 10.00m UNLESS OTHERWISE SHOWN.
- LIP LEVELS ARE AT QUARTER POINTS AT TURNOUTS AND AT EQUAL POINTS WHERE INDICATED (-) UNLESS NOTED OTHERWISE.
- KERBS, KERB AND CHANNEL SHALL BE CONSTRUCTED IN ACCORDANCE WITH G.C.C.C. STD. DWG. No 05-02-101 & 05-02-102.
- IF MACHINE MADE KERB AND CHANNEL IS USED, EXTRA FINES AND 20mm SLUMP IS REQUIRED.
- PROVIDE PRAM RAMPS TO ALL INTERSECTIONS IN ACCORDANCE WITH G.C.C.C. STD. DWG. No. 05-02-202 AND ALIGN TO DIRECT THE USER ACROSS THE ROADWAY BY THE MOST DIRECT ROUTE.
- GULLY CONNECTIONS AND STORM WATER PIPES SHALL BE 375mm DIAMETER CLASS '2' R.C. PIPES UNLESS SHOWN OTHERWISE.
- THE CONTRACTOR SHALL INITIALLY EXCAVATE THE PAVEMENT BOX TO 225mm BELOW THE FINISHED PAVEMENT LEVEL SHOWN ON THE DRAWINGS HE SHALL THEN NOTIFY THE ENGINEER WHO WILL FIX THE PAVEMENT THICKNESS TO BE CONSTRUCTED FOLLOWING THE RESULTS OF SUBGRADE TESTING.
- NOTWITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE DRAWINGS, THE ACTUAL LIMITS SHALL BE DETERMINED ON SITE BY THE ENGINEER AND SIMILARLY THE FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE ENGINEER DURING CONSTRUCTION.
- THE MINIMUM CLEARANCE BETWEEN OUTER WALLS OF PIPES IN MANHOLES SHALL BE 150mm.
- TWO KERB ADAPTORS SHALL BE PROVIDED TO EACH LOT UNLESS INDICATED OTHERWISE. KERB ADAPTORS ARE TO BE LOCATED SO THAT ITS CENTRE LINE IS 300MM FROM THE PROJECTION OF THE SIDE BOUNDARY AT THE KERB LINE.
- ALL ALLOTMENTS SHALL GRADE AT A MINIMUM SLOPE OF 1 IN 150 TOWARDS THE KERB & CHANNEL UND.
- ALL CONCRETE FOOTPATHS TO BE MINIMUM 100mm THICK IN ACCORDANCE WITH G.C.C.C. STD. DRG. No. 05-02-201
- KERB RAMPS TO BE PROVIDED AT ALL INTERSECTIONS IN LINE WITH THE POSITION OF THE CONCRETE FOOTPATH. TACTILE INDICATORS REQUIRED ON KERB RAMPS CONNECTING TO PATHWAYS.
- ANY SPRINGS ENCOUNTERED DURING CONSTRUCTION ARE TO BE IDENTIFIED TO THE SUPERINTENDENT AND CONNECTED TO THE PIPED STORMWATER DRAINAGE NETWORKS.
- STORMWATER MANHOLES AND GULLYPITS ARE TO BE INSTALLED IN ACCORDANCE WITH G.C.C.C STANDARD DRAWINGS.



LOCALITY PLAN
UBD MAP 326 GRID M7
SCALE 1:20000



DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!



REVISIONS

| No | Description | Date | By |
|----|---|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES, STAGING & DRAWING INDEX AMENDED | JUL 14 | BJ |

Associated Consultants

Client

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

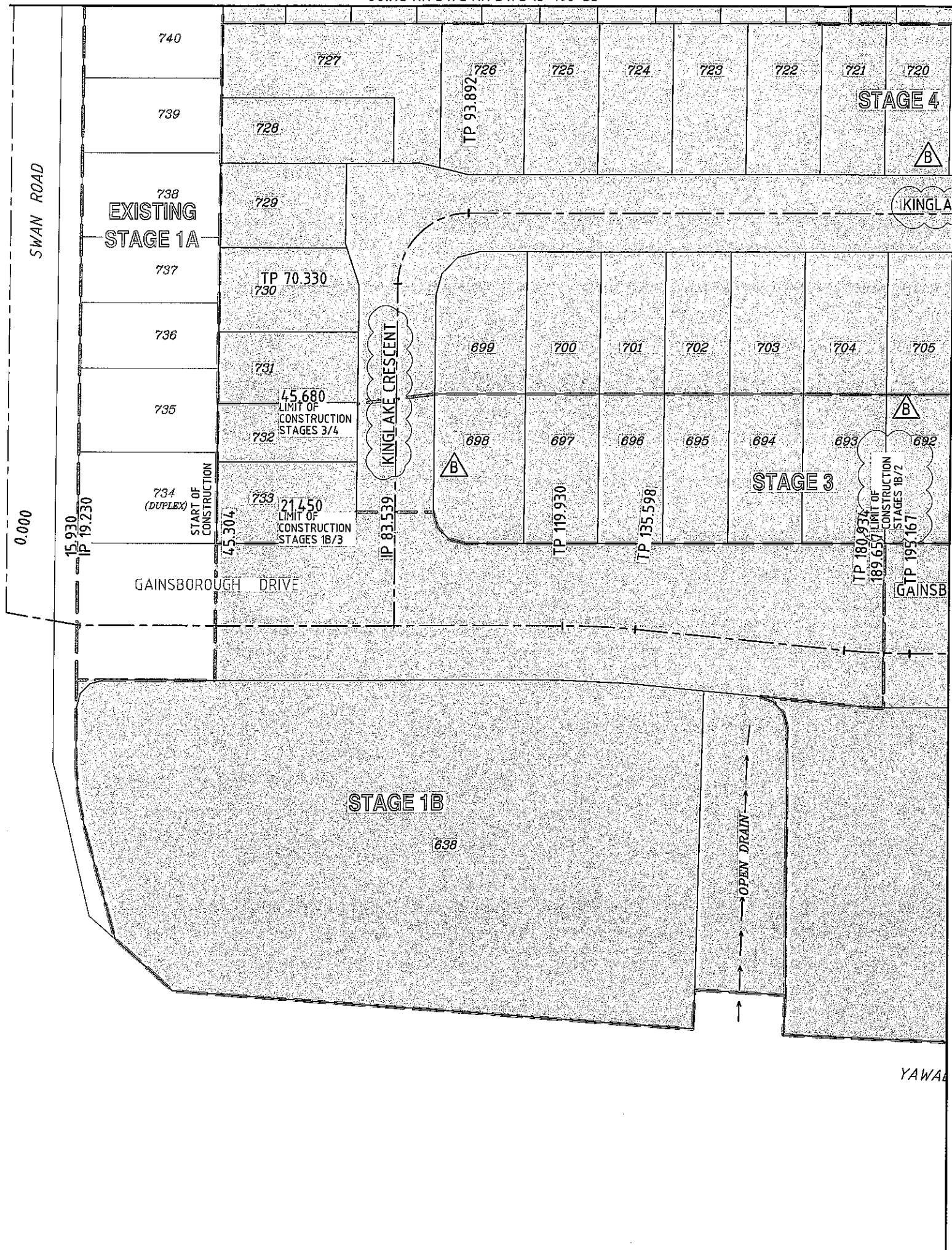
KN GROUP PTY LTD
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LEVEL 2-71 GREY STREET
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QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved by Director - SPEC 398
M. Kelly 18.8.14

Drawing Title
LOCALITY PLAN, DRAWING
INDEX AND NOTES

| Drawn | Designed | Checked | Date |
|-------------------|----------|-------------------------|--------------------|
| ES | CH | GBG | JUN 14 |
| Scale AS SHOWN | | | Sheet 50 of 137 |
| Drawing No A1 | | Revision 13-108-50 B | |



CONTROL LINE DETAILS GAINSBOROUGH DRIVE

| PT | CHAINAGE | EASTING | NORTHING | BEARING | RADIUS | TANGENT | DEF ANGLE | ARC-LEN |
|------|----------|-----------|-----------|------------|---------|---------|-----------|---------|
| IP1 | 0.000 | 74089.023 | 77567.655 | 107d4'16" | - | - | - | - |
| IP2 | 15.930 | 74104.200 | 77562.815 | 107d4'16" | - | - | 9d45'29" | - |
| TC | 119.930 | 74207.205 | 77548.457 | 97d55'47" | - | - | - | - |
| IP3 | 127.764 | 74214.970 | 77547.386 | - | 157.200 | 7.840 | 5d42'38" | 15.668 |
| CT | 135.598 | 74222.590 | 77545.537 | 103d38'25" | - | - | - | - |
| TC | 180.934 | 74266.648 | 77534.845 | 103d38'25" | - | - | - | - |
| IP4 | 188.051 | 74273.569 | 77533.166 | - | 142.800 | 7.122 | 5d42'38" | 14.233 |
| CT | 195.167 | 74280.623 | 77532.183 | 97d55'47" | - | - | - | - |
| TC | 301.627 | 74386.065 | 77517.496 | 97d55'47" | - | - | - | - |
| IP5 | 306.766 | 74391.160 | 77516.786 | - | 92.000 | 5.144 | 6d24'03" | 10.278 |
| CTP | 311.905 | 74396.303 | 77516.649 | 91d31'44" | - | - | - | - |
| IP6 | 322.139 | 74406.576 | 77516.375 | - | 92.000 | 10.276 | 12d44'49" | 20.468 |
| CT | 332.373 | 74416.656 | 77518.374 | 78d46'55" | - | - | - | - |
| TC | 332.385 | 74416.668 | 77518.376 | 78d46'55" | - | - | - | - |
| IP7 | 354.957 | 74439.264 | 77522.858 | - | 91.950 | 23.036 | 28d07'47" | 45.143 |
| CT | 377.529 | 74457.078 | 77537.464 | 50d39'08" | - | - | - | - |
| IP8 | 432.715 | 74499.754 | 77572.453 | 50d39'08" | - | - | 0d44'29" | - |
| IP9 | 472.266 | 74530.662 | 77597.131 | 51d23'37" | - | - | 2d27'49" | - |
| IP10 | 570.760 | 74610.201 | 77655.223 | 53d51'26" | - | - | - | - |

CONTROL LINE DETAILS KINGLAKE CRESCENT

| PT | CHAINAGE | EASTING | NORTHING | BEARING | RADIUS | TANGENT | DEF ANGLE | ARC-LEN |
|------|----------|-----------|-----------|------------|--------|---------|-----------|---------|
| IP1 | -3.000 | 74171.162 | 77553.488 | 7d55'47" | - | - | - | - |
| IP2 | 0.000 | 74171.576 | 77556.459 | 7d55'47" | - | - | 0d00'05" | - |
| TC | 46.700 | 74178.020 | 77602.713 | 7d55'52" | - | - | - | - |
| IP3 | 46.700 | 74178.020 | 77602.713 | - | 0.000 | 0.000 | 0d00'00" | 0.000 |
| CT | 46.700 | 74178.020 | 77602.713 | 7d55'52" | - | - | - | - |
| TC | 70.330 | 74181.280 | 77626.117 | 7d55'52" | - | - | - | - |
| IP4 | 82.111 | 74183.350 | 77640.973 | - | 15.000 | 15.000 | 89d59'54" | 23.562 |
| CT | 93.892 | 74198.206 | 77638.904 | 97d55'47" | - | - | - | - |
| TC | 294.414 | 74396.811 | 77611.240 | 97d55'47" | - | - | - | - |
| IP5 | 296.989 | 74399.398 | 77610.880 | - | 12.525 | 2.612 | 23d33'37" | 5.150 |
| TC | 299.567 | 74401.628 | 77609.514 | 121d29'23" | - | - | - | - |
| IP6 | 299.567 | 74401.628 | 77609.514 | - | 0.000 | 0.000 | 0d01'22" | 0.000 |
| CT | 299.567 | 74401.628 | 77609.514 | 121d29'23" | - | - | - | - |
| IP7 | 306.848 | 74408.641 | 77605.222 | - | 12.525 | 8.206 | 66d27'48" | 14.529 |
| CT | 314.113 | 74407.509 | 77597.094 | 187d55'48" | - | - | - | - |
| TC | 340.209 | 74403.909 | 77571.248 | 187d55'48" | - | - | - | - |
| IP8 | 340.209 | 74403.909 | 77571.248 | - | 0.000 | 0.000 | 0d00'00" | 0.000 |
| CT | 340.209 | 74403.909 | 77571.248 | 187d55'48" | - | - | - | - |
| TC | 389.892 | 74397.054 | 77522.040 | 187d55'48" | - | - | - | - |
| IP9 | 389.892 | 74397.054 | 77522.040 | - | 0.000 | 0.000 | 0d00'00" | 0.000 |
| CT | 389.892 | 74397.054 | 77522.040 | 187d55'48" | - | - | - | - |
| IP10 | 395.335 | 74396.303 | 77516.649 | 187d55'48" | - | - | - | - |

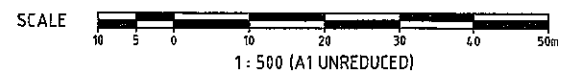
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Princes 10 OCT 2014
SIGNATURE DATE

LEGEND

- STAGE BOUNDARY
- PROPOSED ROAD CENTRELINE



REVISIONS

| No | Description | Date | By |
|----|---|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | G8G |
| B | STAGING AMENDED, TP'S REMOVED + ROAD NAMES AMENDED | JUL 14 | NJS |

Associated Consultants

Client

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

KN GROUP PTY LTD
CONSULTING ENGINEERS

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ABN 35 112 053 611

Approved Director - 18 OCT 2014
Princes 18.10.14
Drawing Title
SETOUT PLAN
SHEET 1 OF 4

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | G8G | JUN 14 |

| Scale | Sheet |
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| 1:500 | 51 of 137 |

| Revision | Revision |
|----------|----------|
| A1 | B |

SETOUT PLAN
SCALE 1:500

YAWA

JOINS KN DWG KN DWG 13-108-52

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FUTURE
STAGE 8A



D.E.R.M.
SIGNIFICANT
VEGETATION
COMMUNITY

REVISIONS

| No | Description | Date | By |
|----|--|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | STAGING AMENDED + TP REMOVED + ROAD NAMES AMENDED | JUL 14 | NJS |
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Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



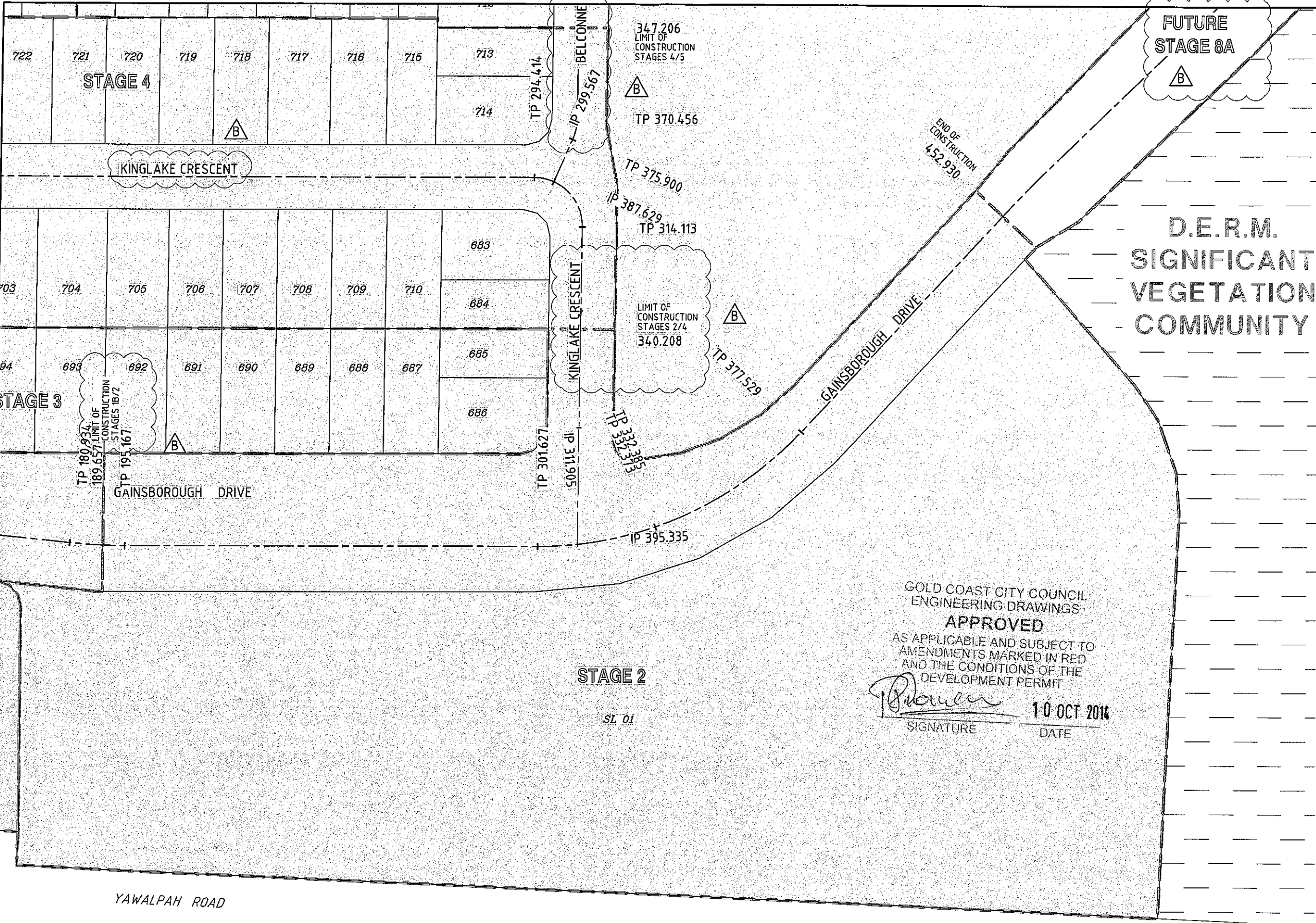
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PHONE 07 3017 1900
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EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director (RPREG 1988)
Mitchell B.B. 14

Project Title
SETOUT PLAN
SHEET 2 OF 4

| Drawn | Designed | Checked | Date |
|------------|----------|----------|-----------|
| ES | CH | GBG | JUN 14 |
| Scale | | | Sheet |
| 1:500 | | | 52 of 137 |
| Drawing No | | Revision | |
| A1 | | B | |

JOINS KN DWG KN DWG 13-108-54



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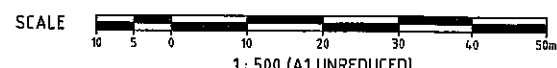
10 OCT 2014
DATE

STAGE 2
SL 01

NOTE:
FOR CONTROL LINE DETAILS REFER TO KN DWG 13-108-51/53

LEGEND
----- STAGE BOUNDARY
----- PROPOSED ROAD CENTRELINE

SETOUT PLAN
SCALE 1:500



JOINS KN DWG KN DWG 13-108-51

KN 201311308 Gainsborough Greens Precinct 5 Planning Engineering\Area13 108 51 54 SETOUT.dwg 16/06/2014 11:30 PM .es

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LEGEND

———— STAGE BOUNDARY
- - - - - PROPOSED ROAD CENTRELINE

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS

APPROVED

AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

[Handwritten Signature]

10 OCT 2014

SIGNATURE DATE

CONTROL LINE DETAILS (BELCONNEN DRIVE)

| PT | CHAINAGE | EASTING | NORTHING | BEARING | RADIUS | TANGENT | DEF ANGLE | ARC-LEN |
|-----|----------|-----------|-----------|------------|--------|---------|-----------|---------|
| IP1 | 0.000 | 74111.714 | 77730.596 | 97d55'49" | - | - | - | - |
| TC | 14.136 | 74254.472 | 77710.710 | 97d55'49" | - | - | - | - |
| IP2 | 148.266 | 74258.683 | 77710.123 | - | 14.250 | 4.252 | 33d13'54" | 8.265 |
| CTP | 152.401 | 74262.528 | 77711.940 | 64d41'55" | - | - | - | - |
| IP3 | 155.808 | 74265.698 | 77713.439 | - | 11.750 | 3.506 | 33d13'54" | 6.815 |
| CTP | 159.216 | 74269.171 | 77712.955 | 97d55'49" | - | - | - | - |
| IP4 | 162.623 | 74272.643 | 77712.471 | - | 11.750 | 3.506 | 33d13'53" | 6.815 |
| CTP | 166.031 | 74275.283 | 77710.164 | 131d09'42" | - | - | - | - |
| IP5 | 170.163 | 74278.485 | 77707.365 | - | 14.250 | 4.252 | 33d13'53" | 8.265 |
| CT | 174.296 | 74282.696 | 77706.778 | 97d55'49" | - | - | - | - |
| TC | 300.297 | 74407.492 | 77689.394 | 97d55'49" | - | - | - | - |
| IP6 | 302.751 | 74409.964 | 77689.050 | - | 11.000 | 2.496 | 25d33'57" | 4.908 |
| CTP | 305.205 | 74412.045 | 77687.672 | 123d29'46" | - | - | - | - |
| IP7 | 311.390 | 74417.826 | 77683.847 | - | 10.999 | 6.931 | 64d26'02" | 12.369 |
| CT | 317.575 | 74416.869 | 77676.982 | 187d55'48" | - | - | - | - |
| TC | 370.456 | 74409.574 | 77624.607 | 187d55'48" | - | - | - | - |
| IP8 | 373.178 | 74409.193 | 77621.872 | - | 13.250 | 2.761 | 23d32'29" | 5.444 |
| CT | 375.900 | 74407.751 | 77619.517 | 211d28'17" | - | - | - | - |
| IP9 | 387.629 | 74401.628 | 77609.514 | 211d28'17" | - | - | - | - |

CONTROL LINE DETAILS (WYPERFIELD CIRCUIT)

| PT | CHAINAGE | EASTING | NORTHING | BEARING | RADIUS | TANGENT | DEF ANGLE | ARC-LEN |
|-----|----------|-----------|-----------|------------|--------|---------|-----------|---------|
| IP1 | 0.000 | 74192.815 | 77719.299 | 7d55'48" | - | - | - | - |
| TC | 98.128 | 74206.353 | 77816.488 | 7d55'48" | - | - | - | - |
| IP2 | 102.152 | 74206.922 | 77820.572 | - | 15.000 | 4.124 | 30d44'35" | 8.049 |
| CTP | 106.177 | 74209.499 | 77823.792 | 38d40'23" | - | - | - | - |
| IP3 | 113.933 | 74214.829 | 77830.452 | - | 15.000 | 8.531 | 59d15'24" | 15.513 |
| CT | 121.690 | 74223.279 | 77829.275 | 97d55'47" | - | - | - | - |
| IP4 | 183.190 | 74284.191 | 77820.791 | 97d55'47" | - | - | 0d00'00" | - |
| TC | 244.690 | 74345.103 | 77812.306 | 97d55'47" | - | - | - | - |
| IP5 | 256.471 | 74359.960 | 77810.237 | - | 15.000 | 15.000 | 90d00'01" | 23.562 |
| CT | 268.252 | 74357.890 | 77795.380 | 187d55'48" | - | - | - | - |
| IP6 | 366.381 | 74344.352 | 77698.189 | 187d55'48" | - | - | - | - |

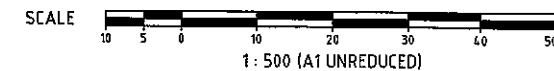
CONTROL LINE DETAILS (NULLARBOR STREET)

| PT | CHAINAGE | EASTING | NORTHING | BEARING | RADIUS | TANGENT | DEF ANGLE | ARC-LEN |
|-----|----------|-----------|-----------|----------|--------|---------|-----------|---------|
| IP1 | 0.000 | 74269.170 | 77712.955 | 7d55'48" | - | - | - | - |
| IP2 | 108.877 | 74284.191 | 77820.791 | 7d55'48" | - | - | - | - |



SETOUT PLAN
SCALE 1:500

JOINS KN DWG KN DWG 13-108-51



REVISIONS

| No | Description | Date | By |
|----|--------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | G&G |
| B | ROAD NAMES AMENDED | JUL 14 | ES |

Associated Consultants

Client

Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knp.com.au
ABN 35 112 053 611

Approved Director: *[Signature]* 18.0.14

Drawing Title

SETOUT PLAN
SHEET 3 OF 4

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | G&G | JUN 14 |

| Scale | Sheet |
|-------|-----------|
| 1:500 | 53 of 137 |

| Drawing No | Revision |
|------------|----------|
| A1 | B |

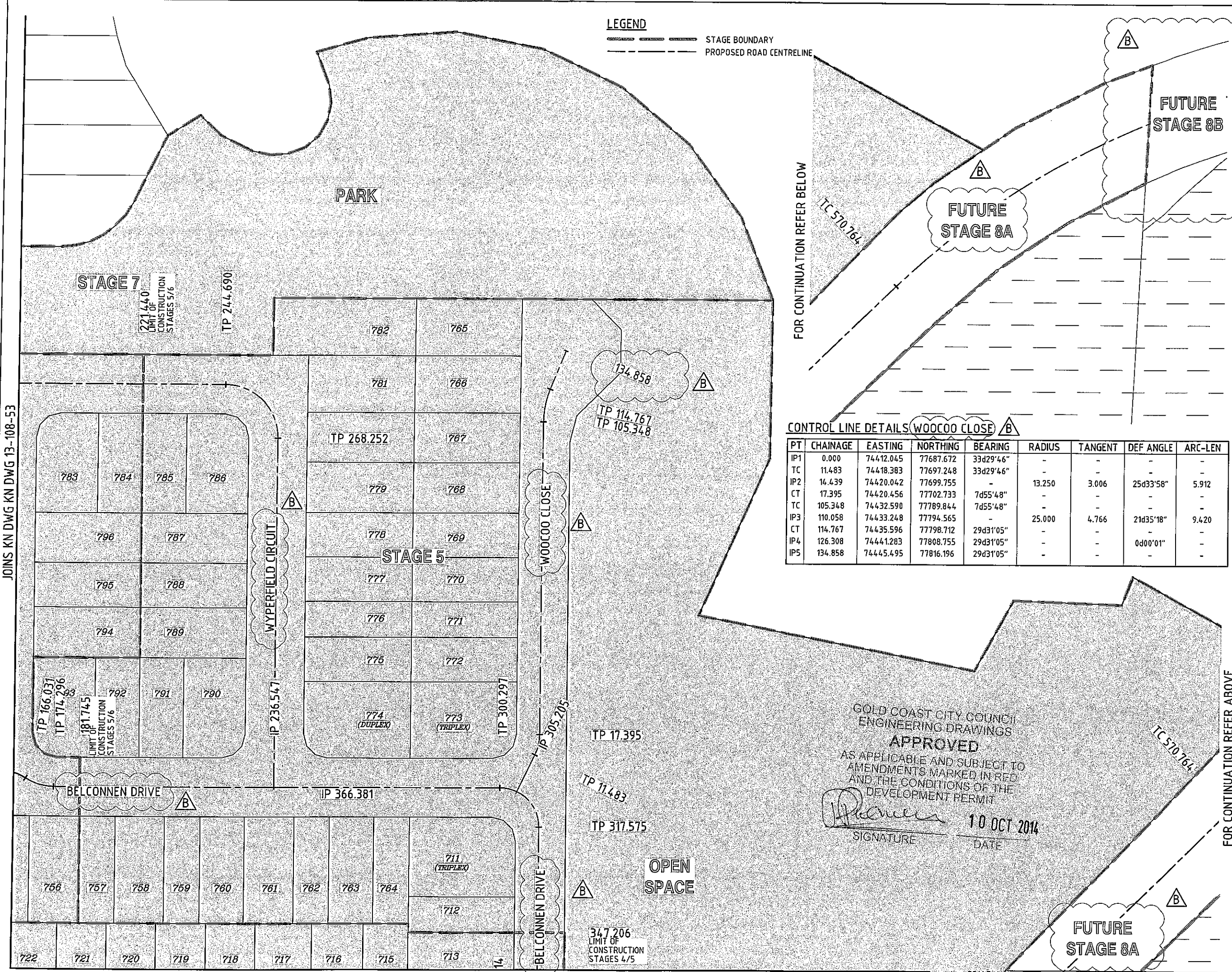
P:\17019\17019 Gainsborough Green Precinct 5 Planning\Engineering\Acad\13_08_51_S1_SE\001.dwg, 18/08/2014, 2:47:07 PM, es

DO NOT SCALE THIS DRAWING
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LEGEND

--- STAGE BOUNDARY
- - - PROPOSED ROAD CENTRELINE



FOR CONTINUATION REFER BELOW

CONTROL LINE DETAILS (WOOCOO CLOSE)

| PT | CHAINAGE | EASTING | NORTHING | BEARING | RADIUS | TANGENT | DEF ANGLE | ARC-LEN |
|-----|----------|------------|-----------|-----------|--------|---------|-----------|---------|
| IP1 | 0.000 | 744.12.045 | 77687.672 | 33d29'46" | - | - | - | - |
| TC | 11.483 | 744.18.383 | 77697.248 | 33d29'46" | - | - | - | - |
| IP2 | 14.439 | 744.20.042 | 77699.755 | - | 13.250 | 3.006 | 25d33'58" | 5.912 |
| CT | 17.395 | 744.20.456 | 77702.733 | 7d55'48" | - | - | - | - |
| TC | 105.348 | 744.32.590 | 77789.844 | 7d55'48" | - | - | - | - |
| IP3 | 110.058 | 744.33.248 | 77794.565 | - | 25.000 | 4.766 | 21d35'18" | 9.420 |
| CT | 114.767 | 744.35.596 | 77798.712 | 29d31'05" | - | - | - | - |
| IP4 | 126.308 | 744.41.283 | 77808.755 | 29d31'05" | - | - | 0d00'01" | - |
| IP5 | 134.858 | 744.45.495 | 77816.196 | 29d31'05" | - | - | - | - |

GOLD COAST CITY COUNCIL
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FOR CONTINUATION REFER ABOVE

REVISIONS

| No | Description | Date | By |
|----|--|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | CHAINAGE LABEL AMENDED + STAGING & ROAD NAMES AMENDED | JUL 14 | NLS |

Associated Consultants

VDM CONSULTING **LANDPARTNERS**
Form landscape architects **DesignFlow**

Client

mirvac

Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director (EPRA) 13.8.14

Drawing Title
**SETOUT PLAN
SHEET 4 OF 4**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

| Scale | Sheet |
|-------|-----------|
| 1:500 | 54 of 137 |

| Drawing No | Revision |
|------------|----------|
| A1 | B |

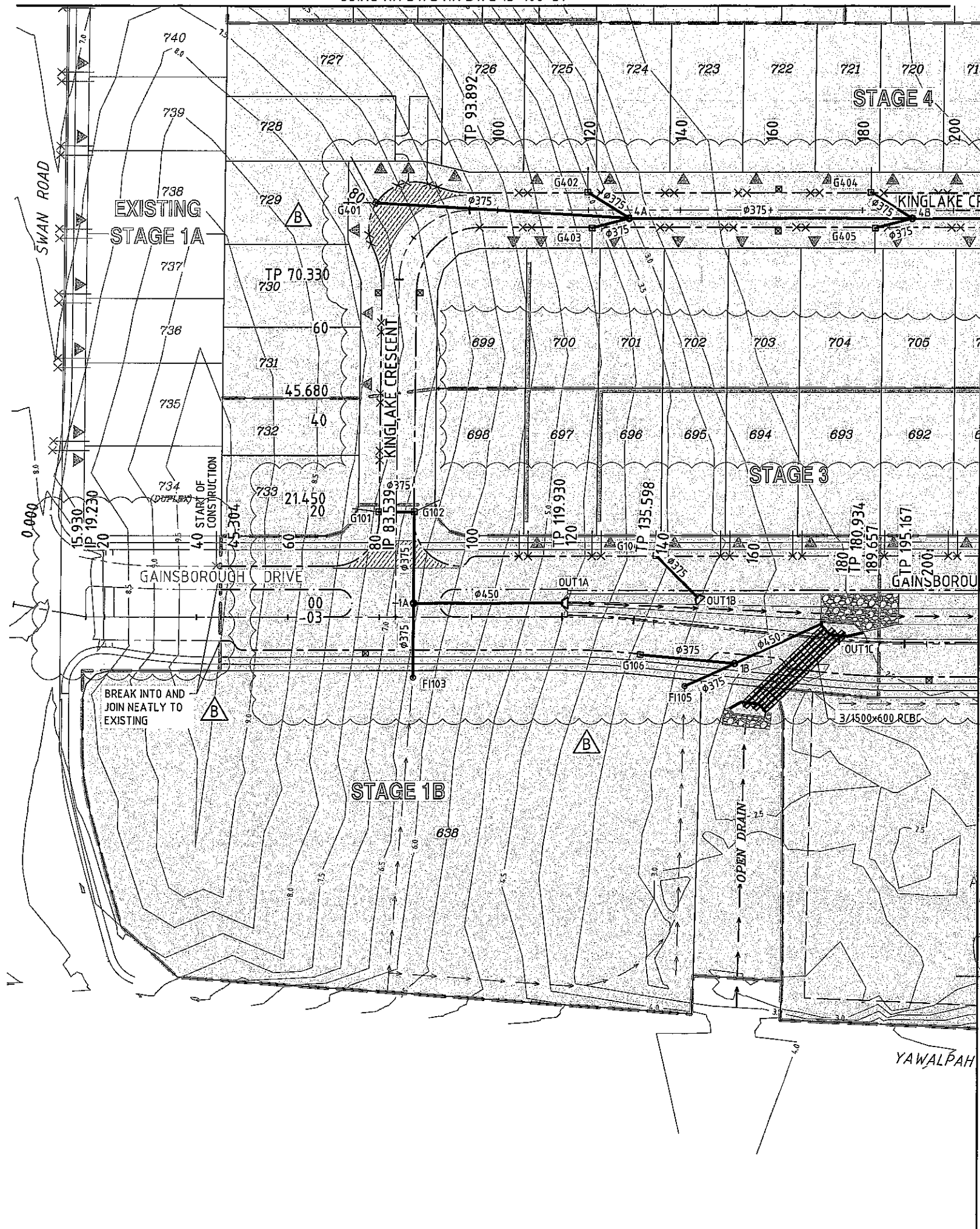
SETOUT PLAN
SCALE 1:500

JOINS KN DWG KN DWG 13-108-52

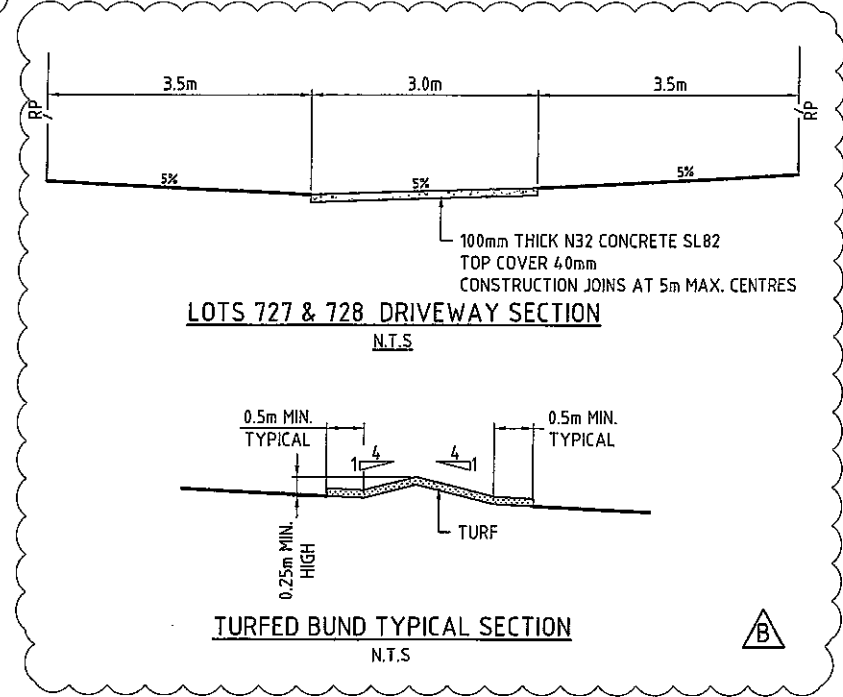
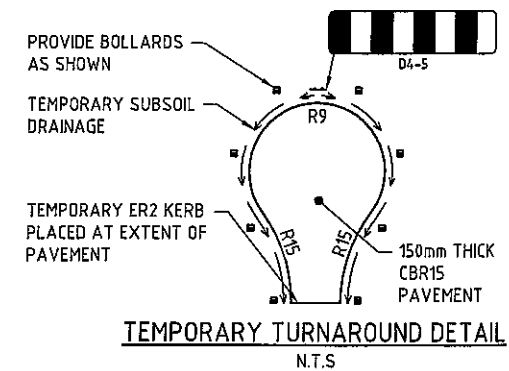
SCALE 1:500 (A1 UNREDUCED)

JOINS KN DWG KN DWG 13-108-53

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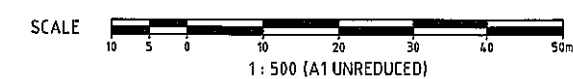
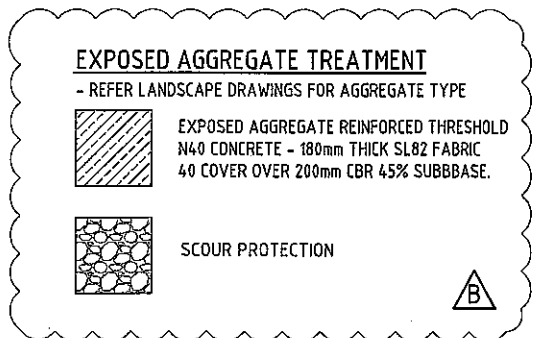
LAYOUT PLAN
SCALE 1:500



- LEGEND**
- STAGE BOUNDARY
 - TYPE 'J' BARRIER KERB & CHANNEL
 - TYPE 'G' BARRIER KERB
 - TYPE 'P' KERB EDGE RESTRAINT
 - NATURAL SURFACE
 - PROPOSED STORMWATER DRAINAGE
 - EARTH STORMWATER DIVERSION BUND
 - I-BEAM SLEEPER RETAINING WALL
 - DRIVEWAY POSITION
 - ▲ FLUSHING POINT (SIDEDRAIN)
 - ⊠ KERB ADAPTOR LOCATION
 - × 100Dia RW CONNECTOR TO KERB ADAPTOR
 - × 150Dia RW CONNECTOR TO GULLY PIT
 - G503 STORMWATER GULLY PIT NUMBER

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REVISIONS

| No | Description | Date | By |
|----|--|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | STORMWATER UPDATE ROAD NAMES & STAGING AMENDED | JUL 14 | NJS |

Associated Consultant

VDM CONSULTING **LANDPARTNERS**
Form **DesignFlow**
landscape architects



Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
CONSULTING ENGINEERS

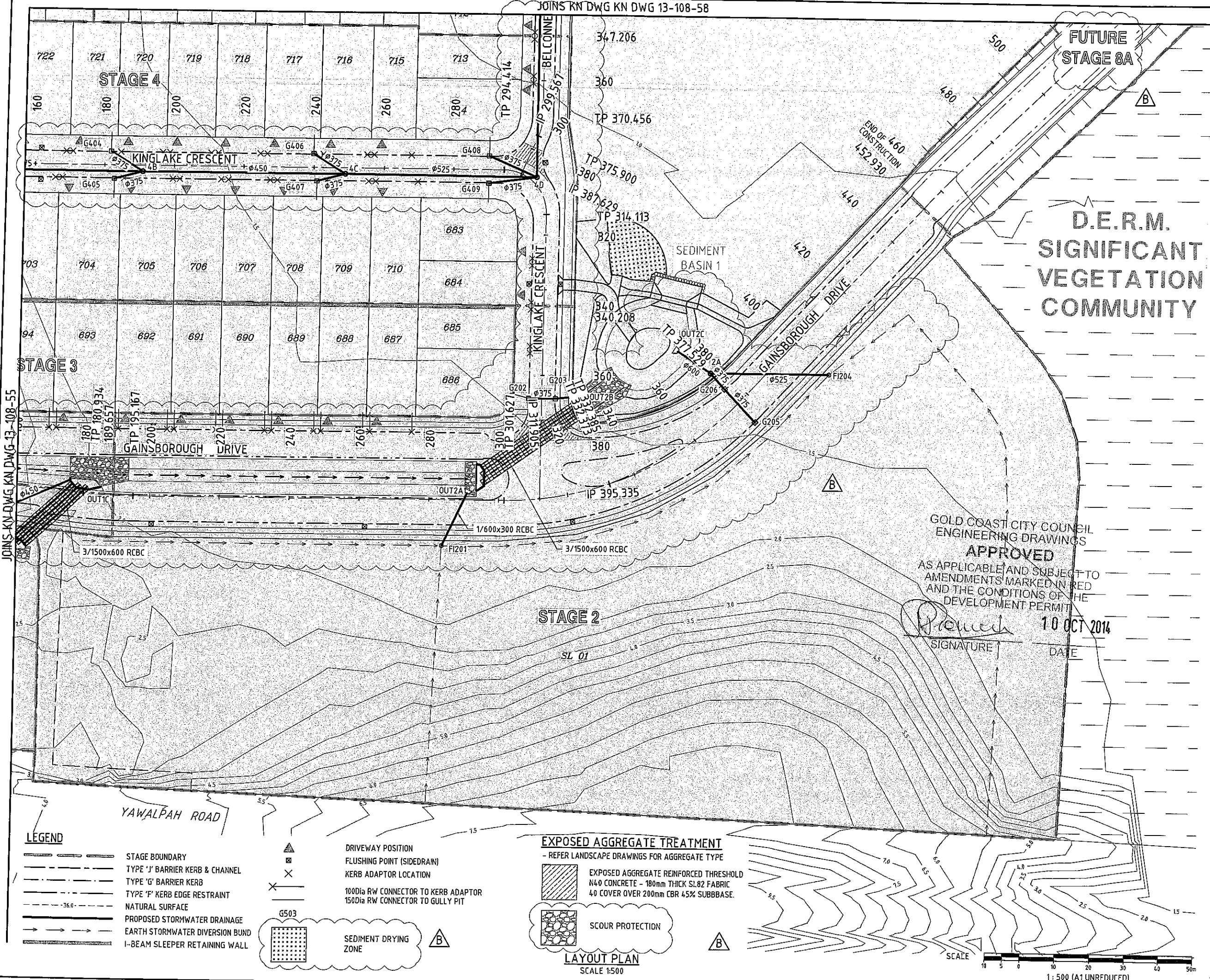
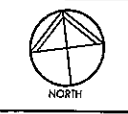
LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Designer - RBCA 1282
[Signature] 12.8.14

Drawn by
**LAYOUT PLAN
SHEET 1 OF 4**

| Drawn | Designed | Checked | Date |
|-------|------------|----------|----------|
| ES | CH | GBG | JUN 14 |
| Scale | Sheet | | Revision |
| 1:500 | 55 of 137 | | |
| A1 | Drawing No | Revision | |
| | 13-108-55 | B | |

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COMMUNITY**

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DEVELOPMENT PERMIT
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SIGNATURE DATE

REVISIONS

| No | Description | Date | By |
|----|--|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | STORMWATER UPDATED + ROAD NAMES AMENDED | JUL 14 | NJS |

Associated Consultants

Client

Project
**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

LEVEL 2 - 71 GREY STREET
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QUEENSLAND 4101
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FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director APES 1988
[Signature] 18.8.14
Drawing Title
**LAYOUT PLAN
SHEET 2 OF 4**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

| Scale | Sheet |
|-------|-----------|
| 1:500 | 56 of 137 |

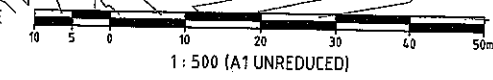
| Drawing No | Revision |
|------------|----------|
| 13-108-56 | B |

- LEGEND**
- STAGE BOUNDARY
 - TYPE 'J' BARRIER KERB & CHANNEL
 - TYPE 'G' BARRIER KERB
 - TYPE 'F' KERB EDGE RESTRAINT
 - NATURAL SURFACE
 - PROPOSED STORMWATER DRAINAGE
 - EARTH STORMWATER DIVERSION BUND
 - I-BEAM SLEEPER RETAINING WALL

- DRIVEWAY POSITION
- FLUSHING POINT (SIDEDRAIN)
- KERB ADAPTOR LOCATION
- 100Dia RW CONNECTOR TO KERB ADAPTOR
- 150Dia RW CONNECTOR TO GULLY PIT
- G503
- SEDIMENT DRYING ZONE

- EXPOSED AGGREGATE TREATMENT**
- REFER LANDSCAPE DRAWINGS FOR AGGREGATE TYPE
- EXPOSED AGGREGATE REINFORCED THRESHOLD
N40 CONCRETE - 180mm THICK SL82 FABRIC
40 COVER OVER 200mm CBR 45% SUBBASE.
 - SCOUR PROTECTION

LAYOUT PLAN
SCALE 1:500



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REVISIONS

| No | Description | Date | By |
|----|--|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | STORMWATER UPDATED + ROAD NAMES AMENDED | JUL 14 | NUS |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



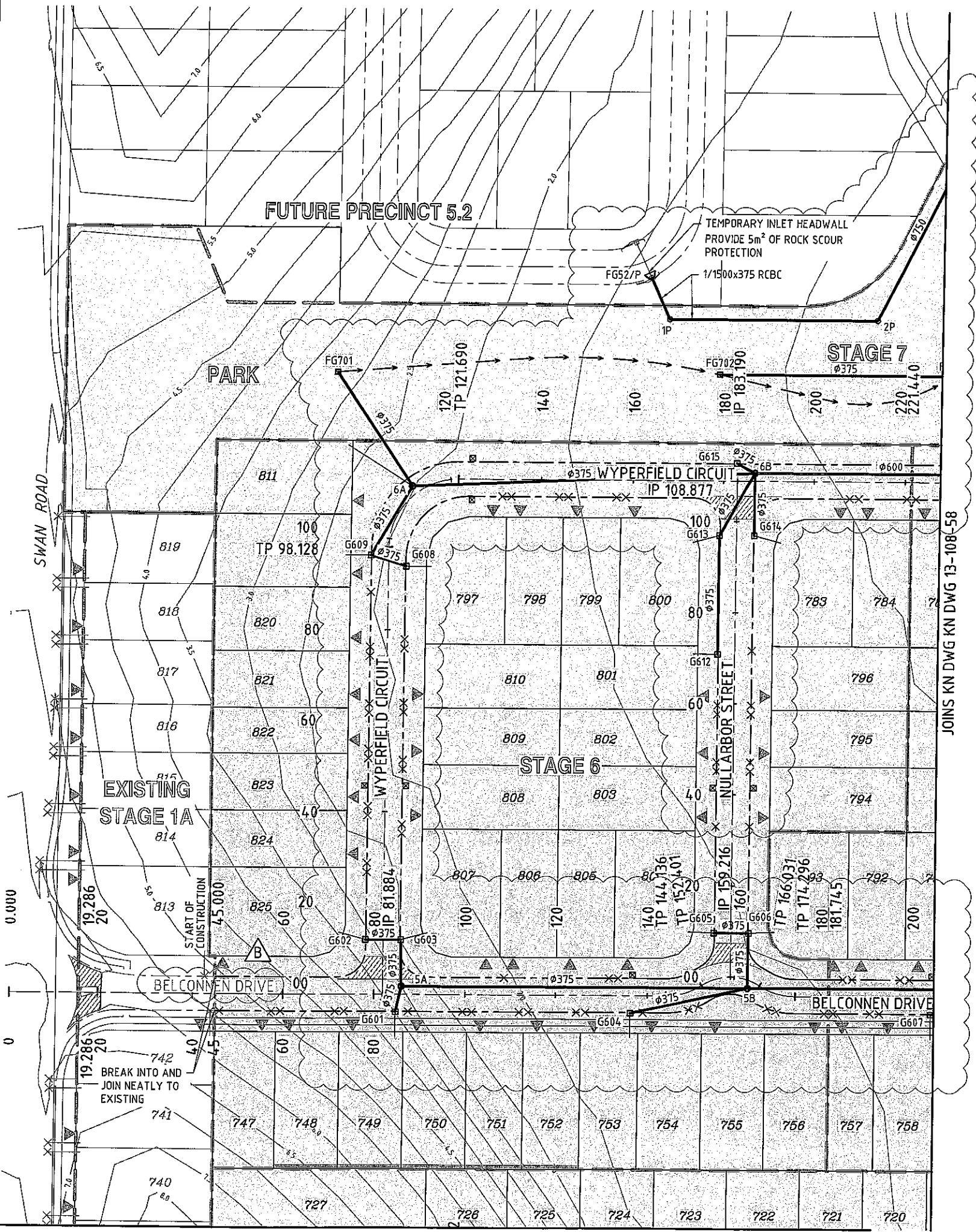
LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved Director BPEB 1988

Wahy 13.8.14

LAYOUT PLAN
SHEET 3 OF 4

| Drawn | Designed | Checked | Date |
|-------|--------------|-----------|----------|
| ES | CH | GBG | JUN 14 |
| Scale | Drawing No | Sheet | Revision |
| 1:500 | A1 13-108-57 | 57 of 137 | B |



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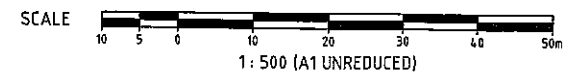
[Signature] 10 OCT 2014
SIGNATURE DATE

LEGEND

- STAGE BOUNDARY
- TYPE 'J' BARRIER KERB & CHANNEL
- TYPE 'G' BARRIER KERB
- TYPE 'F' KERB EDGE RESTRAINT
- NATURAL SURFACE
- PROPOSED STORMWATER DRAINAGE
- I-BEAM SLEEPER RETAINING WALL
- DRIVEWAY POSITION
- FLUSHING POINT (SIDEDRAIN)
- KERB ADAPTOR LOCATION
- 100Dia RW CONNECTOR TO KERB ADAPTOR
- 150Dia RW CONNECTOR TO GULLY PIT
- STORMWATER GULLY PIT NUMBER

EXPOSED AGGREGATE TREATMENT

- REFER LANDSCAPE DRAWINGS FOR AGGREGATE TYPE
- EXPOSED AGGREGATE REINFORCED THRESHOLD
M40 CONCRETE - 180mm THICK SL82 FABRIC
40 COVER OVER 200mm CBR 45% SUBBBASE.



LAYOUT PLAN
SCALE 1:500
JOINS KN DWG KN DWG 13-108-55

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NORTH

REVISIONS

| No | Description | Date | By |
|----|--|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | STORMWATER UPDATED + ROAD NAMES AMENDED | JUL 14 | NJS |

Associated Consultants

Clients

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

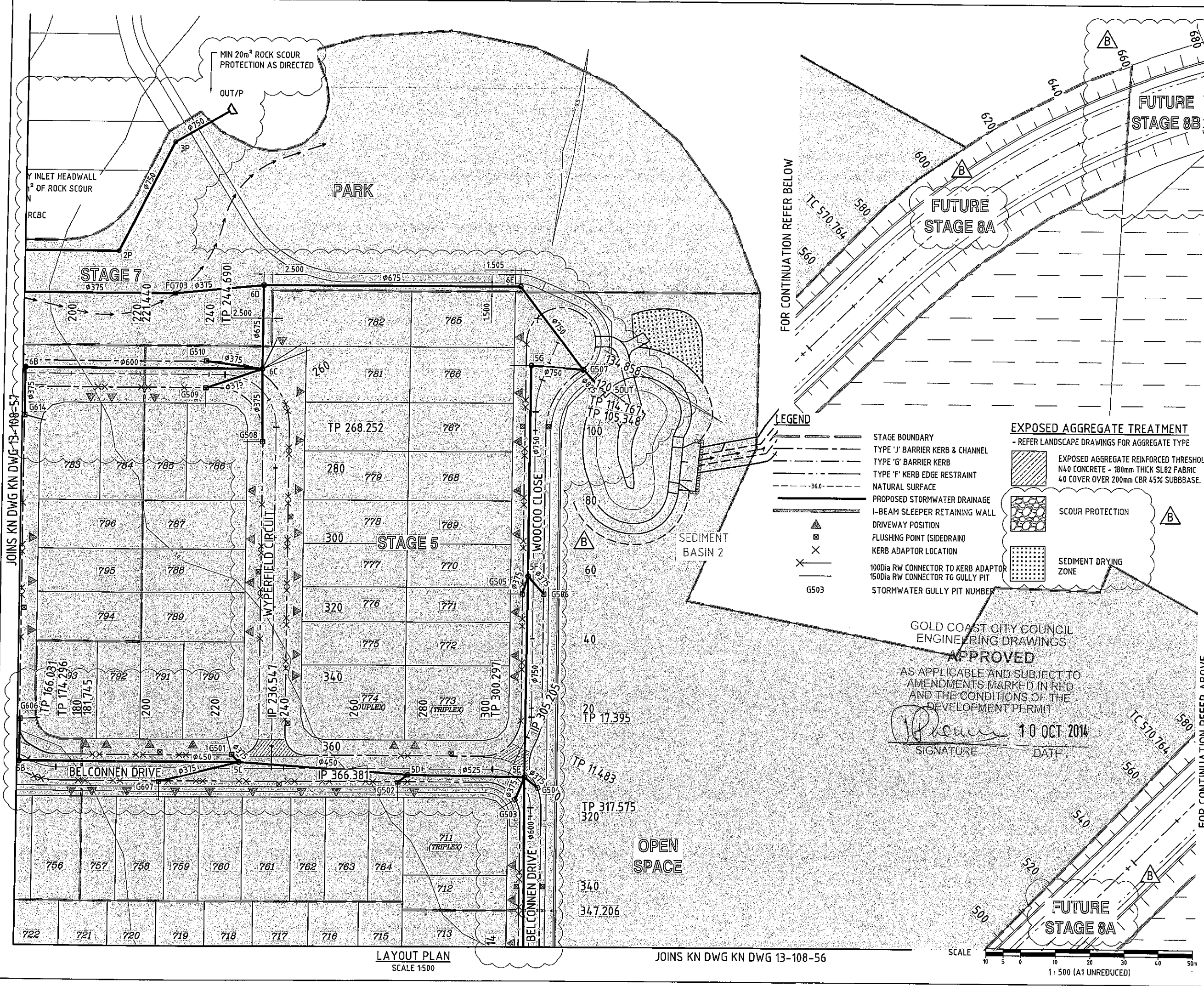
Approved Director: RPEG 1088
Signature 18.0.14

Drawing Title
**LAYOUT PLAN
SHEET 4 OF 4**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale
1:500

| Drawing No | Revision |
|------------|----------|
| A1 | B |



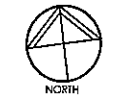
LAYOUT PLAN
SCALE 1:500

JOINS KN DWG KN DWG 13-108-56

JOINS KN DWG KN DWG 13-108-57

1:500 (A1 UNREDUCED)

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REVISIONS

| No | Description | Date | By |
|----|------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | G8G |
| B | ROAD NAMES & STAGING AMENDED | AUG 14 | ES |
| | | | |
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| | | | |
| | | | |

Associated Consultants

VIDM CONSULTING

LANDPARTNERS

Form landscape architects

DesignFlow

Client

mirvac

Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

Approved by: *[Signature]* 13.8.14

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved by: *[Signature]* 13.8.14

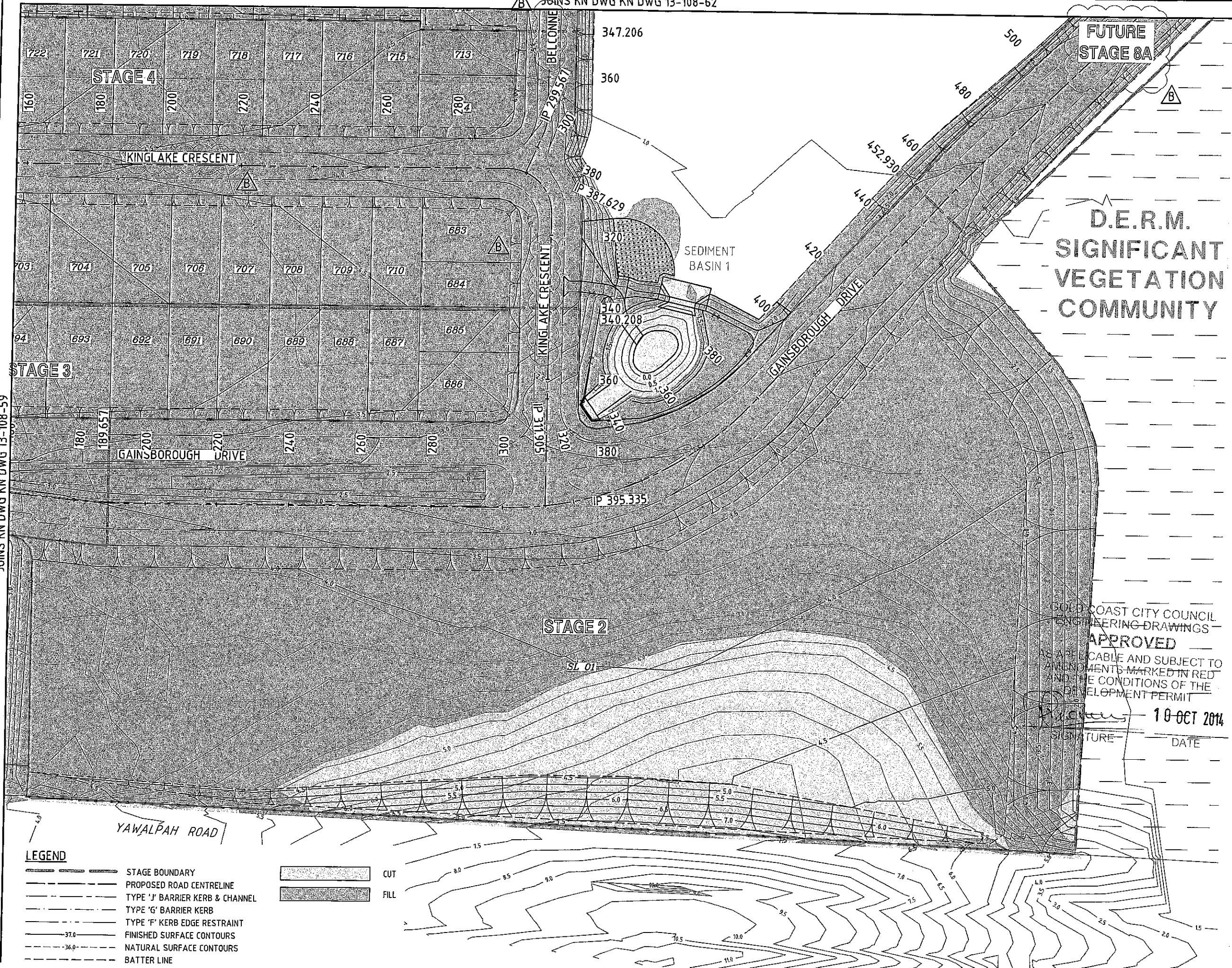
Drawing Title
**EARTHWORKS CONTOUR PLAN
SHEET 2 OF 4**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | G8G | JUN 14 |

| Scale | Sheet |
|-------|-----------|
| 1:500 | 60 of 137 |

| Revision | Drawing No | Date |
|----------|------------|------|
| A1 | 13-108-60 | B |

**D.E.R.M.
SIGNIFICANT
VEGETATION
COMMUNITY**

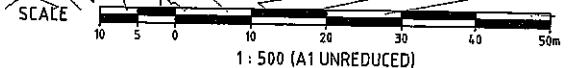


JOINS KN DWG KN DWG 13-108-59

LEGEND

| | | | |
|--|---------------------------------|--|------|
| | STAGE BOUNDARY | | CUT |
| | PROPOSED ROAD CENTRELIN | | FILL |
| | TYPE 'J' BARRIER KERB & CHANNEL | | |
| | TYPE 'G' BARRIER KERB | | |
| | TYPE 'F' KERB EDGE RESTRAINT | | |
| | FINISHED SURFACE CONTOURS | | |
| | NATURAL SURFACE CONTOURS | | |
| | BATTER LINE | | |
| | I-BEAM SLEEPER RETAINING WALL | | |

EARTHWORKS CONTOUR PLAN
SCALE 1:500



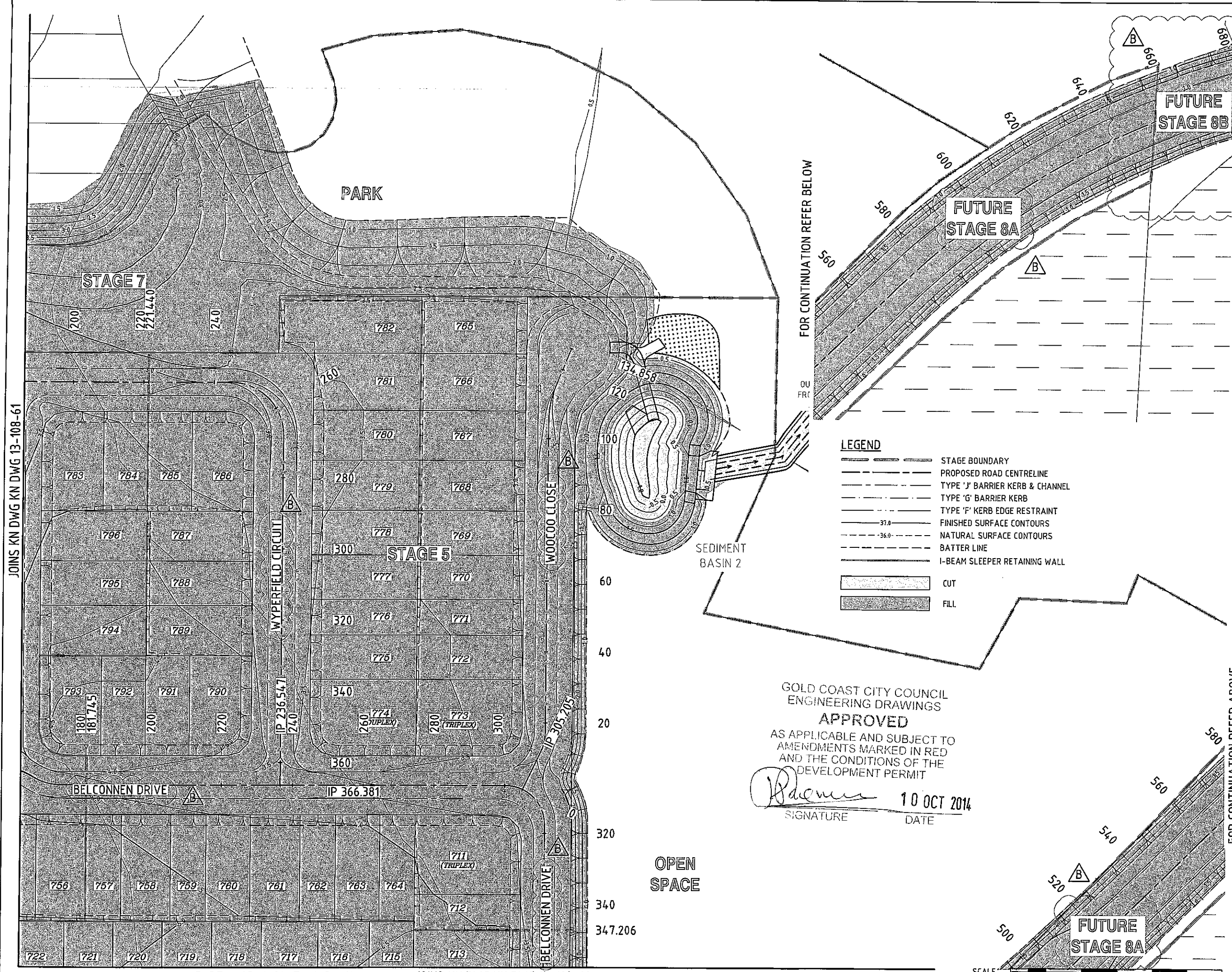
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[Signature] 10-OCT 2014

SIGNATURE DATE

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JOINS KN DWG KN DWG 13-108-61

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FOR CONTINUATION REFER BELOW

LEGEND

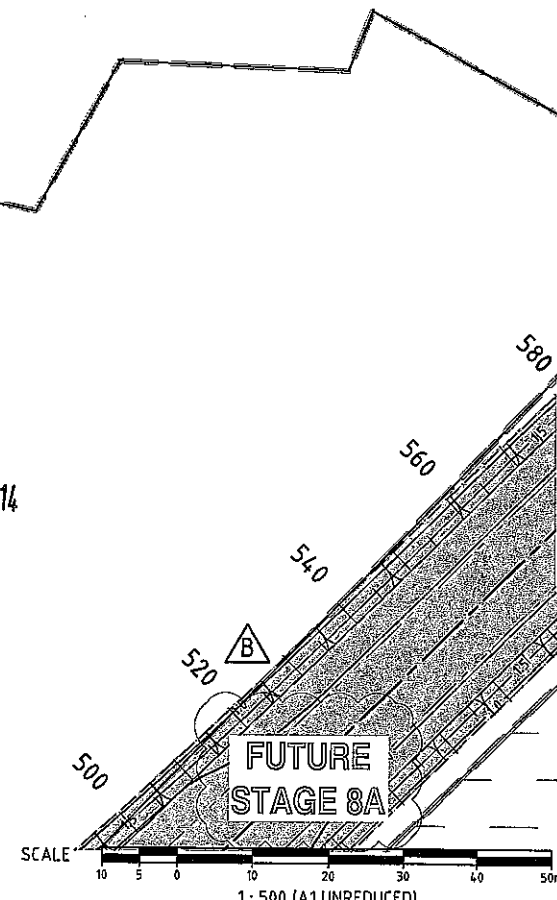
- STAGE BOUNDARY
- PROPOSED ROAD CENTRELINE
- TYPE 'J' BARRIER KERB & CHANNEL
- TYPE 'G' BARRIER KERB
- TYPE 'F' KERB EDGE RESTRAINT
- 37.0 FINISHED SURFACE CONTOURS
- 36.0 NATURAL SURFACE CONTOURS
- BATTER LINE
- I-BEAM SLEEPER RETAINING WALL

- [Pattern] CUT
- [Pattern] FILL

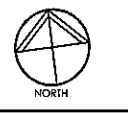
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Raemon 10 OCT 2014
SIGNATURE DATE

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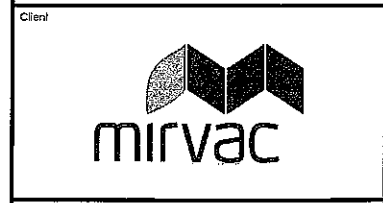


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REVISIONS

| No | Description | Date | By |
|----|------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES & STAGING AMENDED | AUG 14 | ES |



Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

KN GROUP PTY LTD
CONSULTING ENGINEERS
LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Drawing No. 13-108-62
Drawing Title
EARTHWORKS CONTOUR PLAN
SHEET 4 OF 4

| | | | |
|-----------------------------|----------------|----------------|--------------------|
| Drawn ES | Designed CH | Checked GBG | Date JUN 14 |
| Scale 1:500 | | | Sheet 62 of 137 |
| Drawing No. A1 13-108-62 | | Revision B | |

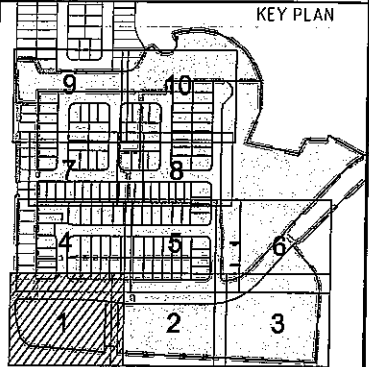
EARTHWORKS CONTOUR PLAN
SCALE 1:500

JOINS KN DWG KN DWG 13-108-60

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KEY PLAN



REVISIONS

| No | Description | Date | By |
|----|------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SCALE AMENDED | AUG 14 | ES |
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| | | | |

Associated Consultants

Client

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

LEVEL 2 - 71 GREY STREET
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EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved Director: *[Signature]* 18.08.14

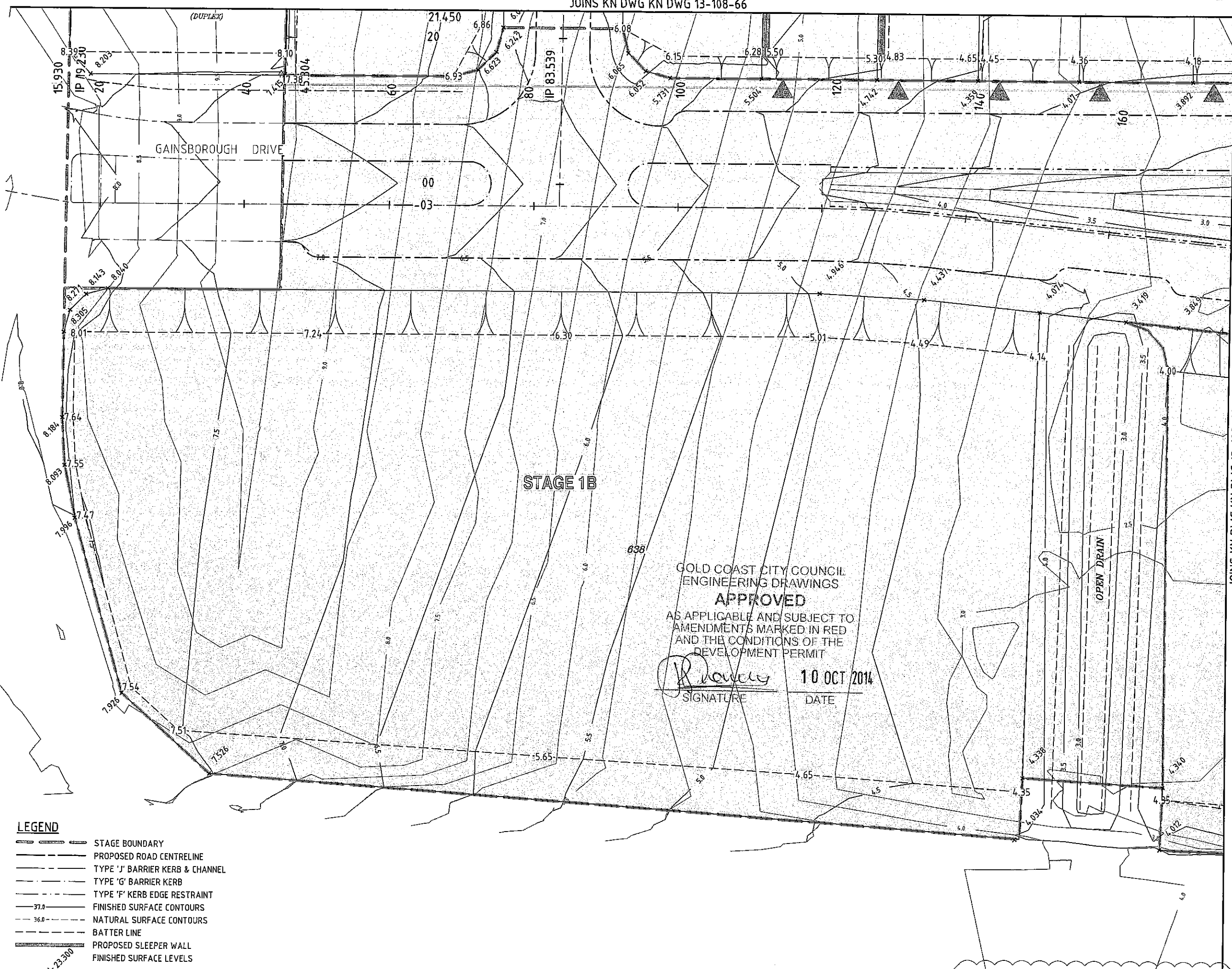
Drawing Title
**EARTHWORKS
SPOT LEVELS PLAN
SHEET 1 OF 10**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale
1:250

| Sheet | Revision |
|-----------|----------|
| 63 of 137 | |

| Drawing No | Revision |
|------------|----------|
| A1 | B |

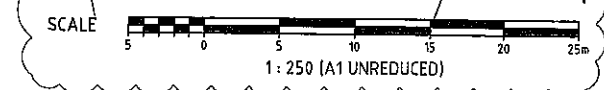


- LEGEND**
- STAGE BOUNDARY
 - PROPOSED ROAD CENTRELINE
 - TYPE 'J' BARRIER KERB & CHANNEL
 - TYPE 'G' BARRIER KERB
 - TYPE 'F' KERB EDGE RESTRAINT
 - 37.0 FINISHED SURFACE CONTOURS
 - 36.0 NATURAL SURFACE CONTOURS
 - BATTER LINE
 - PROPOSED SLEEPER WALL
 - FINISHED SURFACE LEVELS

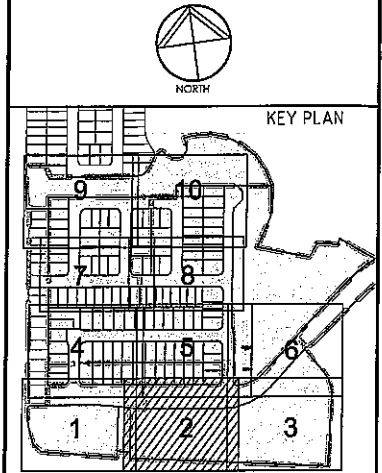
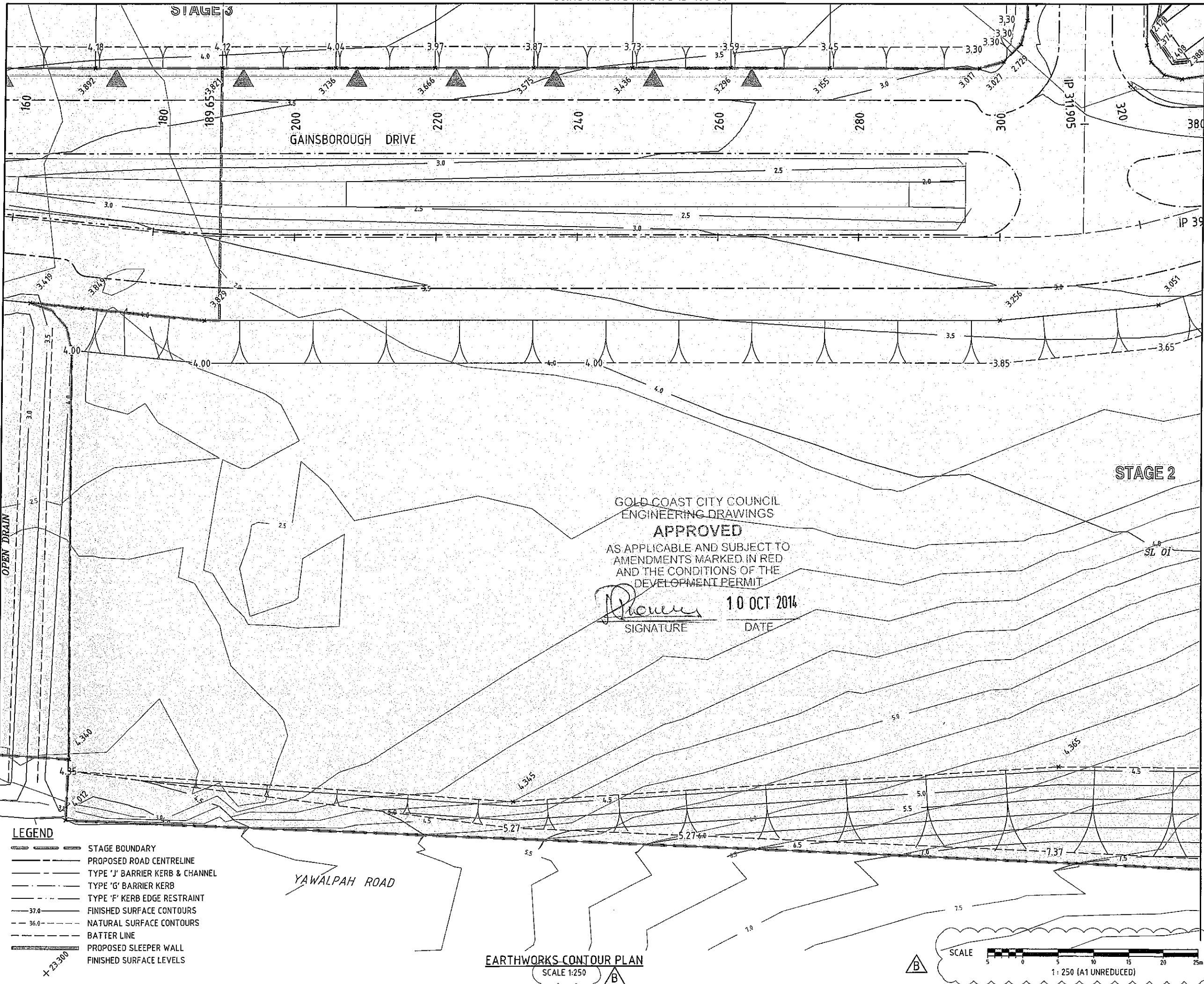
GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED
AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

[Signature] 10 OCT 2014
SIGNATURE DATE

EARTHWORKS CONTOUR PLAN
SCALE 1:250



JOINS KN DWG KN DWG 13-108-64



REVISIONS

| No | Description | Date | By |
|----|------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SCALE AMENDED | AUG 14 | ES |

Associated Consultants

Client

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved *[Signature]* 13-8-14

Drawing Title
**EARTHWORKS
SPOT LEVELS PLAN
SHEET 2 OF 10**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

| Scale | Sheet |
|-------|-----------|
| 1:250 | 64 of 137 |

| Drawing No | Revision |
|------------|----------|
| A1 | B |

JOINS KN DWG KN DWG 13-108-63

JOINS KN DWG KN DWG 13-108-65

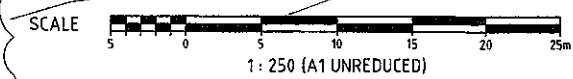
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- LEGEND**
- STAGE BOUNDARY
 - PROPOSED ROAD CENTRELINE
 - TYPE 'J' BARRIER KERB & CHANNEL
 - TYPE 'G' BARRIER KERB
 - TYPE 'F' KERB EDGE RESTRAINT
 - 37.0 FINISHED SURFACE CONTOURS
 - 36.0 NATURAL SURFACE CONTOURS
 - BATTER LINE
 - PROPOSED SLEEPER WALL
 - FINISHED SURFACE LEVELS

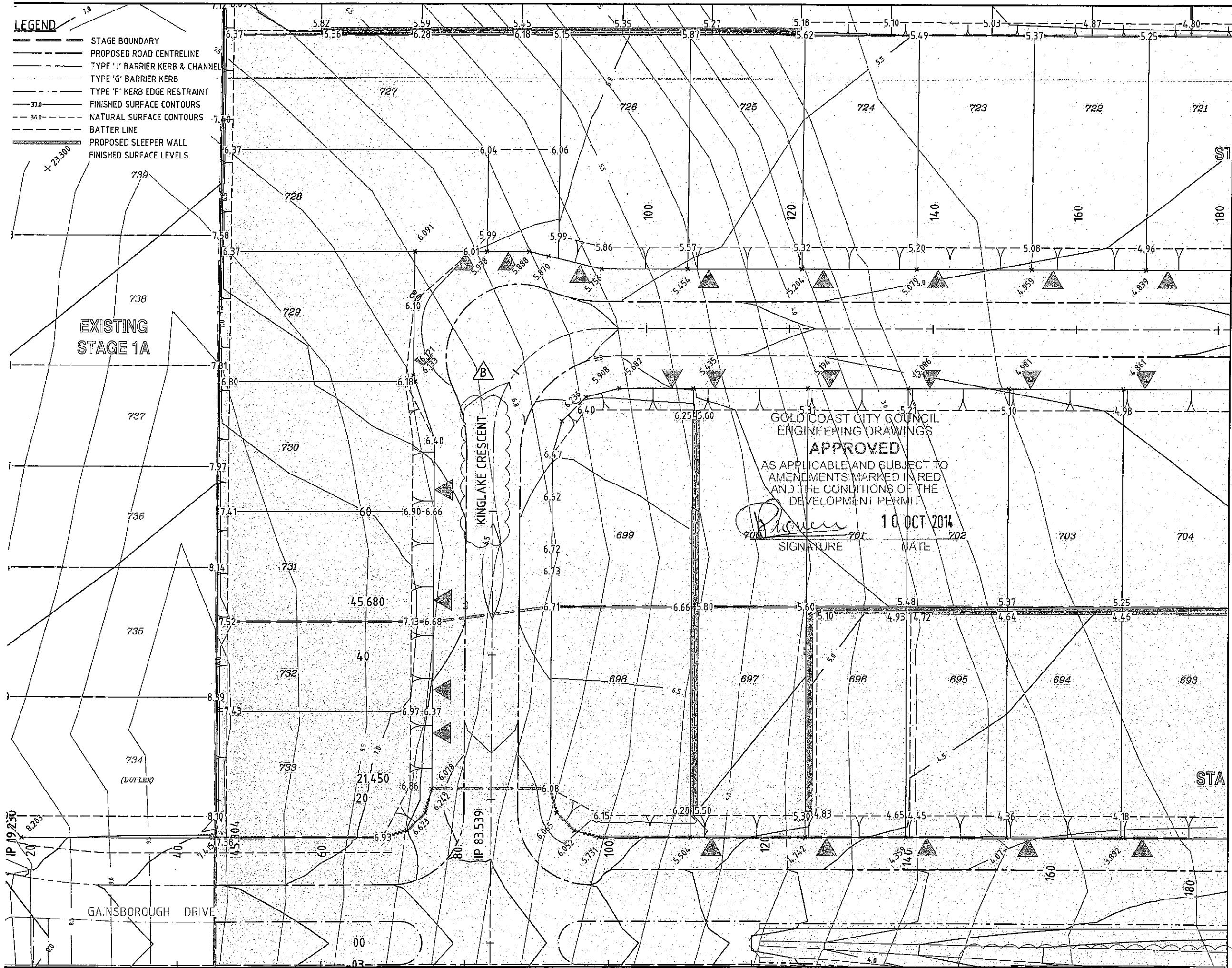
GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED
AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

[Signature] 10 OCT 2014
SIGNATURE DATE

EARTHWORKS CONTOUR PLAN
SCALE 1:250

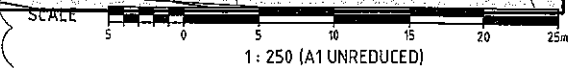


- LEGEND**
- STAGE BOUNDARY
 - PROPOSED ROAD CENTRELINE
 - TYPE 'J' BARRIER KERB & CHANNEL
 - TYPE 'G' BARRIER KERB
 - TYPE 'F' KERB EDGE RESTRAINT
 - 37.0 FINISHED SURFACE CONTOURS
 - 36.0 NATURAL SURFACE CONTOURS
 - BATTER LINE
 - PROPOSED SLEEPER WALL
 - FINISHED SURFACE LEVELS

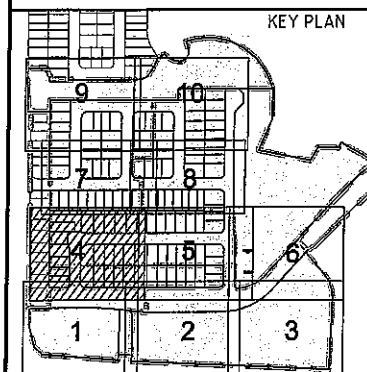


EARTHWORKS CONTOUR PLAN
SCALE 1:250

JOINS KN DWG KN DWG 13-108-63



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REVISIONS

| No | Description | Date | By |
|----|----------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES & SCALE AMENDED | AUG 14 | ES |

Associated Consultants

VDM CONSULTING **LANDPARTNERS**
Form **DesignFlow**
landscape architects

Client

mirvac

Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Drawing - RPEA 18.8.14

Drawing Title
**EARTHWORKS
SPOT LEVELS PLAN
SHEET 4 OF 10**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale
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| Sheet | Revision |
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| 66 of 137 | B |

Drawing No
13-108-66

JOINS KN DWG KN DWG 13-108-67

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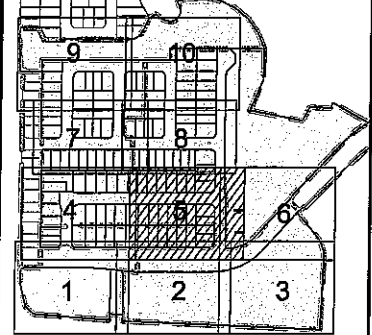
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- STAGE BOUNDARY
- PROPOSED ROAD CENTRELINE
- TYPE 'J' BARRIER KERB & CHANNEL
- TYPE 'G' BARRIER KERB
- TYPE 'F' KERB EDGE RESTRAINT
- 37.0 FINISHED SURFACE CONTOURS
- 36.0 NATURAL SURFACE CONTOURS
- BATTER LINE
- PROPOSED SLEEPER WALL
- FINISHED SURFACE LEVELS

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KEY PLAN



REVISIONS

| No | Description | Date | By |
|----|----------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES & SCALE AMENDED | AUG 14 | ES |
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Associated Consultants

VDM CONSULTING **LANDPARTNERS**
Form **DesignFlow**
 landscape architects **landscape architects**

Client

mirvac

Project

GAINSBOROUGH GREENS PRECINCT 5.1 STAGE 1B TO STAGE 7

KN GROUP PTY LTD
 CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
 SOUTH BRISBANE
 QUEENSLAND 4101
 PHONE 07 3017 1900
 FAX 07 3017 1911
 EMAIL kng@knpl.com.au
 ABN 35 112 053 611

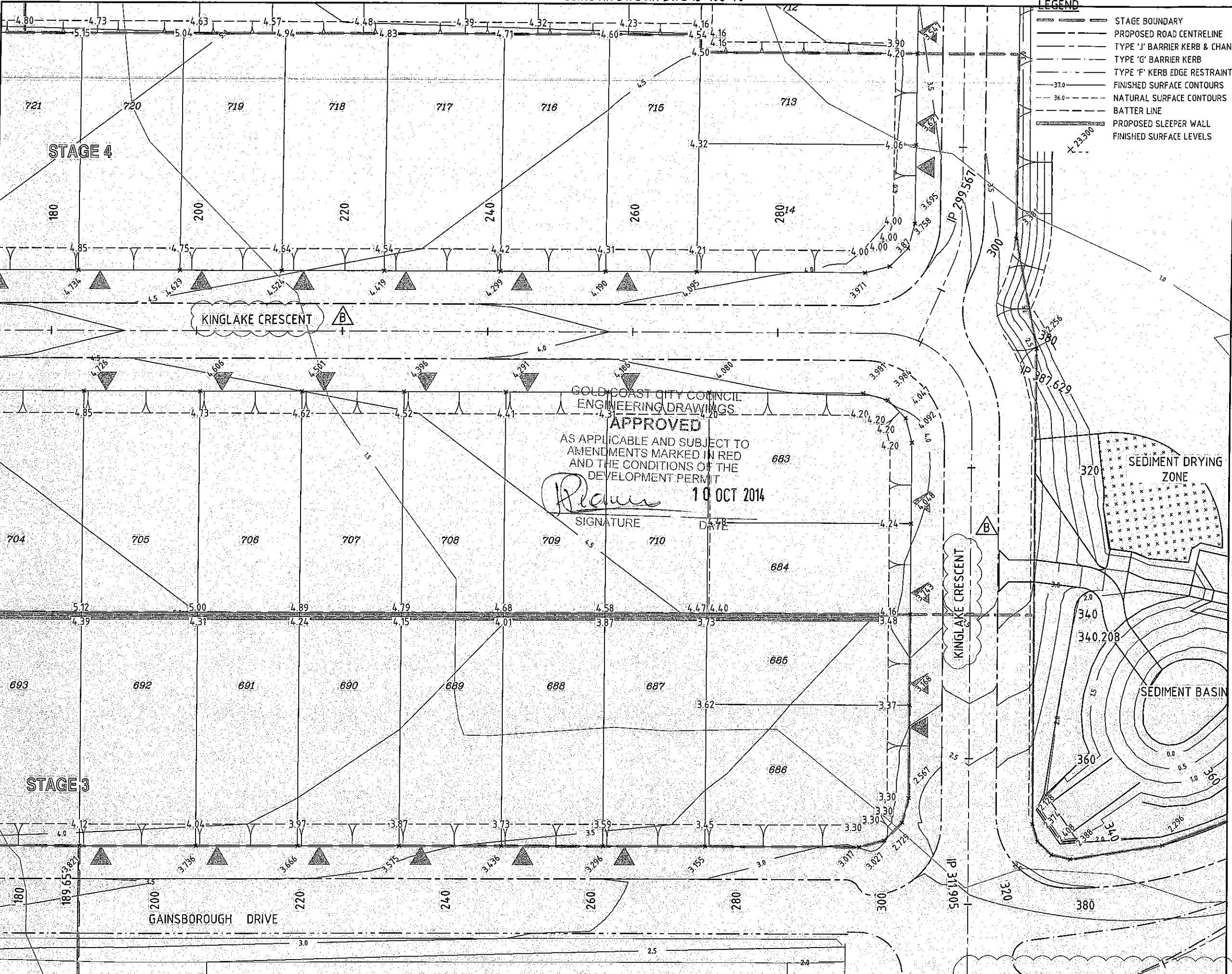
Approved Director - PREG-1088
 Drawing Title
EARTHWORKS SPOT LEVELS PLAN SHEET 5 OF 10

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale
 1:250
 Drawing No
 13-108-67
 Revision
 B

JOINS KN DWG KN DWG 13-108-66

JOINS KN DWG KN DWG 13-108-68



GOLD COAST CITY COUNCIL
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 AMENDMENTS MARKED IN RED
 AND THE CONDITIONS OF THE
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Planner
 SIGNATURE DATE
10 OCT 2014

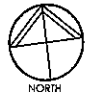
EARTHWORKS CONTOUR PLAN
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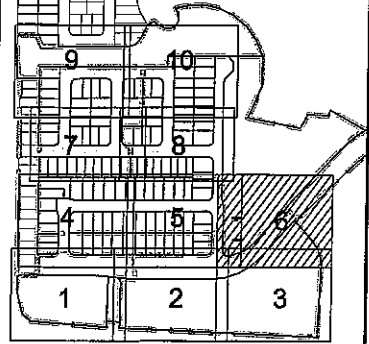
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KEY PLAN



REVISIONS

| No | Description | Date | By |
|----|-----------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | LABELS ADDED, SCALE AMENDED | /07/14 | NJS |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
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PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved by - RPEQ 1988

[Signature] 18.6.14

Drawing Title
**EARTHWORKS
SPOT LEVELS PLAN
SHEET 6 OF 10**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

| Scale | Sheet |
|-------|-----------|
| 1:250 | 68 of 137 |

| Drawing No | Revision |
|------------|----------|
| A1 | B |

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED

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AND THE CONDITIONS OF THE
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[Signature]

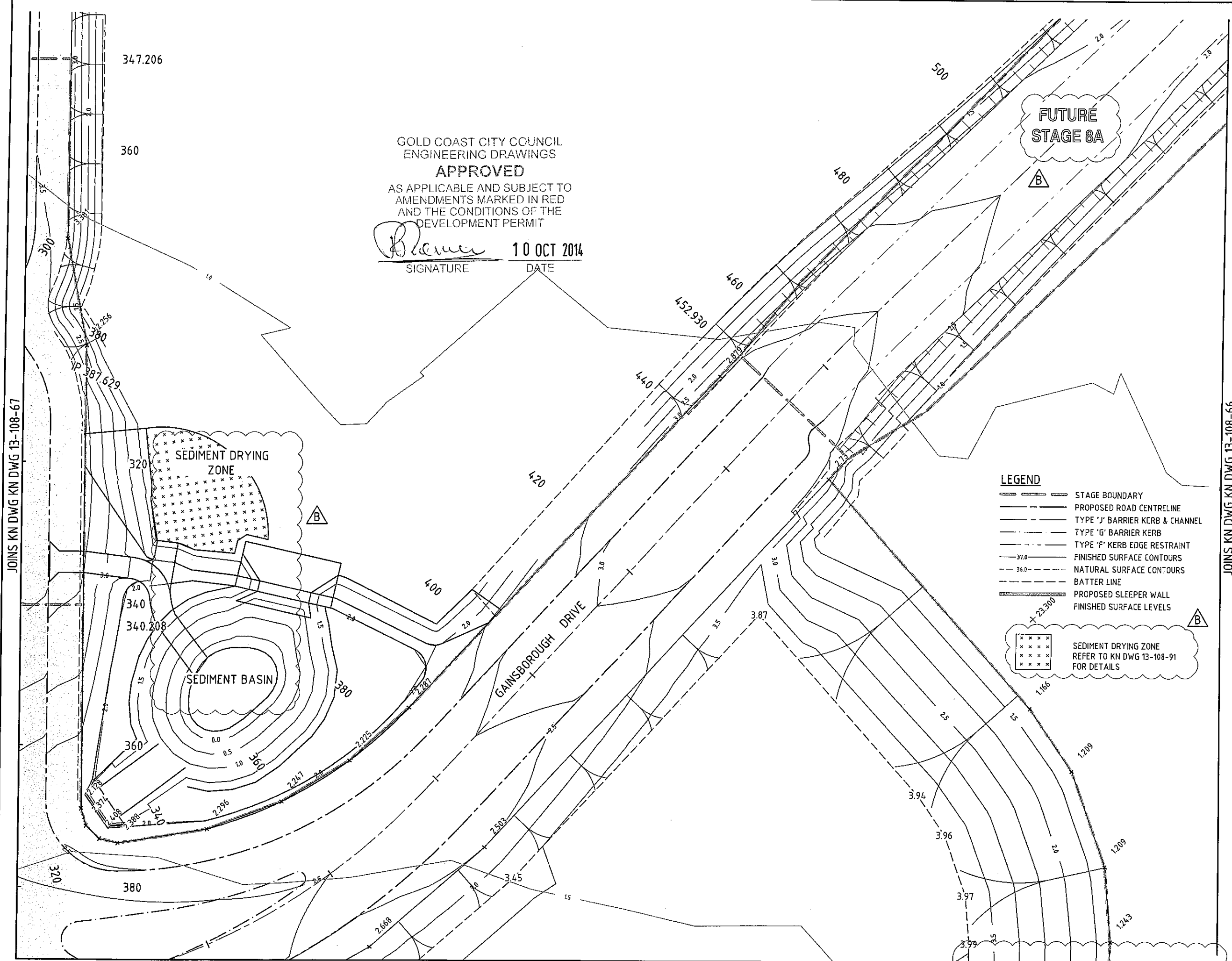
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SIGNATURE

DATE

JOINS KN DWG KN DWG 13-108-67

JOINS KN DWG KN DWG 13-108-66



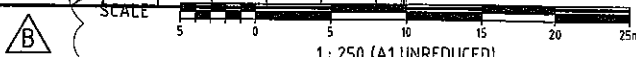
LEGEND

- STAGE BOUNDARY
- PROPOSED ROAD CENTRELINE
- TYPE 'J' BARRIER KERB & CHANNEL
- TYPE 'G' BARRIER KERB
- TYPE 'F' KERB EDGE RESTRAINT
- FINISHED SURFACE CONTOURS
- NATURAL SURFACE CONTOURS
- BATTER LINE
- PROPOSED SLEEPER WALL
- FINISHED SURFACE LEVELS

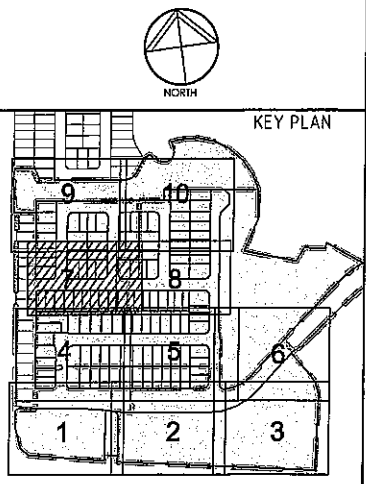
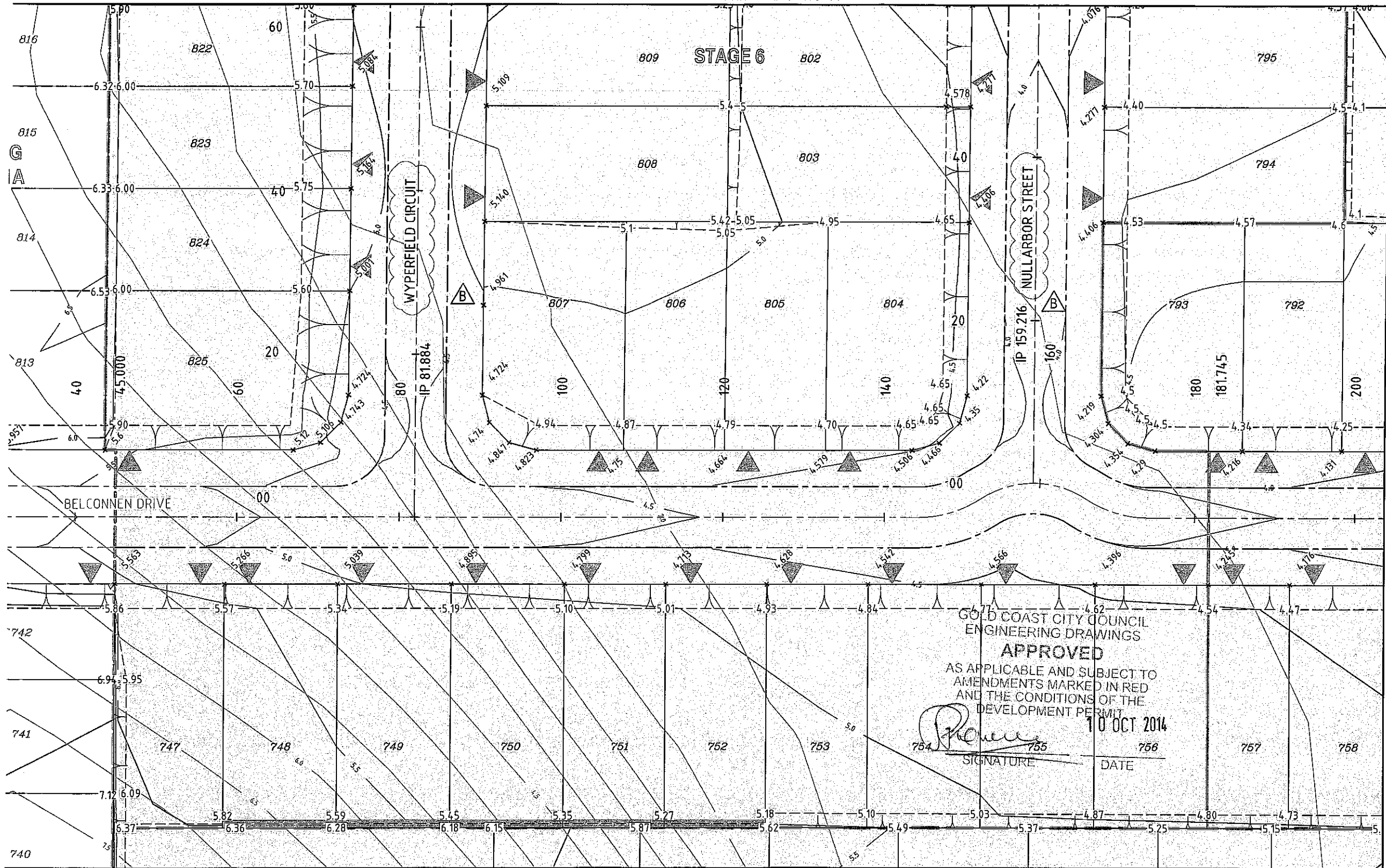
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REFER TO KN DWG 13-108-91
FOR DETAILS

EARTHWORKS CONTOUR PLAN
SCALE 1:250

JOINS KN DWG KN DWG 13-108-65



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REVISIONS

| No | Description | Date | By |
|----|----------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES & SCALE AMENDED | AUG 14 | ES |

Associated Consultants



Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Drawing - R13-108-69

Drawn by: *[Signature]* 13-8-14

EARTHWORKS
SPOT LEVELS PLAN
SHEET 7 OF 10

| Drawn | Designed | Checked | Date |
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| ES | CH | GBG | JUN 14 |

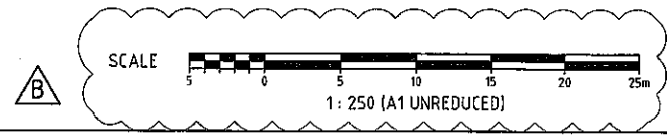
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| 1:250 | 69 of 137 |

| Drawing No | Revision |
|------------|----------|
| A1 | B |

JOINS KN DWG KN DWG 13-108-66

EARTHWORKS CONTOUR PLAN
SCALE 1:250

- LEGEND**
- STAGE BOUNDARY
 - PROPOSED ROAD CENTRELINE
 - TYPE 'J' BARRIER KERB & CHANNEL
 - TYPE 'G' BARRIER KERB
 - TYPE 'F' KERB EDGE RESTRAINT
 - FINISHED SURFACE CONTOURS
 - NATURAL SURFACE CONTOURS
 - BATTER LINE
 - PROPOSED SLEEPER WALL
 - FINISHED SURFACE LEVELS

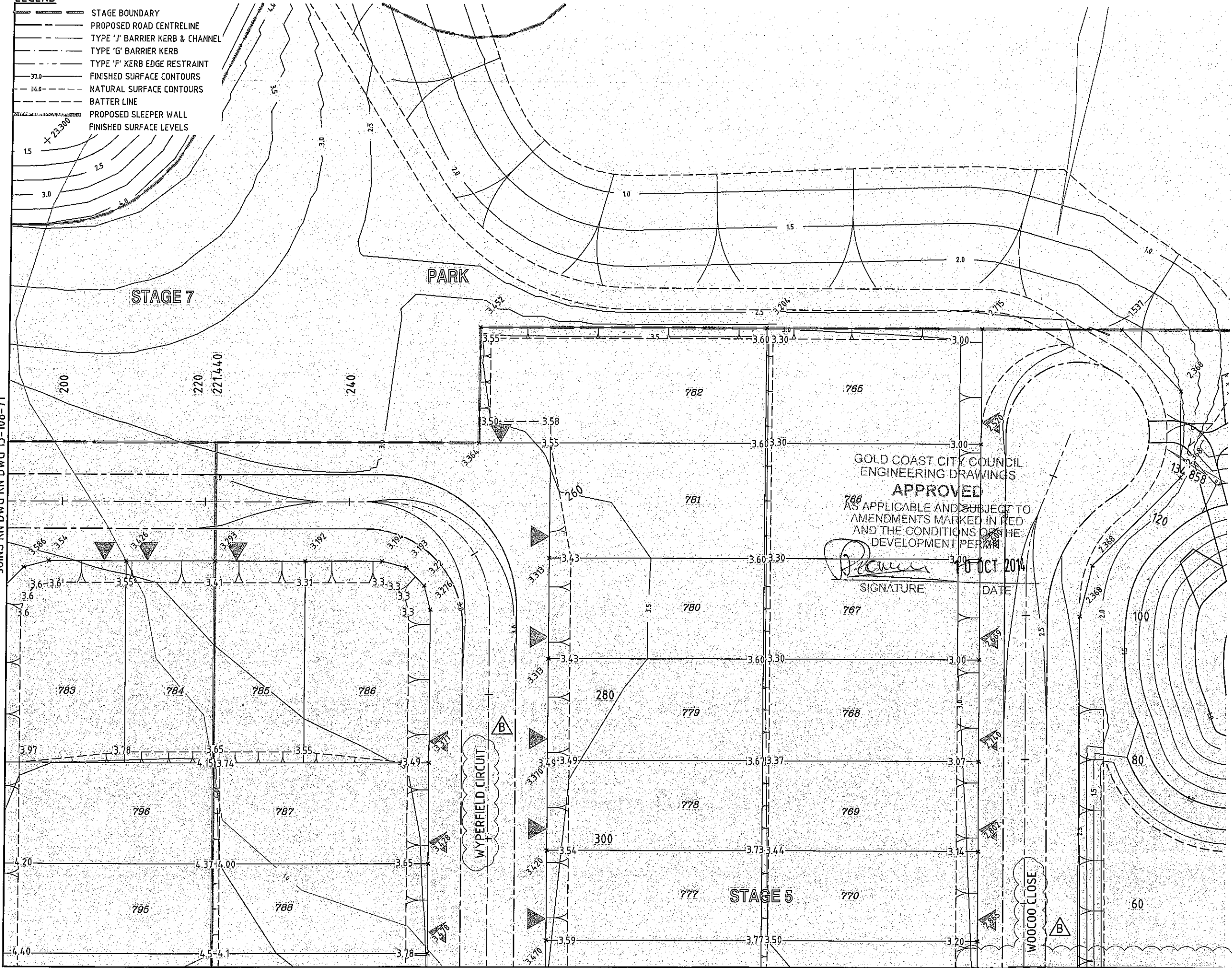


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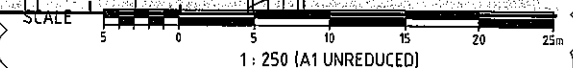
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- PROPOSED ROAD CENTRELINE
- TYPE 'J' BARRIER KERB & CHANNEL
- TYPE 'G' BARRIER KERB
- TYPE 'F' KERB EDGE RESTRAINT
- FINISHED SURFACE CONTOURS
- NATURAL SURFACE CONTOURS
- BATTER LINE
- PROPOSED SLEEPER WALL
- FINISHED SURFACE LEVELS

JOINS KN DWG KN DWG 13-108-71



EARTHWORKS CONTOUR PLAN
SCALE 1:250

JOINS KN DWG KN DWG 13-108-70



GOLD COAST CITY COUNCIL
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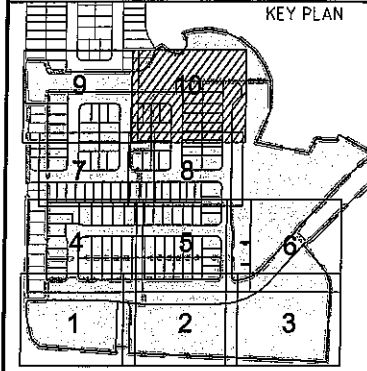
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SIGNATURE

10 OCT 2014
DATE

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KEY PLAN



REVISIONS

| No | Description | Date | By |
|----|----------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES & SCALE AMENDED | AUG 14 | ES |

Associated Consultants

VDM
CONSULTING

LANDPARTNERS
land development consultants

Form
landscape architects

DesignFlow
landscape architects

Client

mirvac

Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved Director - RPEQ #1968
[Signature] 18/6/14

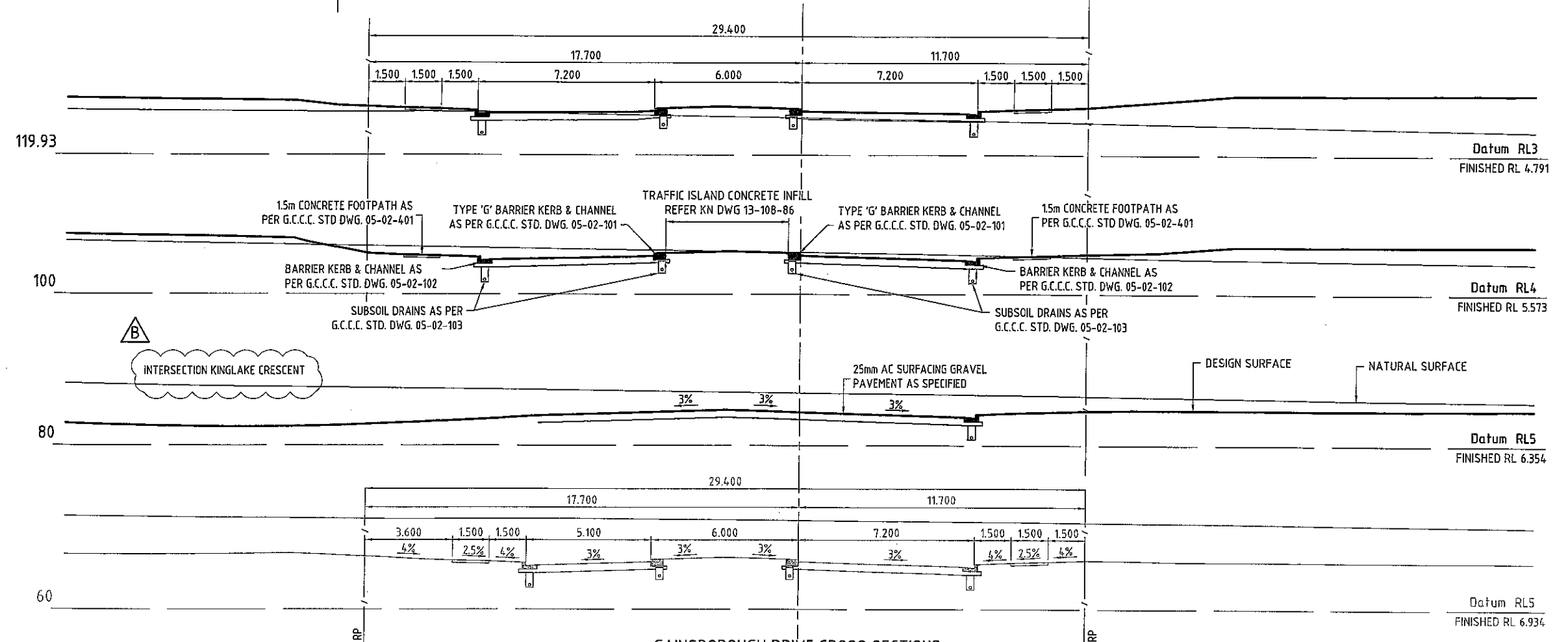
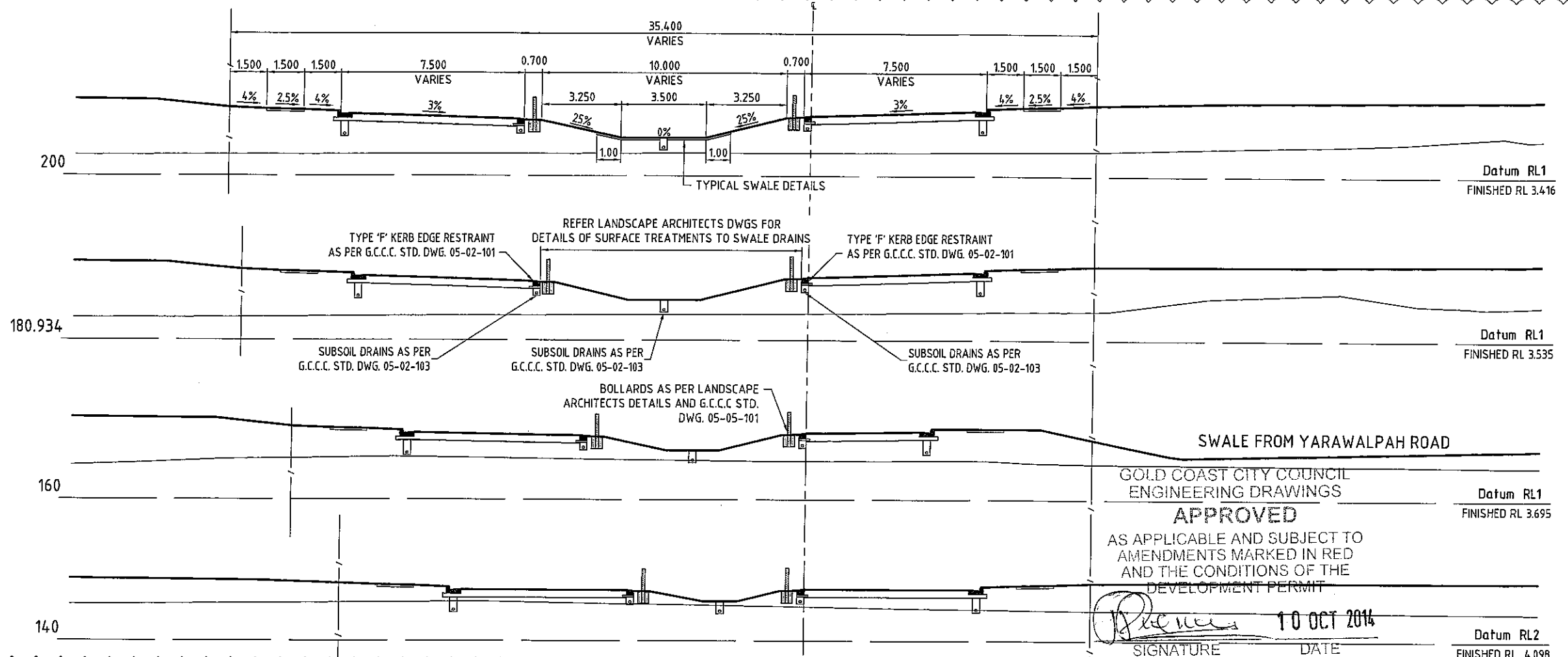
Drawn by
**EARTHWORKS
SPOT LEVELS PLAN
SHEET 10 OF 10**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale 1:250 Sheet 72 of 137

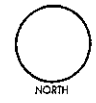
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B



GAINSBOROUGH DRIVE CROSS SECTIONS
SCALE 1:100

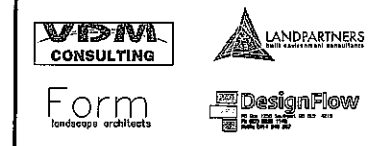
DO NOT SCALE THIS DRAWING
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REVISIONS

| No | Description | Date | By |
|----|---|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | BOLLARDS AND SWALE DETAIL ADDED + FINISHED SURFACE AMENDED | JUL 14 | NJS |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved Director - RPS 1999
Signature 18-8-14

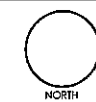
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**ROADWORKS CROSS SECTIONS -
GAINSBOROUGH DRIVE
SHEET 1 OF 3**

| Drawn | Designed | Checked | Date |
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| ES | CH | GBG | JUN 14 |
| Scale AS SHOWN | | | Sheet 74 of 137 |
| Revision A1 | | Drawing No 13-108-74 | Revision B |

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NORTH

INTERSECTION KINGLAKE CRESCENT

320

Datum RL0
FINISHED RL 2.7

INTERSECTION KINGLAKE CRESCENT

311.905

Datum RL0
FINISHED RL 2.74

TYPE 'G' BARRIER KERB & CHANNEL
AS PER G.C.C.C. STD. DWG. 05-02-101

TRAFFIC ISLAND CONCRETE INFILL
REFER KN DWG 13-108-86

TYPE 'G' BARRIER KERB & CHANNEL
AS PER G.C.C.C. STD. DWG. 05-02-101

SUBSOIL DRAINS AS PER
G.C.C.C. STD. DWG. 05-02-103

SUBSOIL DRAINS AS PER
G.C.C.C. STD. DWG. 05-02-103

301.627

Datum RL0
FINISHED RL 2.791

REVISIONS

| No | Description | Date | By |
|----|---|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | BOLLARDS ADDED, ROAD NAMES & FINISHED SURFACE AMENDED | JUL 14 | NJS |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved Director - RBE 1988

Drawn Title

ROADWORKS CROSS SECTIONS -
GAINSBOROUGH DRIVE
SHEET 2 OF 3

| Drawn | Designed | Checked | Date |
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| ES | CH | GBG | JUN 14 |

Scale AS SHOWN Sheet 75 of 137

| AS | Drawing No | Revision |
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| A1 | 13-108-75 | B |

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
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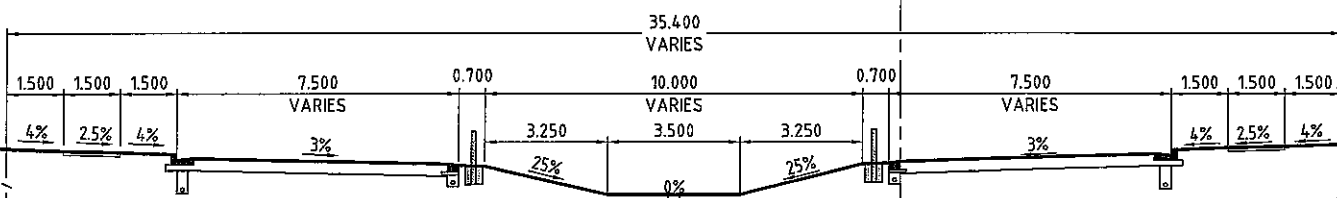
Proven 10 OCT 2014
SIGNATURE DATE

280

Datum RL0
FINISHED RL 2.915

260

Datum RL0
FINISHED RL 3.04



240

Datum RL0
FINISHED RL 3.165

1.5m CONCRETE FOOTPATH AS
PER G.C.C.C. STD DWG. 05-02-401

TYPE 'F' KERB EDGE RESTRAINT
AS PER G.C.C.C. STD. DWG. 05-02-101

REFER LANDSCAPE ARCHITECTS DWGS FOR
DETAILS OF SURFACE TREATMENTS TO SWALE DRAINS

TYPE 'F' KERB EDGE RESTRAINT
AS PER G.C.C.C. STD. DWG. 05-02-101

1.5m CONCRETE FOOTPATH AS
PER G.C.C.C. STD DWG. 05-02-401

DESIGN SURFACE

BARRIER KERB & CHANNEL AS
PER G.C.C.C. STD. DWG. 05-02-102

TYPE 'F' KERB EDGE RESTRAINT
AS PER G.C.C.C. STD. DWG. 05-02-101

REFER LANDSCAPE ARCHITECTS DWGS FOR
DETAILS OF SURFACE TREATMENTS TO SWALE DRAINS

TYPE 'F' KERB EDGE RESTRAINT
AS PER G.C.C.C. STD. DWG. 05-02-101

BARRIER KERB & CHANNEL AS
PER G.C.C.C. STD. DWG. 05-02-102

NATURAL SURFACE

SUBSOIL DRAINS AS PER
G.C.C.C. STD. DWG. 05-02-103

SUBSOIL DRAINS AS PER
G.C.C.C. STD. DWG. 05-02-103

SUBSOIL DRAINS AS PER
G.C.C.C. STD. DWG. 05-02-103

220

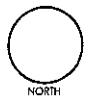
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GAINSBOROUGH DRIVE CROSS SECTIONS

SCALE 1:100

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NORTH

REVISIONS

| No | Description | Date | By |
|----|--------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES AMENDED | AUG 14 | ES |

Associated Consultants

Client




Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director:  13-8-19

Drawing Title
**ROADWORKS
CROSS SECTIONS -
BELCONNEN DRIVE**

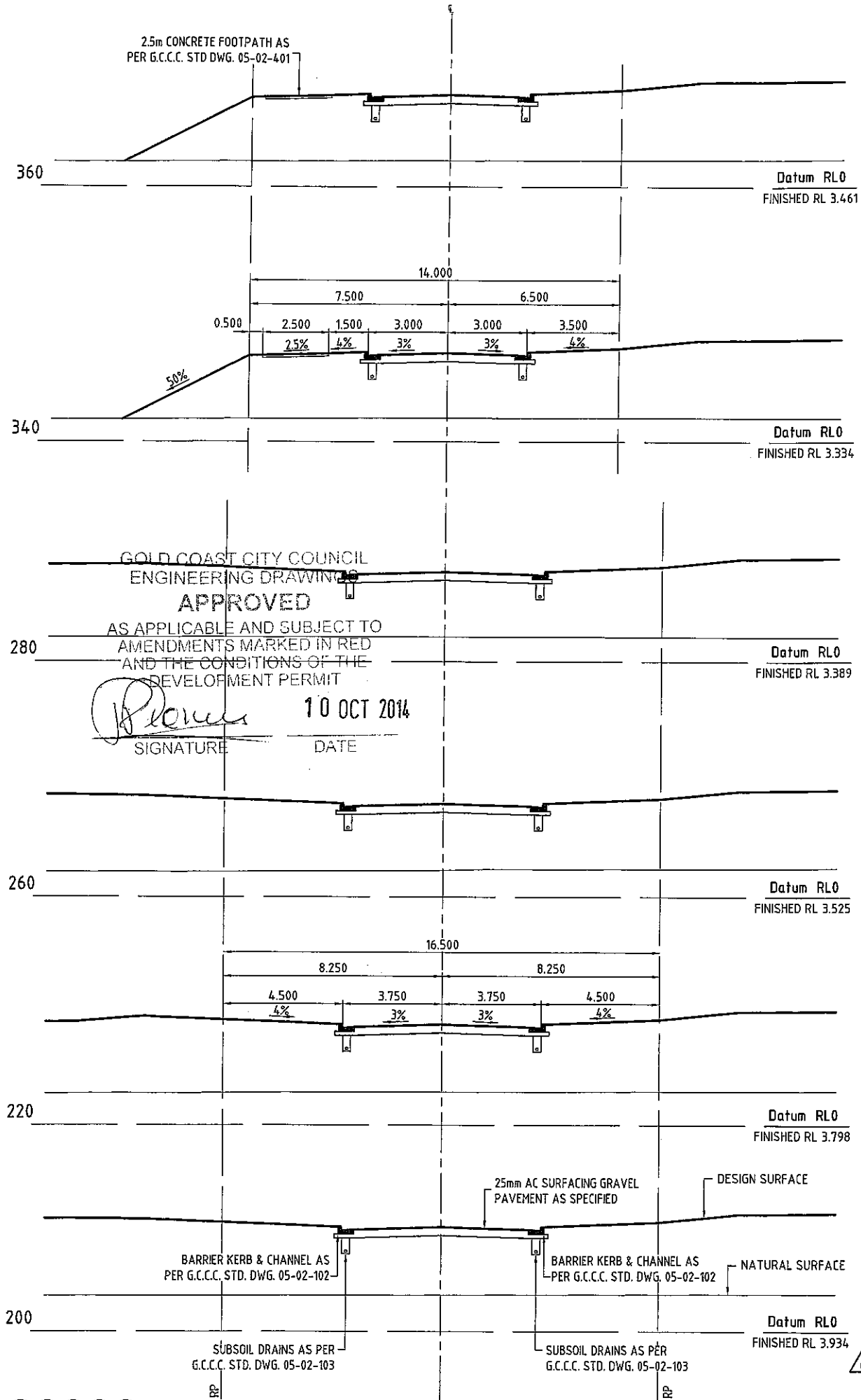
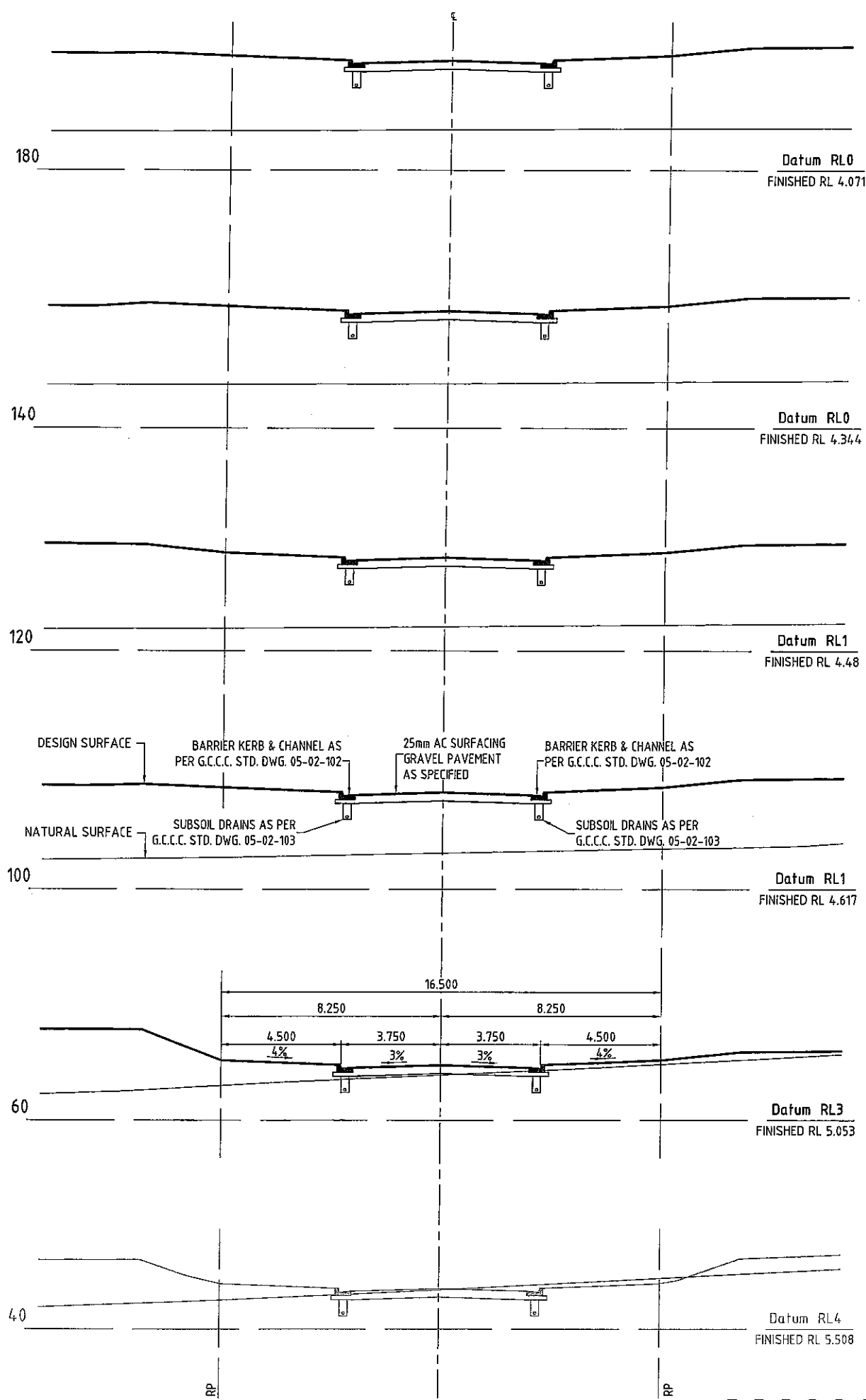
| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale
AS SHOWN

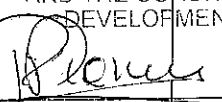
| Sheet | Revision |
|-----------|----------|
| 78 of 137 | |
| | |

Drawing No
A1 13-108-78

Revision
B



GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED
AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

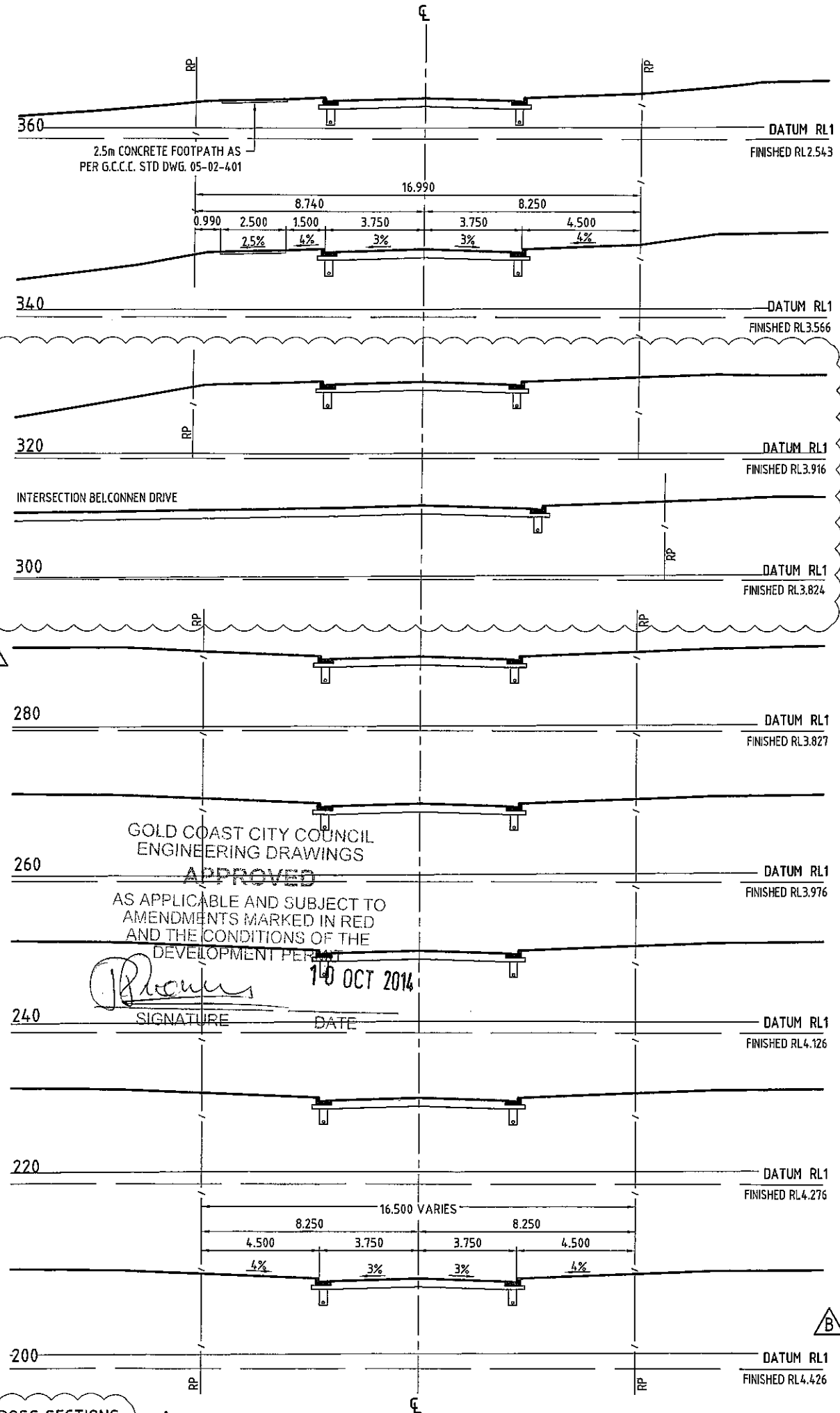
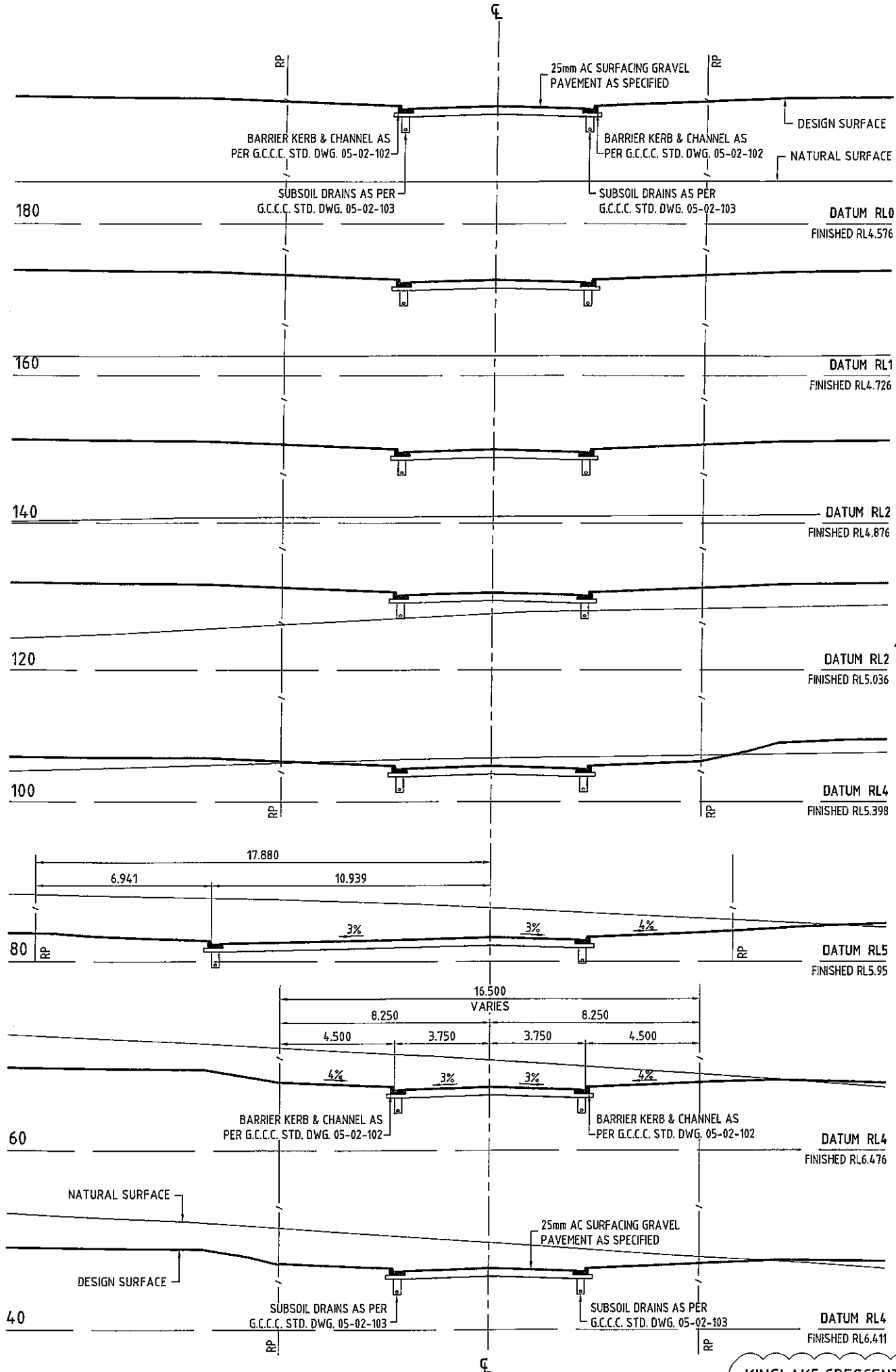
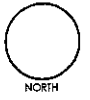
 **10 OCT 2014**
SIGNATURE DATE

BELCONNEN DRIVE CROSS SECTIONS
SCALE 1:100



NORTH

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!



KINGLAKE CRESCENT CROSS SECTIONS
SCALE 1:100

REVISIONS

| No | Description | Date | By |
|----|--|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | CH300 & CH320 ADDED, + ROAD NAMES AMENDED | JUL 14 | NJS |

Associated Consultants

Client

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved Director / RPEQ 1988
Handwritten signature 18-6-14
Drawing Title
**ROADWORKS
CROSS SECTIONS -
KINGLAKE CRESCENT**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale
AS SHOWN

| Sheet | Revision |
|-----------|----------|
| 80 of 137 | B |

| Drawing No | Revision |
|------------|----------|
| A1 | B |

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED
AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT
Handwritten signature 14 OCT 2014
SIGNATURE DATE

EXPOSED AGGREGATE TREATMENT

- REFER LANDSCAPE DRAWINGS FOR AGGREGATE TYPE

EXPOSED AGGREGATE REINFORCED THRESHOLD
N40 CONCRETE - 180mm THICK SL82 FABRIC
40 COVER OVER 200mm CBR 45% SUBBASE.

GENERAL NOTES

1. SETOUT POINTS ARE GIVEN AT KERB LIP LEVELS.
2. KERB LIP LEVELS ARE GIVEN AT QUARTER POINTS, TP'S AND EQUAL PARTS U.M.O.
3. KERB RADII AND OFFSETS ARE GIVEN TO THE KERB FACE.
4. EXTRA DETAIL FOR SETTING OUT IS AVAILABLE ON CAD FILE.
5. JOIN NEATLY TO EXISTING CONSTRUCTION
6. CONCRETE INFILL TO ISLANDS

LEGEND

- PROPOSED ROAD CENTRELINE
- BARRIER KERB AND CHANNEL TYPE J
- MOUNTABLE KERB TYPE F
- MOUNTABLE KERB TYPE G
- SW PROPOSED STORMWATER DRAINAGE
- 36.0 FINISHED SURFACE CONTOURS
- 3.000 OFFSET TO KERB FACE
- PROPOSED EDGE OF BITUMEN
- EXISTING EDGE OF BITUMEN

NOTE

FOR CONCRETE INFILL AND THRESHOLD TREATMENT DETAILS REFER KN DWG 13-108-86

DO NOT SCALE THIS DRAWING IF IN DOUBT - ASK!



REVISIONS

| No | Description | Date | By |
|----|---------------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES, CONTOURS & LEVELS AMENDED | AUG 14 | ND |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

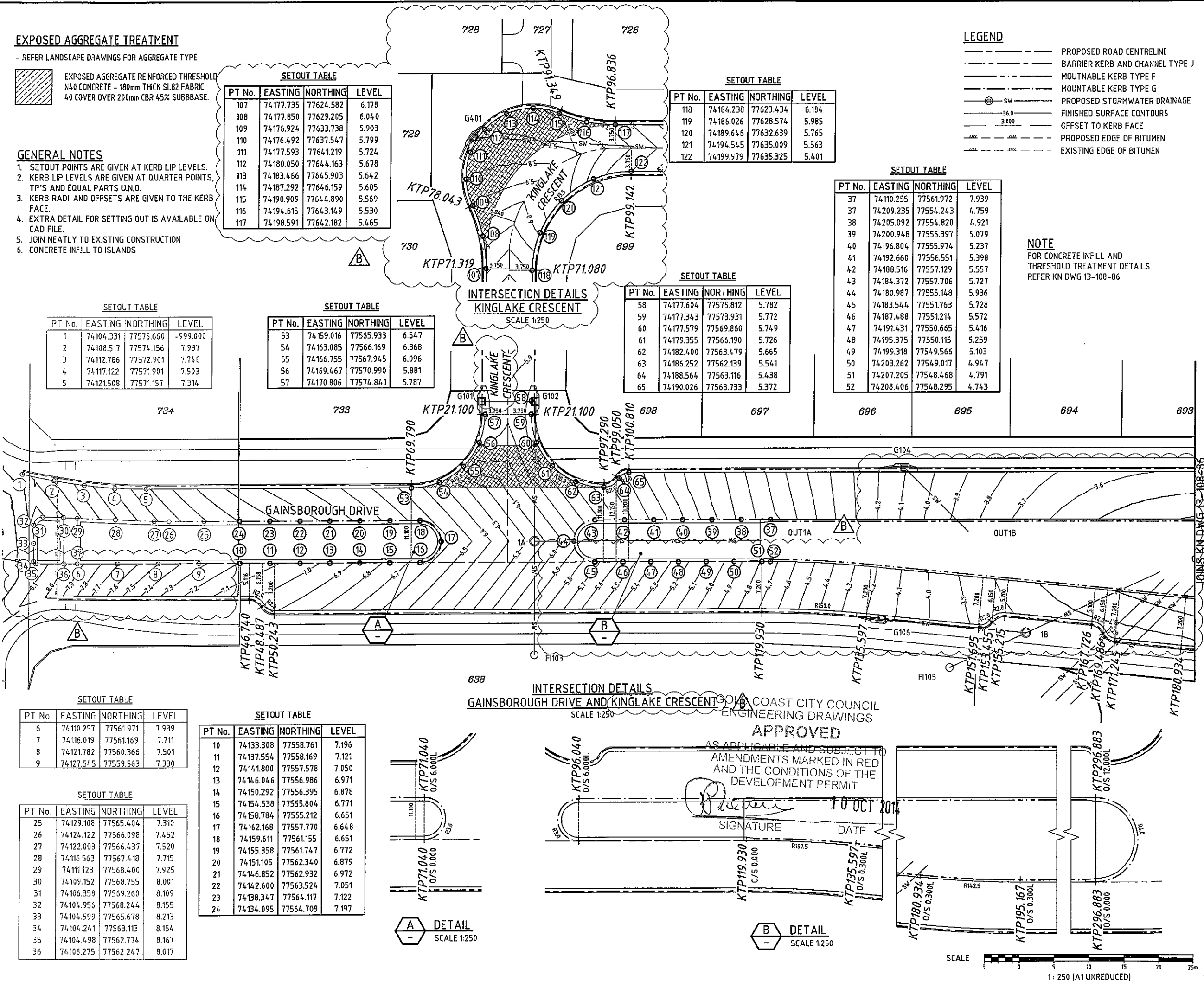


LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director - BPEG 13/8/14

INTERSECTION DETAILS
SHEET 1 OF 3

| | | | |
|----------------|-------------------------|--------------------|----------------|
| Drawn ES | Designed CH | Checked GBG | Date JUN 14 |
| Scale 1:250 | Drawing No 13-108-85 | Sheet 85 of 137 | Revision B |



SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 107 | 74177.735 | 77624.582 | 6.178 |
| 108 | 74177.850 | 77629.205 | 6.040 |
| 109 | 74176.924 | 77633.738 | 5.903 |
| 110 | 74176.492 | 77637.547 | 5.799 |
| 111 | 74177.593 | 77641.219 | 5.724 |
| 112 | 74180.050 | 77644.163 | 5.678 |
| 113 | 74183.456 | 77645.903 | 5.642 |
| 114 | 74187.292 | 77646.159 | 5.605 |
| 115 | 74190.909 | 77644.890 | 5.569 |
| 116 | 74194.615 | 77643.149 | 5.530 |
| 117 | 74198.591 | 77642.182 | 5.465 |

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 118 | 74184.238 | 77623.434 | 6.184 |
| 119 | 74186.026 | 77628.574 | 5.985 |
| 120 | 74189.646 | 77632.639 | 5.765 |
| 121 | 74194.545 | 77635.009 | 5.563 |
| 122 | 74199.979 | 77635.325 | 5.401 |

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 37 | 74110.255 | 77561.972 | 7.939 |
| 37 | 74209.235 | 77554.243 | 4.759 |
| 38 | 74205.092 | 77554.820 | 4.921 |
| 39 | 74200.948 | 77555.397 | 5.079 |
| 40 | 74196.804 | 77555.974 | 5.237 |
| 41 | 74192.660 | 77556.551 | 5.398 |
| 42 | 74188.516 | 77557.129 | 5.557 |
| 43 | 74184.372 | 77557.706 | 5.727 |
| 44 | 74180.228 | 77558.283 | 5.896 |
| 45 | 74176.084 | 77558.860 | 6.065 |
| 46 | 74171.940 | 77559.437 | 6.234 |
| 47 | 74167.796 | 77559.914 | 6.403 |
| 48 | 74163.652 | 77560.491 | 6.572 |
| 49 | 74159.508 | 77561.068 | 6.741 |
| 50 | 74155.364 | 77561.645 | 6.910 |
| 51 | 74151.220 | 77562.222 | 7.079 |
| 52 | 74147.076 | 77562.799 | 7.248 |

SETOUT TABLE

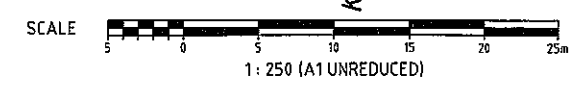
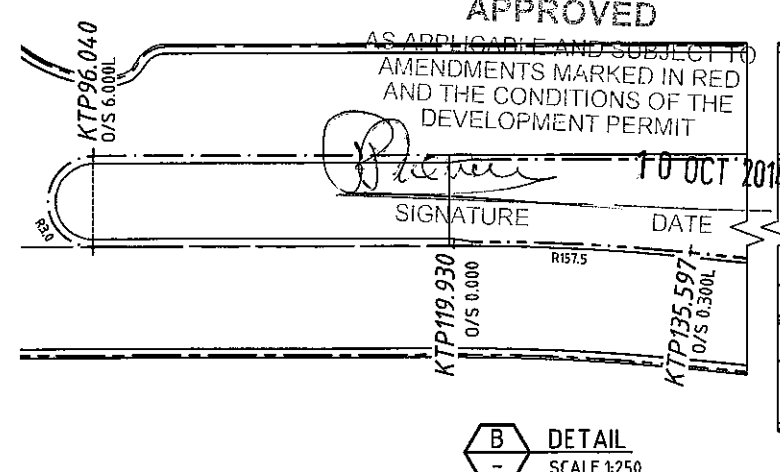
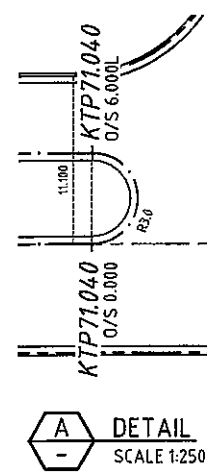
| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 58 | 74177.604 | 77575.812 | 5.782 |
| 59 | 74177.343 | 77573.931 | 5.772 |
| 60 | 74177.579 | 77569.860 | 5.749 |
| 61 | 74179.355 | 77566.190 | 5.726 |
| 62 | 74182.400 | 77563.479 | 5.665 |
| 63 | 74186.252 | 77562.139 | 5.541 |
| 64 | 74188.564 | 77563.116 | 5.438 |
| 65 | 74190.026 | 77563.733 | 5.372 |

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|----------|
| 1 | 74104.331 | 77575.660 | -999.000 |
| 2 | 74108.517 | 77574.156 | 7.937 |
| 3 | 74112.786 | 77572.901 | 7.748 |
| 4 | 74117.122 | 77571.901 | 7.503 |
| 5 | 74121.508 | 77571.157 | 7.314 |

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 53 | 74159.016 | 77565.933 | 6.547 |
| 54 | 74163.085 | 77566.169 | 6.368 |
| 55 | 74166.755 | 77567.945 | 6.096 |
| 56 | 74169.467 | 77570.990 | 5.881 |
| 57 | 74170.806 | 77574.841 | 5.787 |



P:\0151250 Gainsborough Green Precinct 5.1\Planning\Engineering\Acad\13-108-85.dwg, 13/08/14 10:23:40 AM, ES

EXPOSED AGGREGATE TREATMENT

- REFER LANDSCAPE DRAWINGS FOR AGGREGATE TYPE

EXPOSED AGGREGATE REINFORCED THRESHOLD
N40 CONCRETE - 180mm THICK SL82 FABRIC
40 COVER OVER 200mm CBR 45% SUBBASE.

LEGEND

- PROPOSED ROAD CENTRELINE
- BARRIER KERB AND CHANNEL TYPE J
- MOUNTABLE KERB TYPE F
- MOUNTABLE KERB TYPE G
- SW PROPOSED STORMWATER DRAINAGE
- 36.0 FINISHED SURFACE CONTOURS
- 3.000 OFFSET TO KERB FACE
- PROPOSED EDGE OF BITUMEN
- EXISTING EDGE OF BITUMEN

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 128 | 74392.895 | 77615.118 | 3.696 |
| 129 | 74394.567 | 77614.884 | 3.692 |
| 130 | 74397.586 | 77614.904 | 3.666 |
| 131 | 74400.475 | 77615.787 | 3.616 |
| 132 | 74402.990 | 77617.458 | 3.564 |
| 133 | 74404.921 | 77619.778 | 3.517 |

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 123 | 74403.900 | 77595.109 | 3.808 |
| 124 | 74403.635 | 77599.665 | 3.762 |
| 125 | 74401.647 | 77603.774 | 3.716 |
| 126 | 74398.237 | 77606.810 | 3.693 |
| 127 | 74393.927 | 77608.310 | 3.697 |

SETOUT TABLE

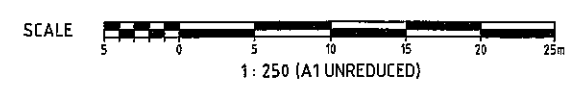
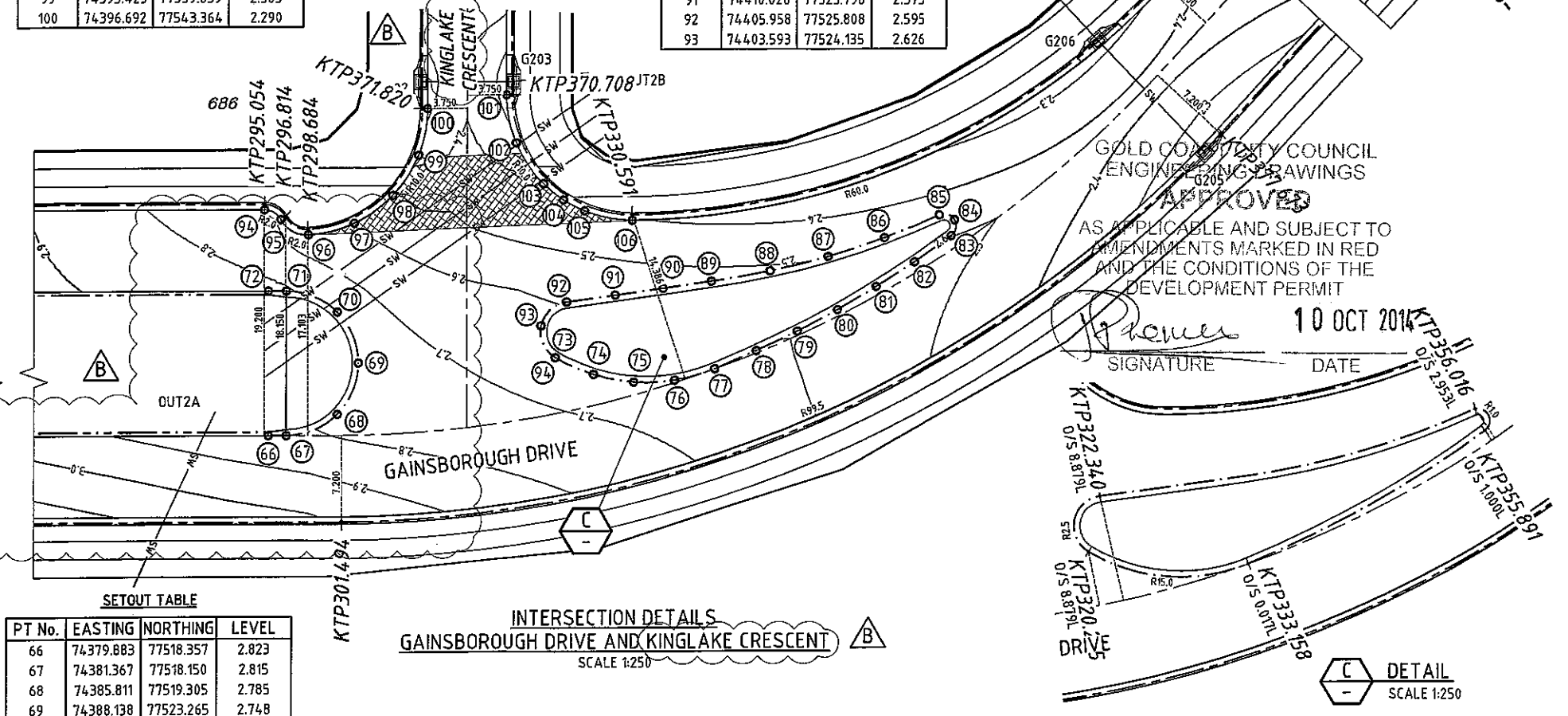
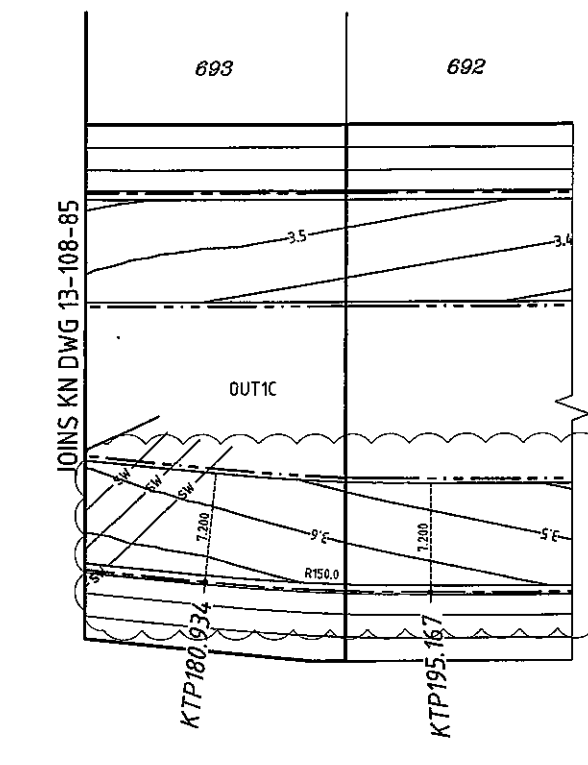
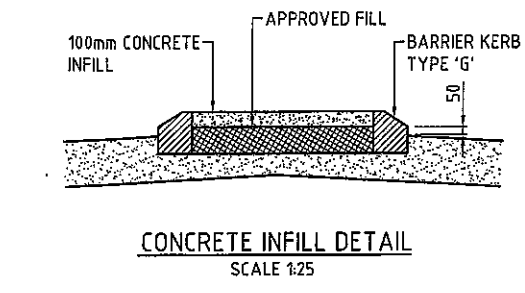
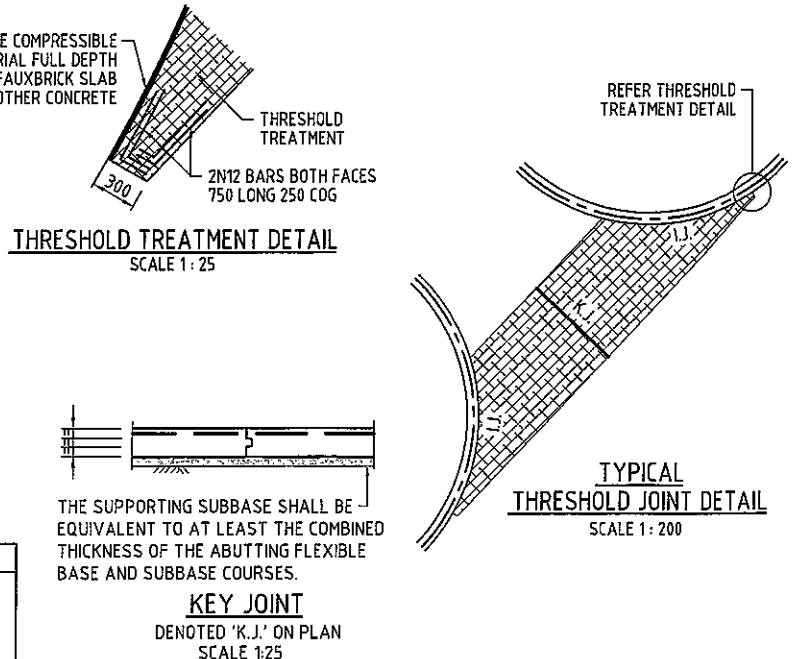
| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 94 | 74382.143 | 77536.973 | 2.697 |
| 94 | 74404.394 | 77521.353 | 2.651 |
| 95 | 74383.380 | 77535.979 | 2.680 |
| 96 | 74385.472 | 77534.393 | 2.647 |
| 97 | 74389.386 | 77534.810 | 2.601 |
| 98 | 74392.869 | 77536.645 | 2.515 |
| 99 | 74395.425 | 77539.639 | 2.363 |
| 100 | 74396.692 | 77543.364 | 2.290 |

SETOUT TABLE

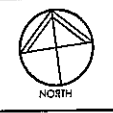
| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 101 | 74403.383 | 77543.555 | 2.278 |
| 102 | 74403.621 | 77539.479 | 2.329 |
| 103 | 74405.403 | 77535.805 | 2.409 |
| 104 | 74406.868 | 77534.235 | 2.421 |
| 105 | 74408.458 | 77533.093 | 2.416 |
| 106 | 74412.318 | 77531.761 | 2.405 |

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 73 | 74404.396 | 77521.351 | 2.651 |
| 74 | 74407.318 | 77519.530 | 2.657 |
| 75 | 74410.580 | 77518.424 | 2.656 |
| 76 | 74414.008 | 77518.090 | 2.649 |
| 77 | 74417.422 | 77518.547 | 2.634 |
| 78 | 74421.057 | 77519.548 | 2.613 |
| 79 | 74424.649 | 77520.697 | 2.591 |
| 80 | 74428.190 | 77521.992 | 2.569 |
| 81 | 74431.676 | 77523.432 | 2.546 |
| 82 | 74435.100 | 77525.013 | 2.523 |
| 83 | 74438.455 | 77526.733 | 2.498 |
| 84 | 74438.906 | 77527.993 | 2.470 |
| 85 | 74437.698 | 77528.572 | 2.453 |
| 86 | 74432.905 | 77527.346 | 2.473 |
| 87 | 74428.035 | 77526.469 | 2.493 |
| 88 | 74423.115 | 77525.945 | 2.513 |
| 89 | 74418.169 | 77525.779 | 2.534 |
| 90 | 74414.099 | 77525.788 | 2.552 |
| 91 | 74410.028 | 77525.798 | 2.573 |
| 92 | 74405.958 | 77525.808 | 2.595 |
| 93 | 74403.593 | 77524.135 | 2.626 |



DO NOT SCALE THIS DRAWING IF IN DOUBT - ASKI



REVISIONS

| No. | Description | Date | By |
|-----|---------------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GSG |
| B | ROAD NAMES, CONTOURS & LEVELS AMENDED | AUG 14 | ND |

Associated Consultants

VDM CONSULTING LANDPARTNERS
Form landscape architects DesignFlow

Client

mirvac

Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
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EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved Director - REG 1988
18.08.14

Drawn Title
INTERSECTION DETAILS
SHEET 2 OF 3

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale 1:250 Sheet 86 of 137

| Drawing No | Revision |
|--------------|----------|
| A1 13-108-86 | B |

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!



NOTE
FOR THRESHOLD TREATMENT DETAILS
REFER KN DWG 13-108-86

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 208 | 74225.200 | 77825.676 | 4.043 |
| 209 | 74221.520 | 77825.703 | 4.074 |
| 210 | 74217.957 | 77824.777 | 4.114 |
| 211 | 74214.756 | 77822.961 | 4.164 |
| 212 | 74212.134 | 77820.378 | 4.223 |
| 213 | 74210.270 | 77817.204 | 4.289 |
| 214 | 74209.290 | 77813.657 | 4.344 |

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 203 | 74279.577 | 77811.590 | 3.221 |
| 204 | 74279.431 | 77814.102 | 3.264 |
| 205 | 74278.335 | 77816.367 | 3.364 |
| 206 | 74276.456 | 77818.041 | 3.467 |
| 207 | 74274.079 | 77818.867 | 3.519 |

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 197 | 74293.391 | 77816.177 | 3.312 |
| 198 | 74291.663 | 77816.184 | 3.321 |
| 199 | 74290.880 | 77816.032 | 3.319 |
| 200 | 74288.614 | 77814.935 | 3.287 |
| 201 | 74286.941 | 77813.056 | 3.245 |
| 202 | 74286.114 | 77810.679 | 3.221 |

SETOUT TABLE

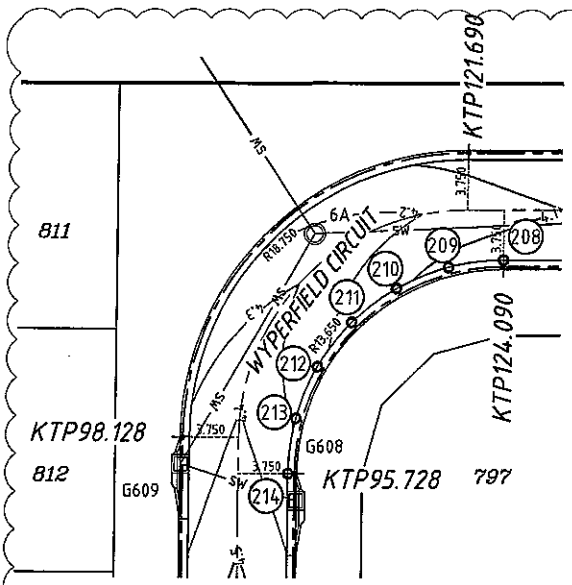
| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|----------|
| 186 | 74353.277 | 77786.182 | 3.041 |
| 187 | 74353.783 | 77789.813 | 3.026 |
| 188 | 74354.288 | 77793.445 | 3.011 |
| 189 | 74354.316 | 77797.129 | 2.994 |
| 190 | 74353.389 | 77800.695 | 2.977 |
| 191 | 74351.571 | 77803.899 | 2.959 |
| 192 | 74348.985 | 77806.524 | 2.942 |
| 193 | 74345.809 | 77808.391 | 2.924 |
| 194 | 74342.256 | 77809.371 | 2.907 |
| 195 | 74339.149 | 77809.804 | -999.000 |
| 196 | 74336.042 | 77810.237 | -999.000 |

SETOUT TABLE

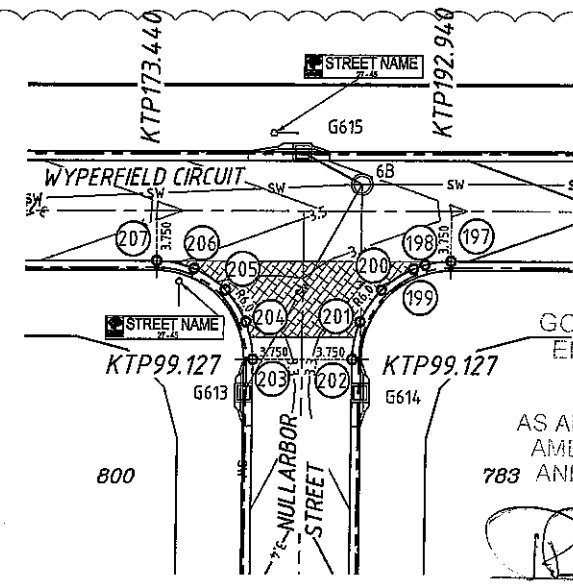
| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 157 | 74430.065 | 77790.199 | 2.458 |
| 158 | 74430.752 | 77795.133 | 2.439 |
| 159 | 74431.440 | 77800.067 | 2.419 |
| 160 | 74432.127 | 77805.000 | 2.399 |
| 161 | 74432.814 | 77809.935 | 2.379 |
| 162 | 74434.712 | 77814.451 | 2.359 |
| 163 | 74438.599 | 77817.432 | 2.339 |
| 164 | 74443.452 | 77818.094 | 2.319 |
| 165 | 74447.996 | 77816.263 | 2.300 |

SETOUT TABLE

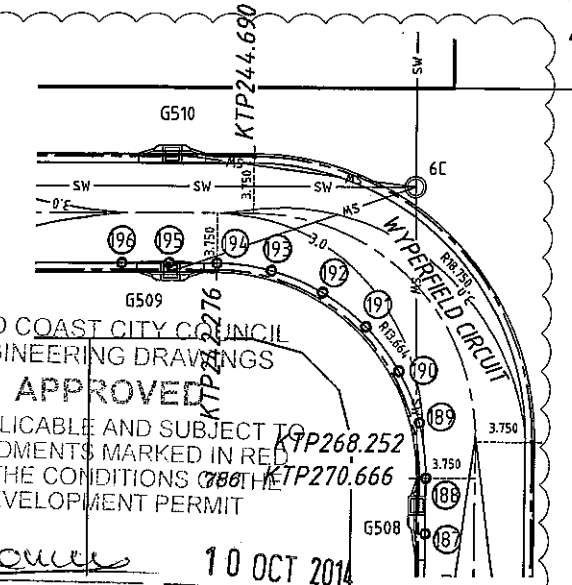
| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 166 | 74451.033 | 77812.420 | 2.280 |
| 167 | 74451.766 | 77807.576 | 2.260 |
| 168 | 74450.001 | 77803.007 | 2.240 |
| 169 | 74447.353 | 77800.531 | 2.229 |
| 170 | 74446.204 | 77799.914 | 2.231 |
| 171 | 74441.821 | 77797.226 | 2.275 |
| 172 | 74438.247 | 77793.530 | 2.365 |
| 173 | 74435.708 | 77789.059 | 2.441 |
| 174 | 74434.365 | 77784.098 | 2.480 |



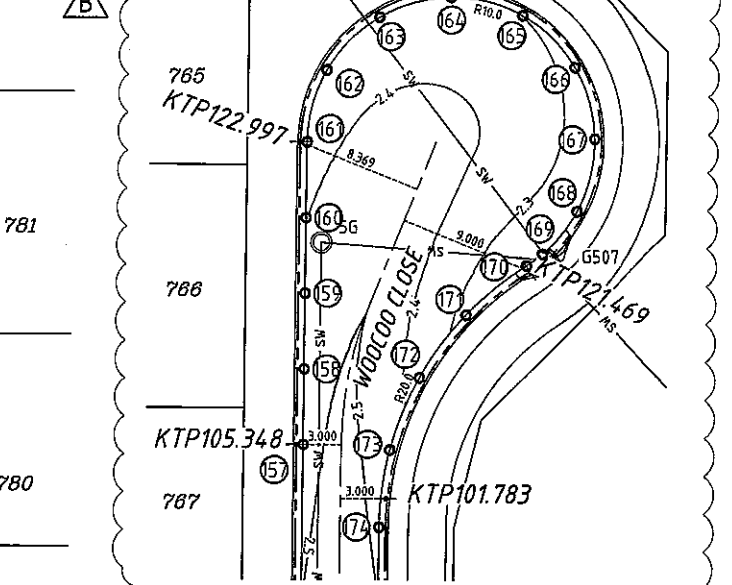
INTERSECTION DETAILS
WYPERFIELD CIRCUIT
SCALE 1:250



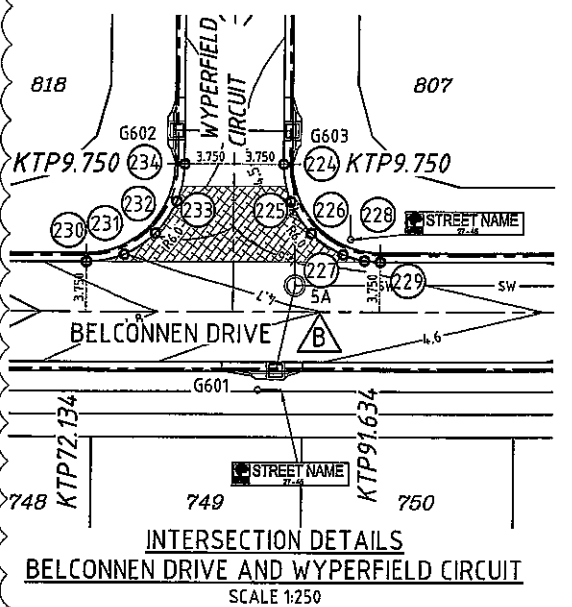
INTERSECTION DETAILS
WYPERFIELD CIRCUIT AND NULLARBOR STREET
SCALE 1:250



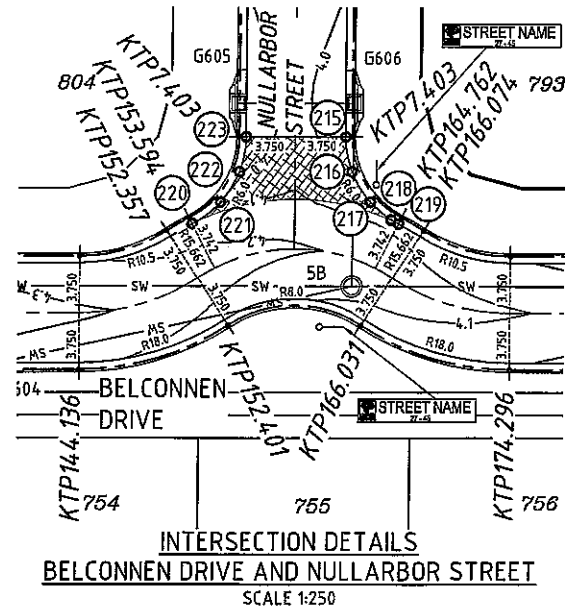
INTERSECTION DETAILS
WYPERFIELD CIRCUIT
SCALE 1:250



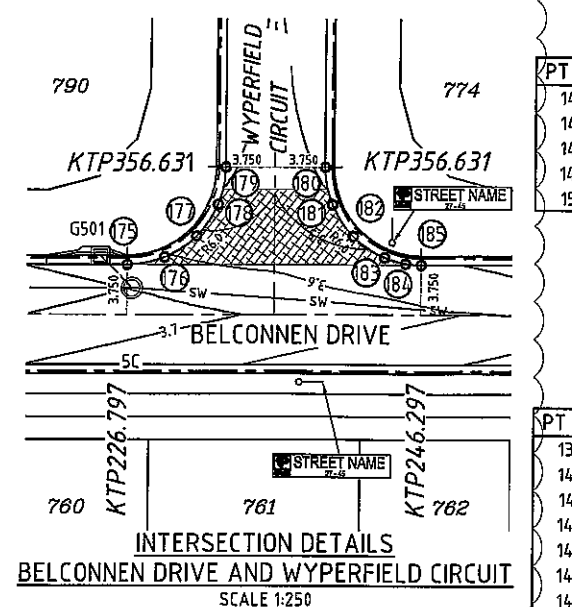
INTERSECTION DETAILS
WOOCOO CLOSE
SCALE 1:250



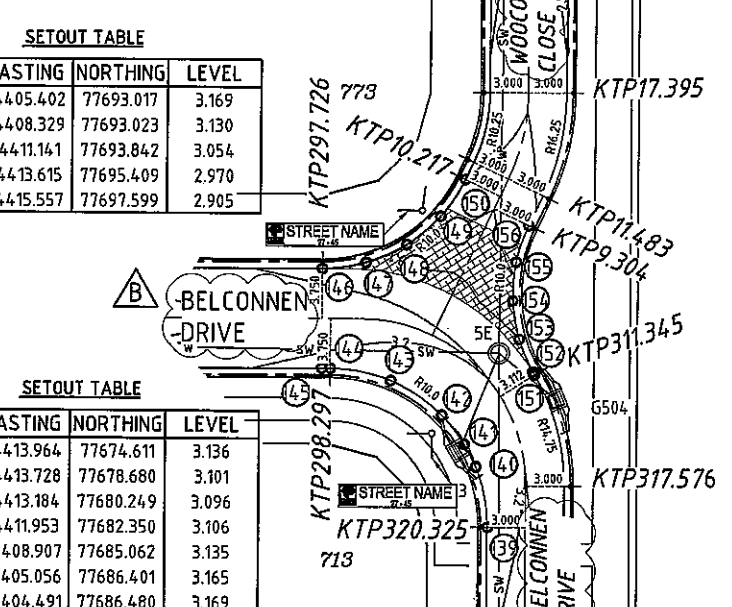
INTERSECTION DETAILS
BELCONNEN DRIVE AND WYPERFIELD CIRCUIT
SCALE 1:250



INTERSECTION DETAILS
BELCONNEN DRIVE AND NULLARBOR STREET
SCALE 1:250



INTERSECTION DETAILS
BELCONNEN DRIVE AND WYPERFIELD CIRCUIT
SCALE 1:250



INTERSECTION DETAILS
BELCONNEN DRIVE AND WOOCOO CLOSE
SCALE 1:250

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED
AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

Power 10 OCT 2014
SIGNATURE

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 146 | 74405.402 | 77693.017 | 3.169 |
| 147 | 74408.329 | 77693.023 | 3.130 |
| 148 | 74411.141 | 77693.842 | 3.054 |
| 149 | 74413.615 | 77695.409 | 2.970 |
| 150 | 74415.557 | 77697.599 | 2.905 |

SETOUT TABLE

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 139 | 74413.964 | 77674.611 | 3.136 |
| 140 | 74413.728 | 77678.680 | 3.101 |
| 141 | 74413.184 | 77680.249 | 3.096 |
| 142 | 74411.953 | 77682.350 | 3.106 |
| 143 | 74408.907 | 77685.062 | 3.135 |
| 144 | 74405.056 | 77686.401 | 3.165 |
| 145 | 74404.491 | 77686.480 | 3.169 |

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 230 | 74183.614 | 77723.912 | 4.760 |
| 231 | 74186.126 | 77724.058 | 4.701 |
| 232 | 74188.391 | 77725.154 | 4.592 |
| 233 | 74190.065 | 77727.034 | 4.485 |
| 234 | 74190.892 | 77729.410 | 4.433 |

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 220 | 74262.622 | 77715.530 | 4.151 |
| 221 | 74264.675 | 77716.687 | 4.101 |
| 222 | 74266.176 | 77718.506 | 3.998 |
| 223 | 74266.923 | 77720.742 | 3.943 |

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 175 | 74335.151 | 77702.803 | 3.653 |
| 176 | 74337.663 | 77702.949 | 3.611 |
| 177 | 74339.928 | 77704.045 | 3.522 |
| 178 | 74341.602 | 77705.925 | 3.428 |
| 179 | 74342.428 | 77708.301 | 3.377 |

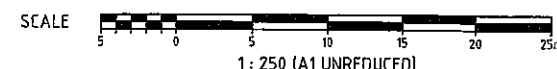
| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 224 | 74197.428 | 77728.499 | 4.433 |
| 225 | 74197.574 | 77725.987 | 4.469 |
| 226 | 74198.671 | 77723.722 | 4.525 |
| 227 | 74200.550 | 77722.048 | 4.571 |
| 228 | 74201.914 | 77721.447 | 4.578 |
| 229 | 74202.926 | 77721.222 | 4.575 |

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 215 | 74273.460 | 77719.832 | 3.943 |
| 216 | 74273.567 | 77717.477 | 3.986 |
| 217 | 74274.514 | 77715.317 | 4.058 |
| 218 | 74275.723 | 77713.985 | 4.078 |
| 219 | 74276.172 | 77713.643 | 4.076 |

| PT No. | EASTING | NORTHING | LEVEL |
|--------|-----------|-----------|-------|
| 180 | 74348.965 | 77707.390 | 3.377 |
| 181 | 74349.111 | 77704.878 | 3.416 |
| 182 | 74350.207 | 77702.613 | 3.472 |
| 183 | 74352.087 | 77700.939 | 3.516 |
| 184 | 74353.420 | 77700.347 | 3.523 |
| 185 | 74354.463 | 77700.113 | 3.519 |

LEGEND

- PROPOSED ROAD CENTRELINE
- BARRIER KERB AND CHANNEL TYPE J
- MOUNTABLE KERB TYPE F
- MOUNTABLE KERB TYPE G
- SW PROPOSED STORMWATER DRAINAGE
- FINISHED SURFACE CONTOURS
- OFFSET TO KERB FACE
- PROPOSED EDGE OF BITUMEN
- EXISTING EDGE OF BITUMEN



REVISIONS

| No. | Description | Date | By |
|-----|---------------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES, CONTOURS & LEVELS AMENDED | AUG 14 | ND |

Associated Consultants

Client

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

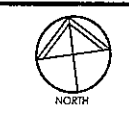
Approved For: *[Signature]* 18.8.14

Drawn: ES
Designed: CH
Checked: GBG
Date: JUN 14

Scale: 1:250
Sheet: 87 of 137

Revision: A1 13-108-87 B

DO NOT SCALE THIS DRAWING
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REVISIONS

| No | Description | Date | By |
|----|--------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | ROAD NAMES AMENDED | AUG 14 | ES |

Associated Consultants

Client

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

LEVEL 2 - 71 GREY STREET
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QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director (EPF) 16.8.14

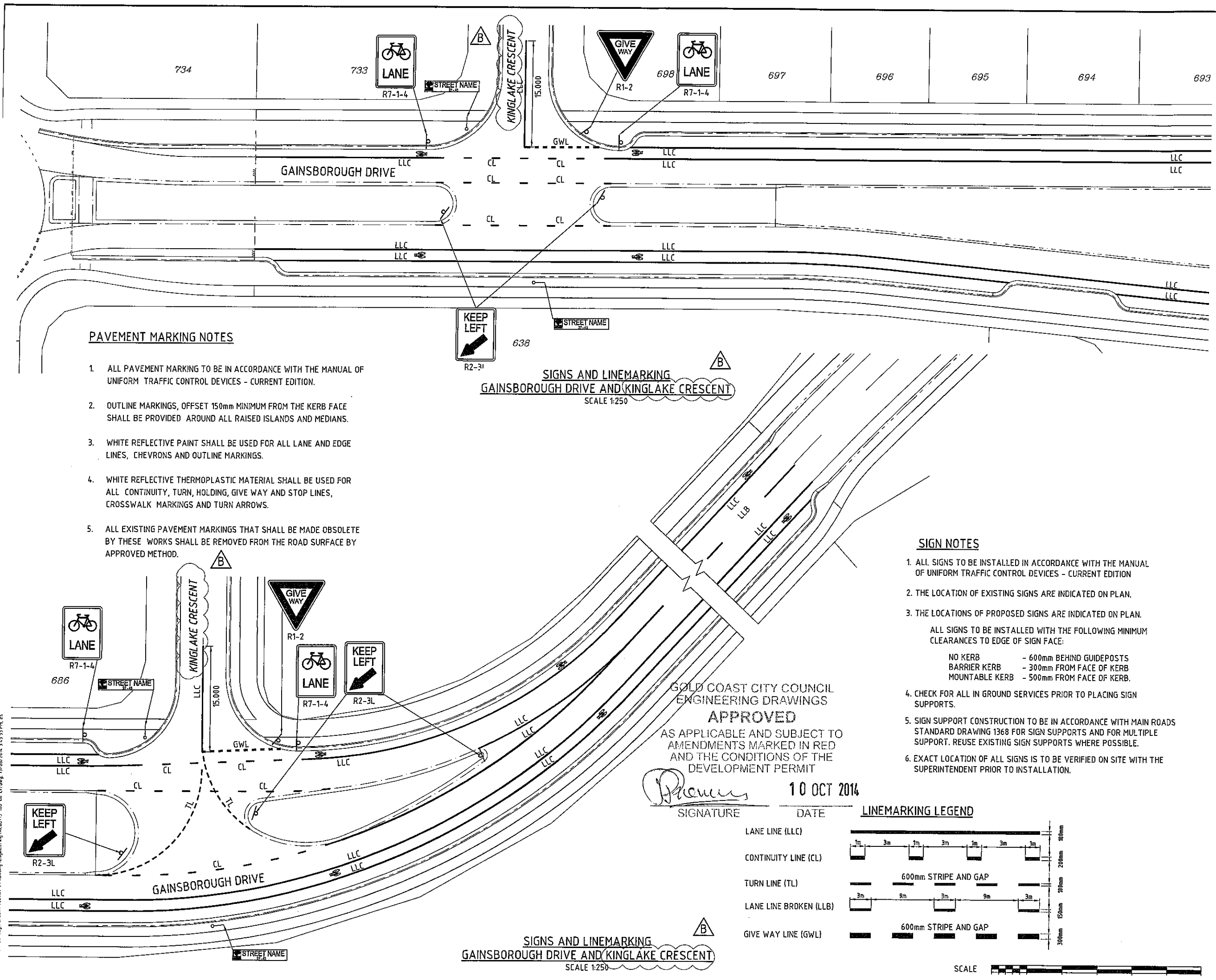
Design Title
SIGNS AND LINEMARKING PLAN

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale
1:250

| Sheet | Revision |
|-----------|----------|
| 88 of 137 | B |

| Drawing No | Revision |
|------------|----------|
| 13-108-88 | B |



PAVEMENT MARKING NOTES

- ALL PAVEMENT MARKING TO BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - CURRENT EDITION.
- OUTLINE MARKINGS, OFFSET 150mm MINIMUM FROM THE KERB FACE SHALL BE PROVIDED AROUND ALL RAISED ISLANDS AND MEDIANS.
- WHITE REFLECTIVE PAINT SHALL BE USED FOR ALL LANE AND EDGE LINES, CHEVRONS AND OUTLINE MARKINGS.
- WHITE REFLECTIVE THERMOPLASTIC MATERIAL SHALL BE USED FOR ALL CONTINUITY, TURN, HOLDING, GIVE WAY AND STOP LINES, CROSSWALK MARKINGS AND TURN ARROWS.
- ALL EXISTING PAVEMENT MARKINGS THAT SHALL BE MADE OBSOLETE BY THESE WORKS SHALL BE REMOVED FROM THE ROAD SURFACE BY APPROVED METHOD.

SIGNS AND LINEMARKING
GAINSBOROUGH DRIVE AND KINGLAKE CRESCENT
SCALE 1:250

SIGN NOTES

- ALL SIGNS TO BE INSTALLED IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES - CURRENT EDITION
- THE LOCATION OF EXISTING SIGNS ARE INDICATED ON PLAN.
- THE LOCATIONS OF PROPOSED SIGNS ARE INDICATED ON PLAN.
ALL SIGNS TO BE INSTALLED WITH THE FOLLOWING MINIMUM CLEARANCES TO EDGE OF SIGN FACE:
NO KERB - 600mm BEHIND GUIDEPOSTS
BARRIER KERB - 300mm FROM FACE OF KERB
MOUNTABLE KERB - 500mm FROM FACE OF KERB.
- CHECK FOR ALL IN GROUND SERVICES PRIOR TO PLACING SIGN SUPPORTS.
- SIGN SUPPORT CONSTRUCTION TO BE IN ACCORDANCE WITH MAIN ROADS STANDARD DRAWING 1368 FOR SIGN SUPPORTS AND FOR MULTIPLE SUPPORT. REUSE EXISTING SIGN SUPPORTS WHERE POSSIBLE.
- EXACT LOCATION OF ALL SIGNS IS TO BE VERIFIED ON SITE WITH THE SUPERINTENDENT PRIOR TO INSTALLATION.

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AS APPLICABLE AND SUBJECT TO
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AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

Proctor 10 OCT 2014
SIGNATURE DATE

LINEMARKING LEGEND

| | | |
|------------------------|--|-------|
| LANE LINE (LLC) | | 100mm |
| CONTINUITY LINE (CL) | | 200mm |
| TURN LINE (TL) | | 100mm |
| LANE LINE BROKEN (LLB) | | 150mm |
| GIVE WAY LINE (GWL) | | 300mm |

SIGNS AND LINEMARKING
GAINSBOROUGH DRIVE AND KINGLAKE CRESCENT
SCALE 1:250

SCALE 1:250 (A1 UNREDUCED)

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REVISIONS

| No | Description | Date | By |
|----|-------------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SECTION ADDED, STREET NAMES AMENDED | JUL 14 | BJ |
| C | REGIONAL WETLAND REMOVED | SEP 14 | ES |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



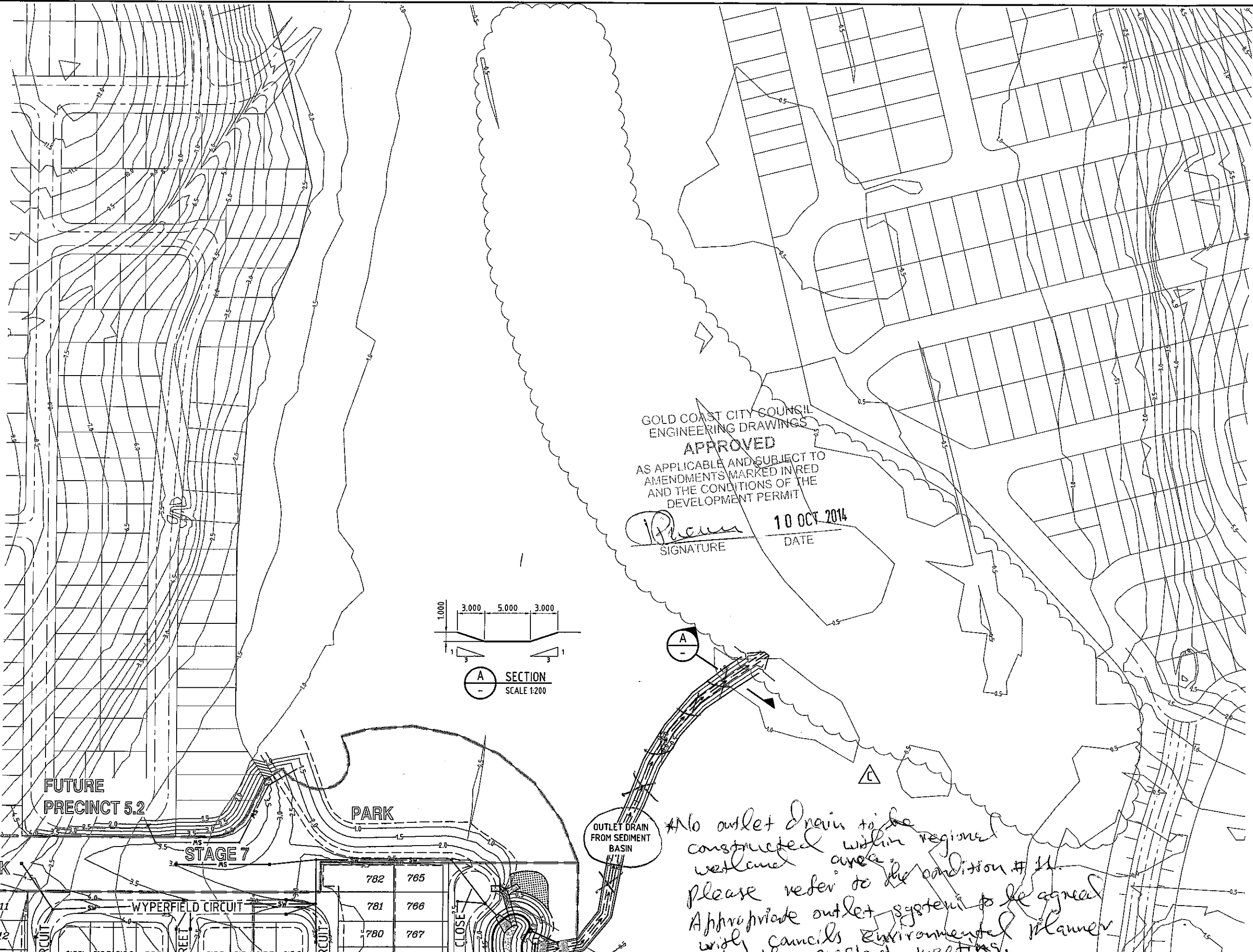
LEVEL 2 - 71 GREY STREET
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QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved/checked RPS/1988

Handwritten signature 12.9.14

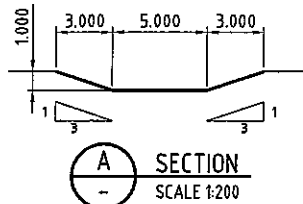
STORMWATER SEDIMENT BASINS
AND WETLANDS - SHEET 4 OF 5

| Drawn | Designed | Checked | Date |
|-------------------------|----------|---------|-----------------|
| CH | CH | GBG | JUN 14 |
| Scale AS SHOWN | | | Sheet 92 of 137 |
| Drawing No A1 13-108-92 | | | Revision C |



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SIGNATURE
10 OCT 2014
DATE

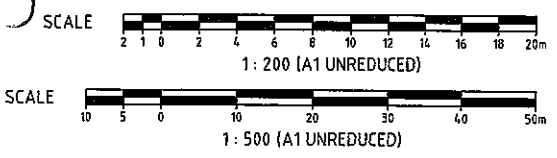


OUTLET DRAIN
FROM SEDIMENT
BASIN

No outlet drain to be constructed within regional wetland area. Please refer to the condition # 11. Appropriate outlet system to be agreed with councils Environmental planner at the present meeting.

STAGE 1 P4/P5 REGIONAL WETLAND - LAYOUT PLAN
SCALE 1:500

LEGEND
—— 37.0 FINISHED SURFACE CONTOURS
- - - - 36.0 NATURAL SURFACE CONTOURS



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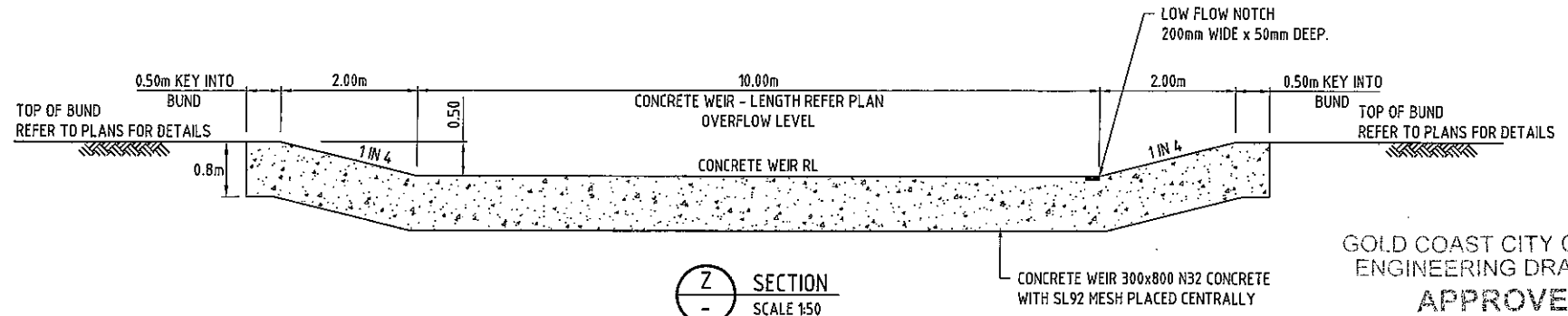
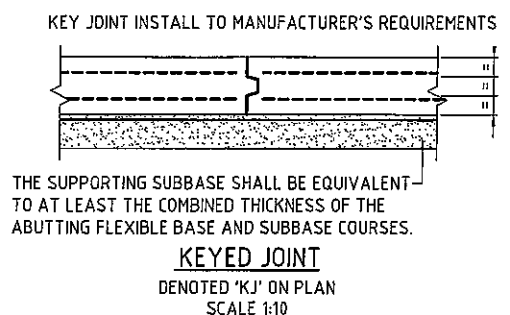
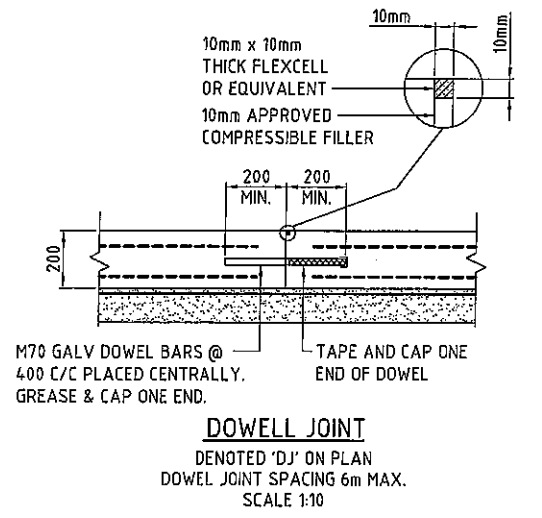
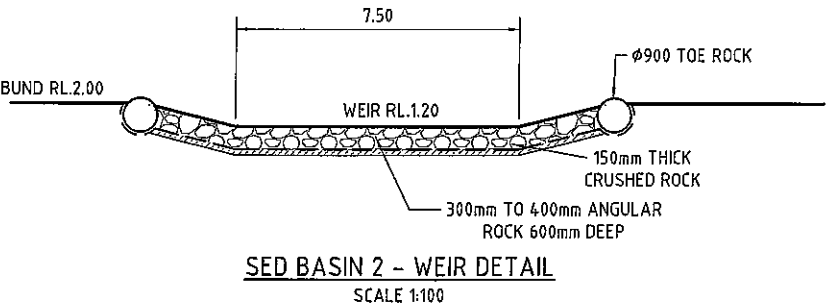
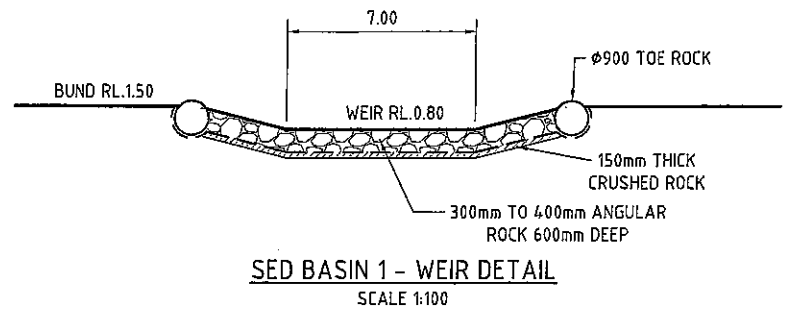
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NOTES

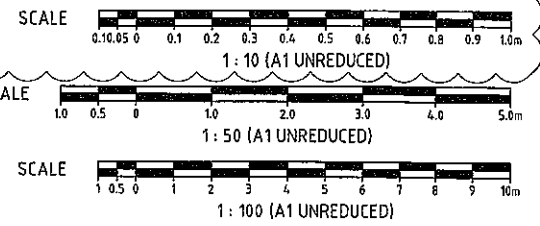
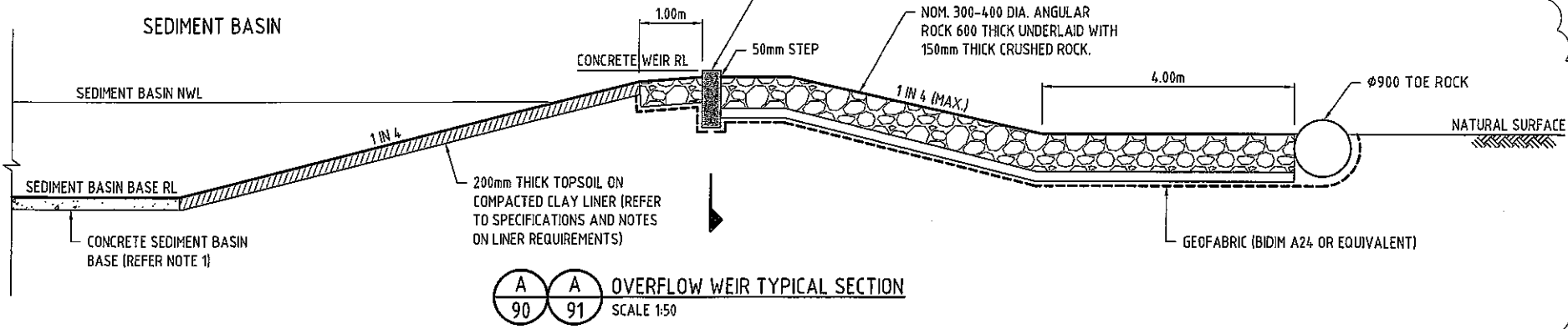
1. CONCRETE ACCESS RAMPS AND BASIN BASE SLABS TO COMPRISE 200 THICK N32 CONCRETE, TWO LAYERS OF SL82 MESH PLACED WITH 50mm COVER TOP AND BOTTOM.
2. INSITU MATERIAL TO BE TESTED AND APPROVED FOR WATER RETAINING BUNDS BY GEOTECHNICAL ENGINEER PRIOR TO BUND CONSTRUCTION.
3. CONSTRUCTION TOLERANCE FOR WETLAND WORKS AND STRUCTURES ARE REQUIRED AS PER THE FOLLOWING TABLE:

| ITEM | TOLERANCE | VERIFICATION |
|------------------------|-----------|--------------|
| PITS/PIPES | +/-25mm | SURVEY |
| CONCRETE WEIR/SPILLWAY | +/-25mm | SURVEY |
| EARTHWORKS/BUNDS | +/-50mm | SURVEY |
4. DESIGN LEVELS SHOWN ARE FINISHED TOPSOIL SURFACE LEVELS. BULK EARTHWORKS TO ALLOW FOR 200MM TOPSOIL PLUS COMPACTED CLAY LINER.
5. WETLAND CONSTRUCTION STAGING AND HOLD POINT INSPECTIONS TO BE IN ACCORDANCE WITH THE 'WETLAND CONSTRUCTION SPECIFICATION' MAY 2012 BY DESIGNFLOW.



NOTE:
REFER TO PLANS & DETAILS
FOR LEVELS AND LENGTHS

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[Signature] 10 OCT 2014
SIGNATURE DATE



REVISIONS

| No | Description | Date | By |
|----|----------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SECTS AMENDED & JOINT DETS ADDED | 07/14 | BJ |

Associated Consultants

Client

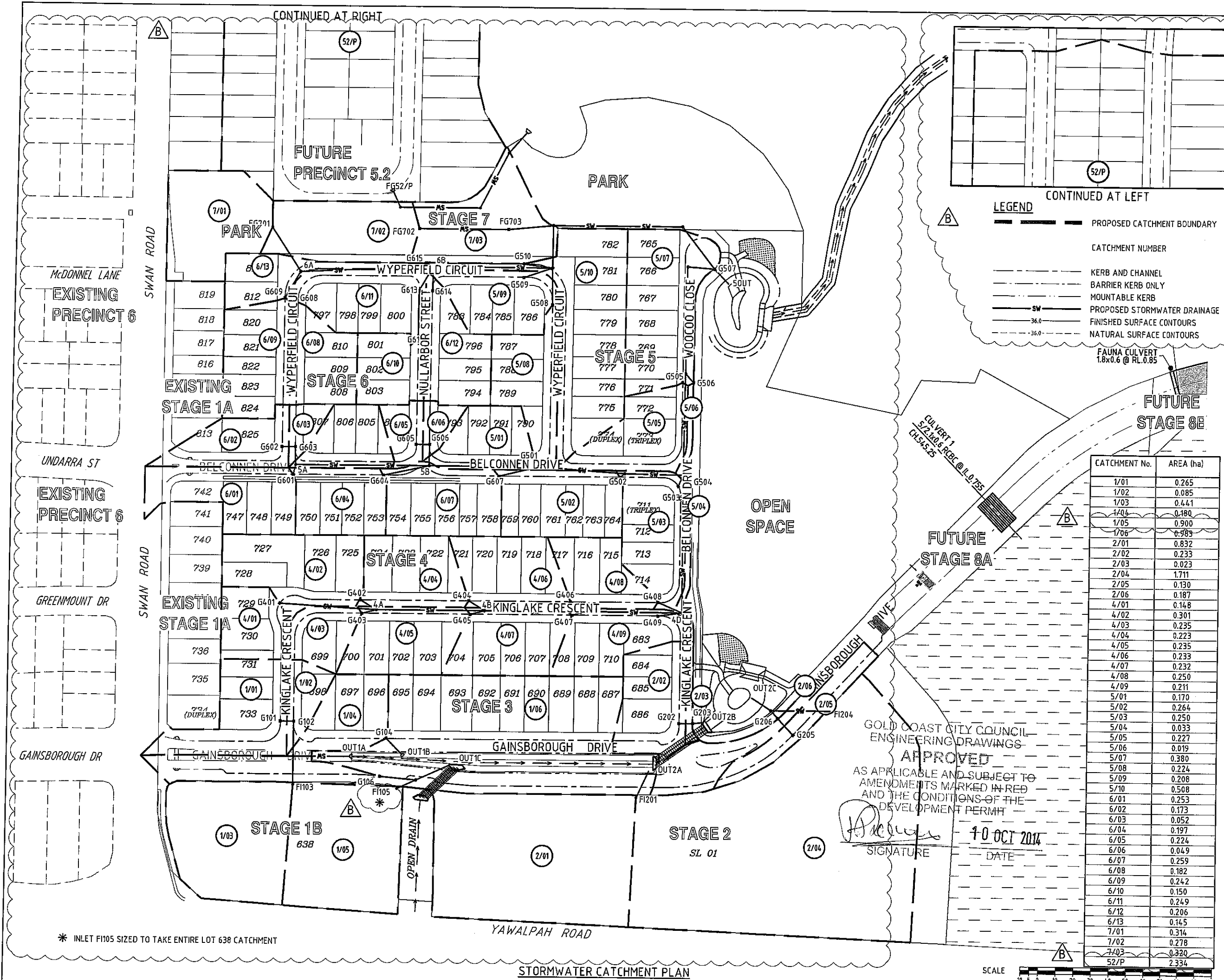
Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

Approved by Director - RPSO 1999
[Signature] B.B.14
Drawing Title
KN GROUP PTY LTD
CONSULTING ENGINEERS
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SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

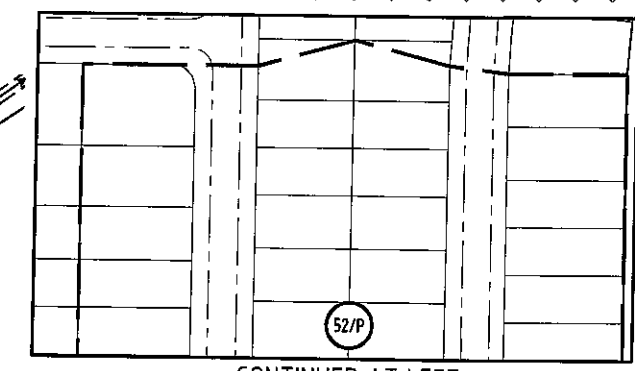
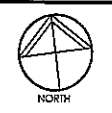
Stormwater Sediment Basins and Wetlands - Sheet 5 of 5

| | | | |
|-------------------|-------------------------|----------------|--------------------|
| Drawn CH | Designed CH | Checked GBG | Date JUN 14 |
| Scale AS SHOWN | Drawing No 13-108-93 | | Sheet 93 of 137 |
| A1 | | | Revision B |

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- LEGEND**
- PROPOSED CATCHMENT BOUNDARY
 - CATCHMENT NUMBER
 - KERB AND CHANNEL
 - BARRIER KERB ONLY
 - MOUNTABLE KERB
 - PROPOSED STORMWATER DRAINAGE
 - FINISHED SURFACE CONTOURS
 - NATURAL SURFACE CONTOURS

REVISIONS

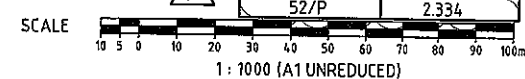
| No | Description | Date | By |
|----|--|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | FUT. PREC. 5.2 CATCHMENT SHOWN. NOTE ADDED, STREET NAMES AMENDED | JUL 14 | BJ |

| CATCHMENT No. | AREA (ha) |
|---------------|-----------|
| 1/01 | 0.265 |
| 1/02 | 0.085 |
| 1/03 | 0.441 |
| 1/04 | 0.180 |
| 1/05 | 0.900 |
| 1/06 | 0.985 |
| 2/01 | 0.832 |
| 2/02 | 0.233 |
| 2/03 | 0.023 |
| 2/04 | 1.711 |
| 2/05 | 0.130 |
| 2/06 | 0.187 |
| 4/01 | 0.148 |
| 4/02 | 0.301 |
| 4/03 | 0.235 |
| 4/04 | 0.223 |
| 4/05 | 0.235 |
| 4/06 | 0.233 |
| 4/07 | 0.232 |
| 4/08 | 0.250 |
| 4/09 | 0.211 |
| 5/01 | 0.170 |
| 5/02 | 0.264 |
| 5/03 | 0.250 |
| 5/04 | 0.033 |
| 5/05 | 0.227 |
| 5/06 | 0.019 |
| 5/07 | 0.380 |
| 5/08 | 0.224 |
| 5/09 | 0.208 |
| 5/10 | 0.508 |
| 6/01 | 0.253 |
| 6/02 | 0.173 |
| 6/03 | 0.052 |
| 6/04 | 0.197 |
| 6/05 | 0.224 |
| 6/06 | 0.049 |
| 6/07 | 0.259 |
| 6/08 | 0.182 |
| 6/09 | 0.242 |
| 6/10 | 0.150 |
| 6/11 | 0.249 |
| 6/12 | 0.206 |
| 6/13 | 0.145 |
| 7/01 | 0.314 |
| 7/02 | 0.278 |
| 7/03 | 0.320 |
| 52/P | 2.334 |

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10 OCT 2014
DATE



* INLET FI105 SIZED TO TAKE ENTIRE LOT 638 CATCHMENT

STORMWATER CATCHMENT PLAN
SCALE 1:1000

Associated Consultants

VDM CONSULTING **LANDPARTNERS**
Form **DesignFlow**
landscape architects

Client

mirvac

Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
CONSULTING ENGINEERS

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EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Factor - 100%
[Signature] 13-8-14

Drawing Title
**STORMWATER
CATCHMENT PLAN**

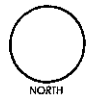
| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

Scale 1:1000

| Sheet | Revision |
|-----------|----------|
| 94 of 137 | |

| Drawing No | Revision |
|--------------|----------|
| A1 13-108-94 | B |

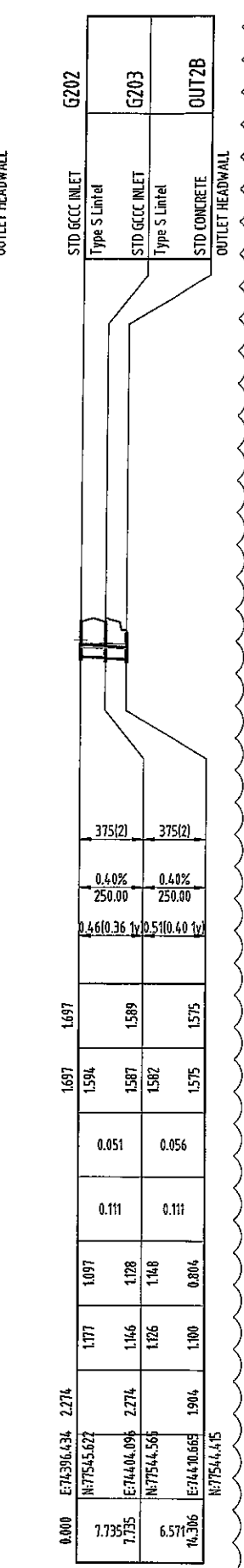
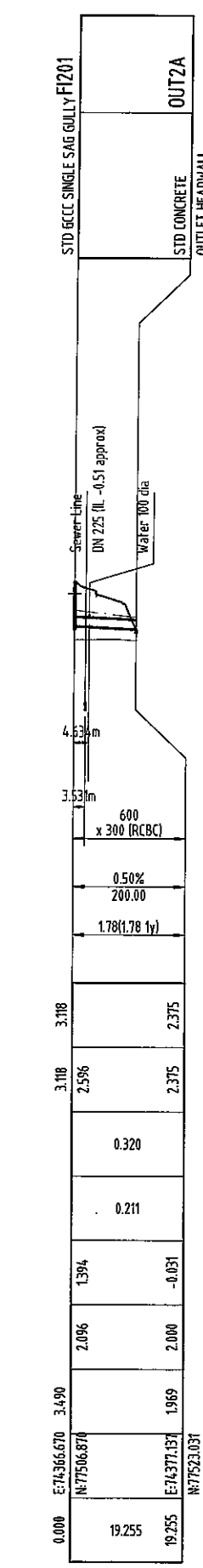
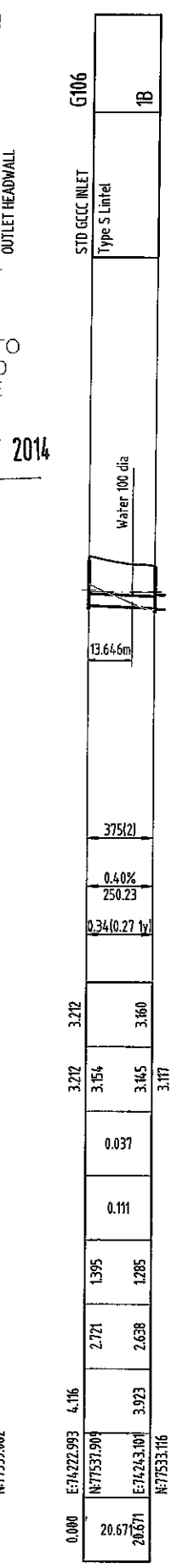
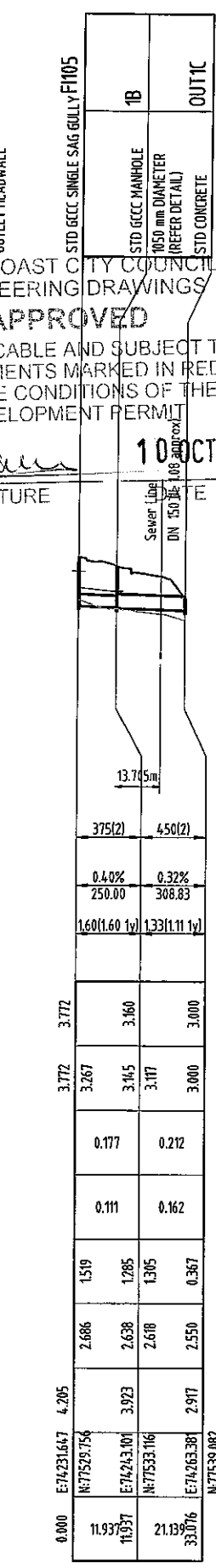
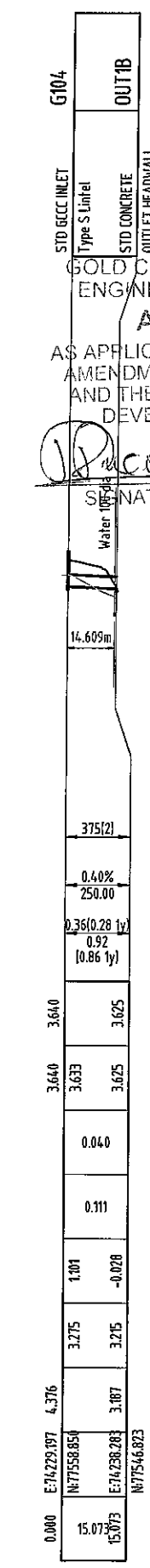
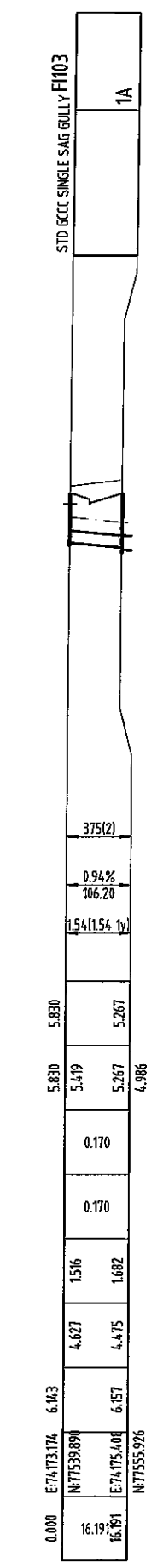
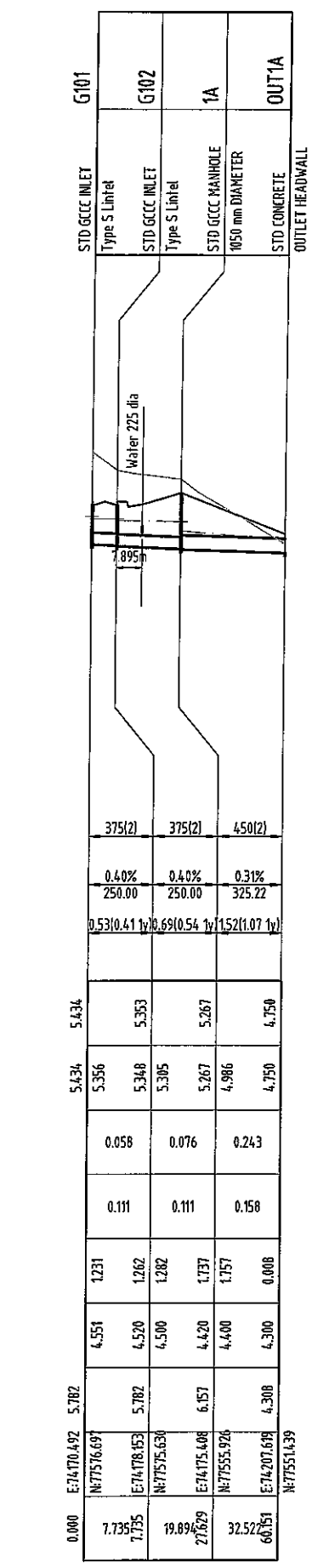
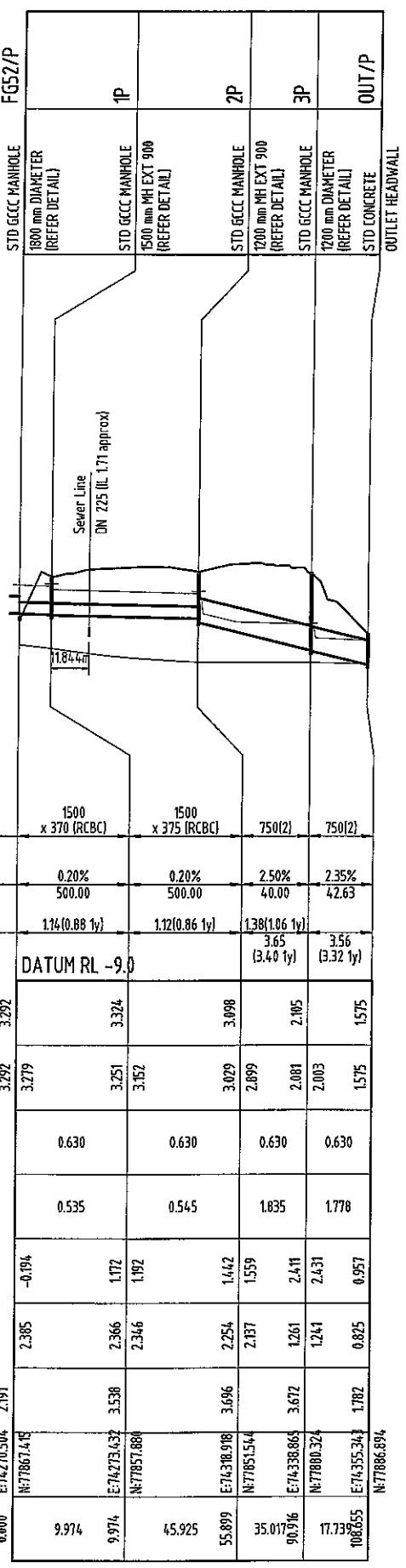
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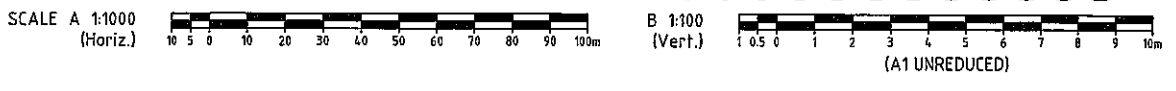
| |
|-----------------------|
| STRUCTURE NAME |
| STRUCTURE DESCRIPTION |

| | | | | |
|-------------------------------|-------------------|-------------------|---------------|---------------|
| PIPE SIZE (mm Class) | 1500 x 370 (RCBC) | 1500 x 375 (RCBC) | 750(2) | 750(2) |
| PIPE GRADE % | 0.20% | 0.20% | 2.50% | 2.35% |
| PIPE SLOPE 1 in X | 500.00 | 500.00 | 4.00 | 42.63 |
| FULL PIPE FLOW VELOCITY (m/s) | 1.14(0.88 ty) | 1.12(0.86 ty) | 1.38(1.06 ty) | 3.56(3.32 ty) |
| PART FULL FLOW VELOCITY (m/s) | | | 3.65(3.40 ty) | 3.56(3.32 ty) |

| | | | | |
|---------------------------------|--|--|--|--|
| WATER LEVEL IN STRUCTURE | | | | |
| HYDRAULIC GRADE LEVEL | | | | |
| PIPE FLOW (Cumecs) | | | | |
| PIPE CAPACITY AT GRADE (Cumecs) | | | | |
| DEPTH TO INVERT | | | | |
| INVERT LEVEL OF DRAIN | | | | |
| DESIGN SURFACE LEVEL | | | | |
| SETOUT CO-ORDINATE | | | | |
| RUNNING CHAINAGE | | | | |



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DATE: 10 OCT 2014



| REVISIONS | | | |
|-----------|---------------------------------|--------|-----|
| No | Description | Date | By |
| A | COUNCIL APPROVAL | JUN 14 | CBG |
| B | SHEET NUMBERS ADDED, LS AMENDED | /07/14 | BJ |

Associated Consultants:

VPM CONSULTING

LANDPARTNERS

Form landscape architects

DesignFlow

Client:

mirvac

Project:

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

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CONSULTING ENGINEERS

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EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved: *[Signature]* 10.10.14

Drawn: *[Signature]*

**STORMWATER
LONGITUDINAL SECTIONS
SHEET 1 OF 6**

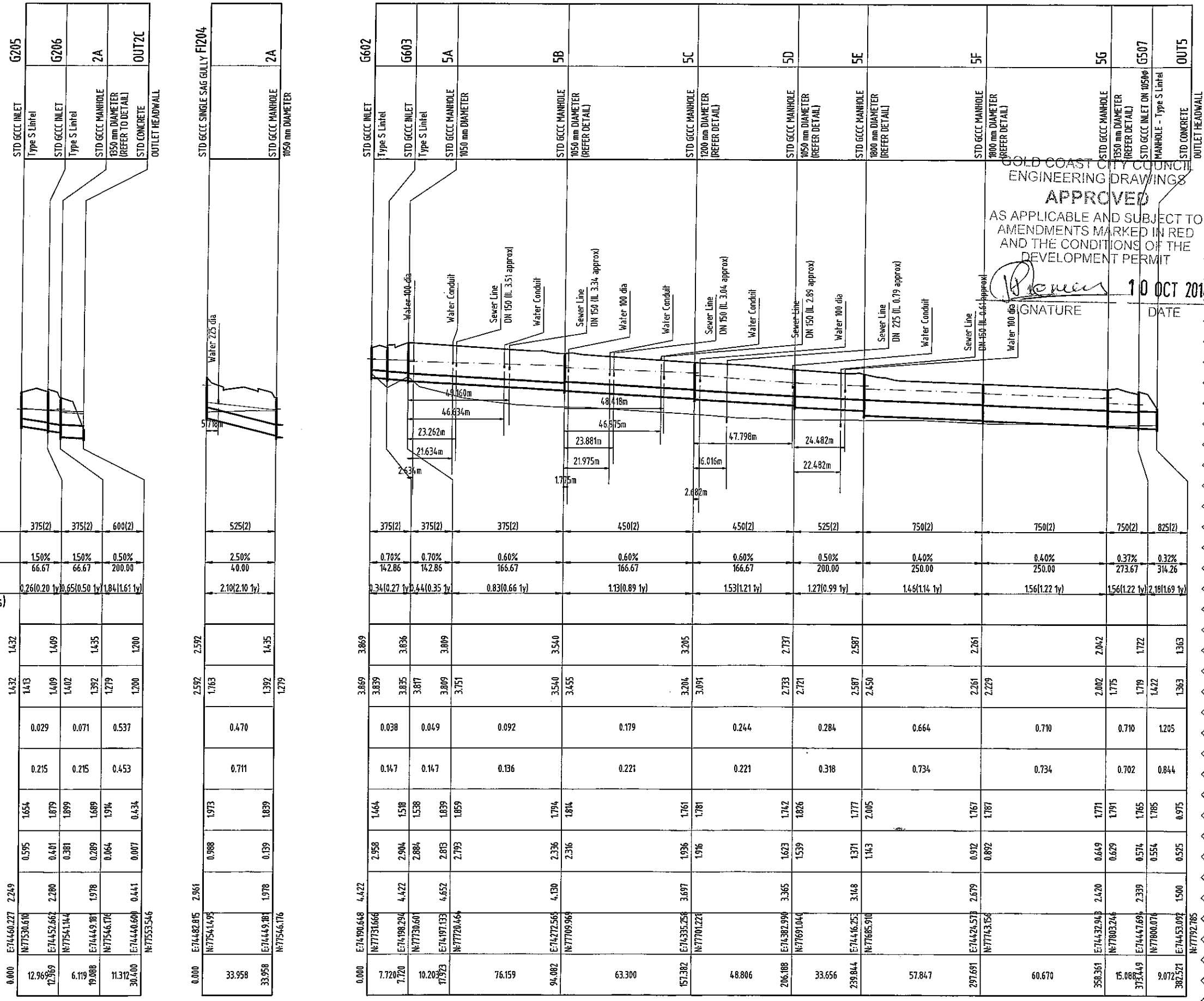
| | | | |
|------------|-----------|---------|-----------------|
| Drawn | Designed | Checked | Date |
| ES | CH | GBG | JUN 14 |
| Scale | AS SHOWN | | Sheet 95 of 137 |
| Drawing No | Revision | | |
| A1 | 13-108-95 | | B |

P:\2013\108 Gainsborough Green Precinct 5 Planning\Engineering\Acad\10 108 15 SW_15.dwg, 18/08/2014, 11:32:04 PM, es

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!



| |
|-----------------------|
| STRUCTURE NAME |
| STRUCTURE DESCRIPTION |



| | | | | | | | | | | | | | |
|-------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| PIPE SIZE (mm Class) | 375(2) | 375(2) | 600(2) | 525(2) | 375(2) | 375(2) | 375(2) | 450(2) | 450(2) | 525(2) | 750(2) | 750(2) | 825(2) |
| PIPE GRADE % | 1.50% | 1.50% | 0.50% | 2.50% | 0.70% | 0.70% | 0.60% | 0.60% | 0.60% | 0.50% | 0.40% | 0.40% | 0.37% |
| PIPE SLOPE 1 in X | 66.67 | 66.67 | 200.00 | 40.00 | 142.86 | 142.86 | 166.67 | 166.67 | 166.67 | 200.00 | 250.00 | 250.00 | 314.26 |
| FULL PIPE FLOW VELOCITY (m/s) | 0.26(0.20 ty) | 0.65(0.50 ty) | 1.84(1.61 ty) | 2.10(2.10 ty) | 0.34(0.27 ty) | 0.44(0.35 ty) | 0.83(0.66 ty) | 1.13(0.89 ty) | 1.53(1.21 ty) | 1.27(0.99 ty) | 1.46(1.14 ty) | 1.56(1.22 ty) | 2.18(1.69 ty) |
| PART FULL FLOW VELOCITY (m/s) | | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| WATER LEVEL IN STRUCTURE | 1.432 | 1.432 | 1.432 | 1.435 | 1.432 | 1.432 | 1.432 | 1.435 | 1.435 | 1.432 | 1.432 | 1.432 | 1.435 |
| HYDRAULIC GRADE LEVEL | 1.432 | 1.413 | 1.409 | 1.402 | 1.392 | 1.279 | 1.200 | 1.200 | 2.592 | 1.763 | 1.392 | 1.279 | 1.435 |
| PIPE FLOW (Cumecs) | 0.029 | 0.071 | 0.537 | 0.470 | 0.038 | 0.049 | 0.092 | 0.179 | 0.244 | 0.284 | 0.664 | 0.710 | 1.205 |
| PIPE CAPACITY AT GRADE (Cumecs) | 0.215 | 0.215 | 0.453 | 0.711 | 0.147 | 0.147 | 0.136 | 0.221 | 0.221 | 0.318 | 0.734 | 0.734 | 0.844 |
| DEPTH TO INVERT | 1.654 | 1.879 | 1.899 | 1.689 | 1.974 | 0.064 | 0.007 | 0.434 | 2.958 | 1.464 | 1.771 | 1.791 | 1.765 |
| INVERT LEVEL OF DRAIN | 0.595 | 0.491 | 0.381 | 0.289 | 0.064 | 0.007 | 0.007 | 0.434 | 2.958 | 1.464 | 1.771 | 1.791 | 1.765 |
| DESIGN SURFACE LEVEL | 2.249 | 2.280 | 1.978 | 1.978 | 1.978 | 0.441 | 0.441 | 0.441 | 2.961 | 4.422 | 2.679 | 2.679 | 1.500 |
| SETOUT CO-ORDINATE | E:74460.227 | N:77530.610 | E:74452.667 | N:77541.144 | E:74449.081 | N:77546.176 | E:74440.600 | N:77553.546 | E:74482.015 | N:77541.149 | E:74449.081 | N:77546.176 | E:74453.097 |
| RUNNING CHAINAGE | 0.000 | 12.969 | 12.369 | 6.119 | 19.088 | 11.312 | 30.400 | 0.000 | 7.720 | 17.220 | 10.203 | 17.373 | 76.159 |

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
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DEVELOPMENT PERMIT
[Signature] 10 OCT 2014
SIGNATURE DATE

| REVISIONS | | | |
|-----------|---------------------------------|--------|-----|
| No | Description | Date | By |
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SHEET NUMBERS ADDED, LS AMENDED | /07/14 | BJ |

Associated Consultants:

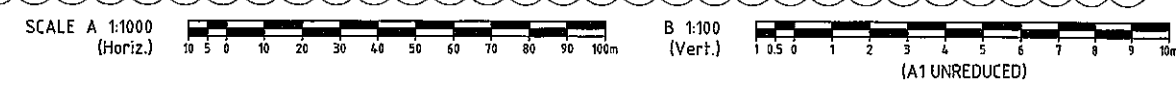
Client:

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

KN GROUP PTY LTD
CONSULTING ENGINEERS
LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

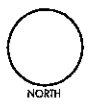
Approved Director: *[Signature]* 18.8.14
Drawing Title
**STORMWATER
LONGITUDINAL SECTIONS
SHEET 2 OF 6**

| | | | | | | | |
|------------|----------|-----------|-----------|----------|-----|------|--------|
| Drawn | ES | Designed | CH | Checked | GBG | Date | JUN 14 |
| Scale | AS SHOWN | Sheet | 96 of 137 | Revision | | | |
| Drawing No | A1 | 13-108-96 | | Revision | B | | |

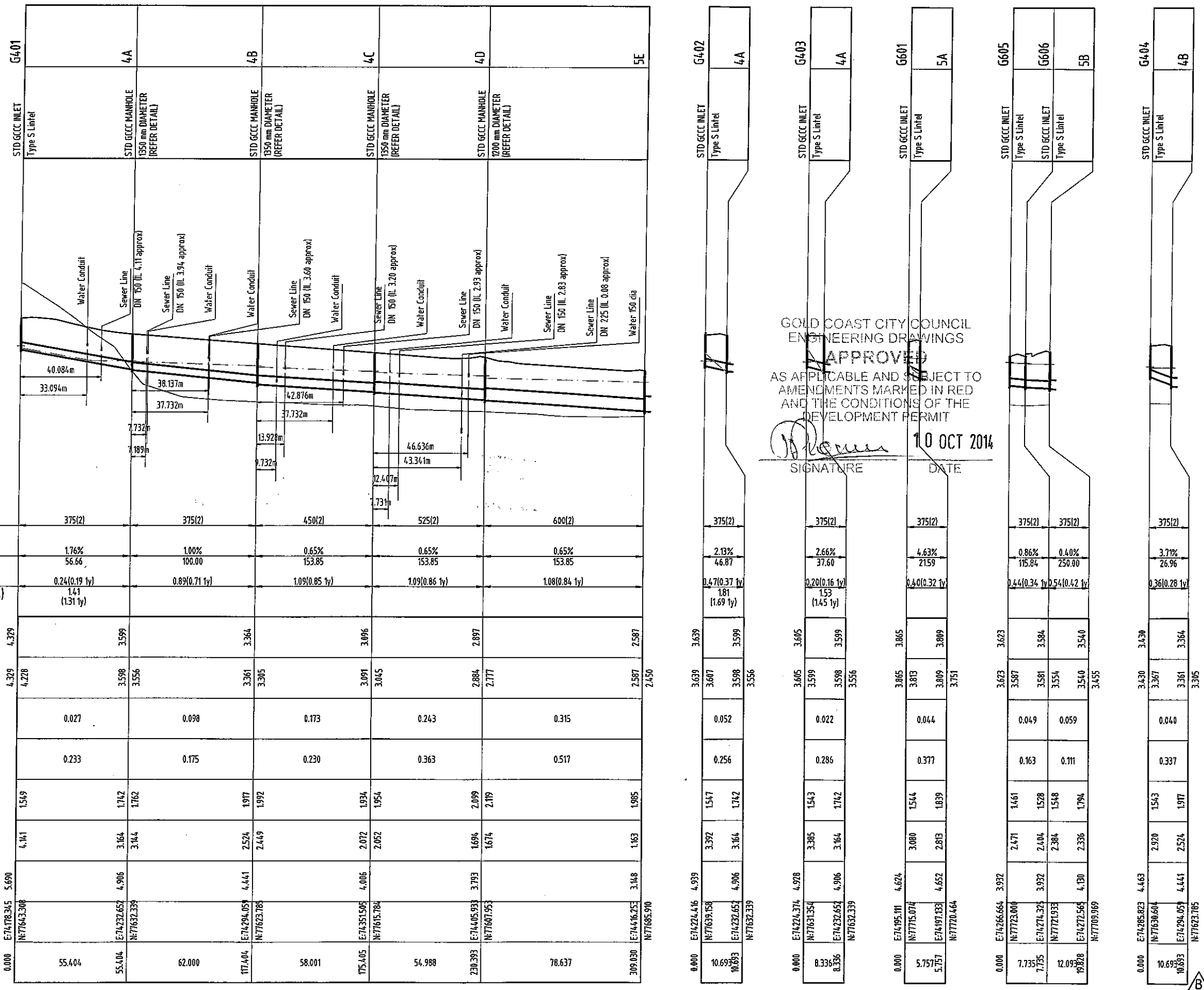


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DO NOT SCALE THIS DRAWING
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| |
|-----------------------|
| STRUCTURE NAME |
| STRUCTURE DESCRIPTION |

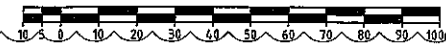


| | | | | | |
|-------------------------------|-------------------|---------------|---------------|---------------|---------------|
| PIPE SIZEmm (Class) | 375(2) | 375(2) | 450(2) | 525(2) | 600(2) |
| PIPE GRADE % | 1.76% | 1.00% | 0.65% | 0.65% | 0.65% |
| PIPE SLOPE 1 in X | 56.66 | 100.00 | 153.85 | 153.85 | 153.85 |
| FULL PIPE FLOW VELOCITY (m/s) | 0.24(0.19 1y) | 0.89(0.71 1y) | 1.09(0.85 1y) | 1.09(0.86 1y) | 1.08(0.84 1y) |
| PART FULL FLOW VELOCITY (m/s) | 1.41 (1.31 1y) | | | | |

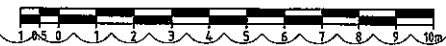
| | | | | | |
|---------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| WATER LEVEL IN STRUCTURE | 4.329 | 3.599 | 3.364 | 3.096 | 2.587 |
| HYDRAULIC GRADE LEVEL | 4.329 4.228 | 3.598 3.556 | 3.361 3.305 | 3.091 3.045 | 2.587 2.450 |
| PIPE FLOW (Cumecs) | 0.027 | 0.098 | 0.173 | 0.243 | 0.315 |
| PIPE CAPACITY AT GRADE (Cumecs) | 0.233 | 0.175 | 0.230 | 0.363 | 0.517 |
| DEPTH TO INVERT | 1.549 | 1.742 | 1.917 | 2.099 | 1.985 |
| INVERT LEVEL OF DRAIN | 4.161 | 3.164 | 2.574 | 2.072 | 1.163 |
| DESIGN SURFACE LEVEL | 5.690 | 4.906 | 4.441 | 4.006 | 3.148 |
| SETOUT CO-ORDINATE | E:74178.345 N:77663.308 | E:74232.652 N:77632.339 | E:74294.059 N:77623.781 | E:74351.505 N:77615.784 | E:74416.253 N:77605.910 |
| RUNNING CHAINAGE | 55.404 | 62.000 | 58.001 | 54.988 | 78.637 |

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SIGNATURE DATE

SCALE A 1:1000
(Horiz.)



B 1:100
(Vert.)



(A1 UNREDUCED)

| REVISIONS | | | |
|-----------|---------------------------------|--------|-----|
| No | Description | Date | By |
| A | COUNCIL APPROVAL | JUN 14 | G8G |
| B | SHEET NUMBERS ADDED, IS AMENDED | 10/14 | BJ |

Associated Consultants

Client

Project
**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL knge@knpl.com.au
ABN 35 112 053 611

Approved: *[Signature]* 18.8.14
Drawing Title
**STORMWATER
LONGITUDINAL SECTIONS
SHEET 3 OF 6**

| | | | | | | | |
|------------|--------------|----------|----|---------|-----|----------|-----------|
| Drawn | ES | Designed | CH | Checked | G8G | Date | JUN 14 |
| Scale | AS SHOWN | | | | | Sheet | 97 of 137 |
| Drawing No | A1 13-108-97 | | | | | Revision | B |

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NORTH

REVISIONS

| No | Description | Date | By |
|----|---------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SHEET NUMBERS ADDED, LS AMENDED | /07/14 | BJ |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kng@knpl.com.au
ABN 35 112 053 611

Approved Director - REGO 1998

[Signature] 18.8.14

Drawing Title

STORMWATER
LONGITUDINAL SECTIONS
SHEET 4 OF 6

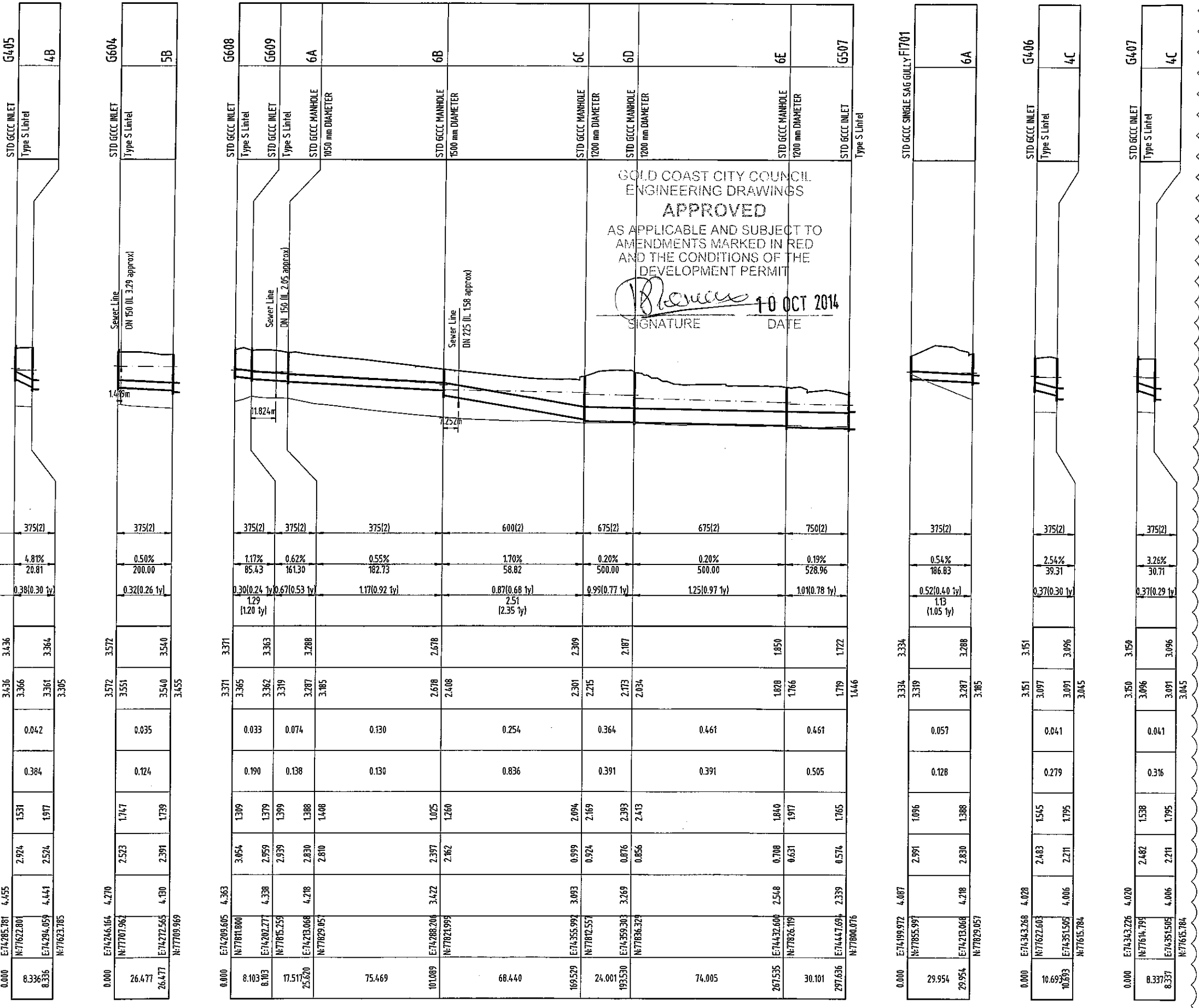
| Drawn | Designed | Checked | Date |
|------------|----------|----------|-----------|
| ES | CH | GBG | JUN 14 |
| Scale | | | Sheet |
| AS SHOWN | | | 98 of 137 |
| Drawing No | | Revision | |
| A1 | | B | |

B

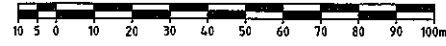
STRUCTURE NAME
STRUCTURE DESCRIPTION

PIPE SIZEmm (Class)
PIPE GRADE %
PIPE SLOPE 1 in X
FULL PIPE FLOW VELOCITY (m/s)
PART FULL FLOW VELOCITY (m/s)

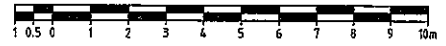
WATER LEVEL IN STRUCTURE
HYDRAULIC GRADE LEVEL
PIPE FLOW (Cumecs)
PIPE CAPACITY AT GRADE (Cumecs)
DEPTH TO INVERT
INVERT LEVEL OF DRAIN
DESIGN SURFACE LEVEL
SETOUT CO-ORDINATE
RUNNING CHAINAGE



SCALE A 1:1000 (Horiz.)



B 1:100 (Vert.)



(A1 UNREDUCED)

B

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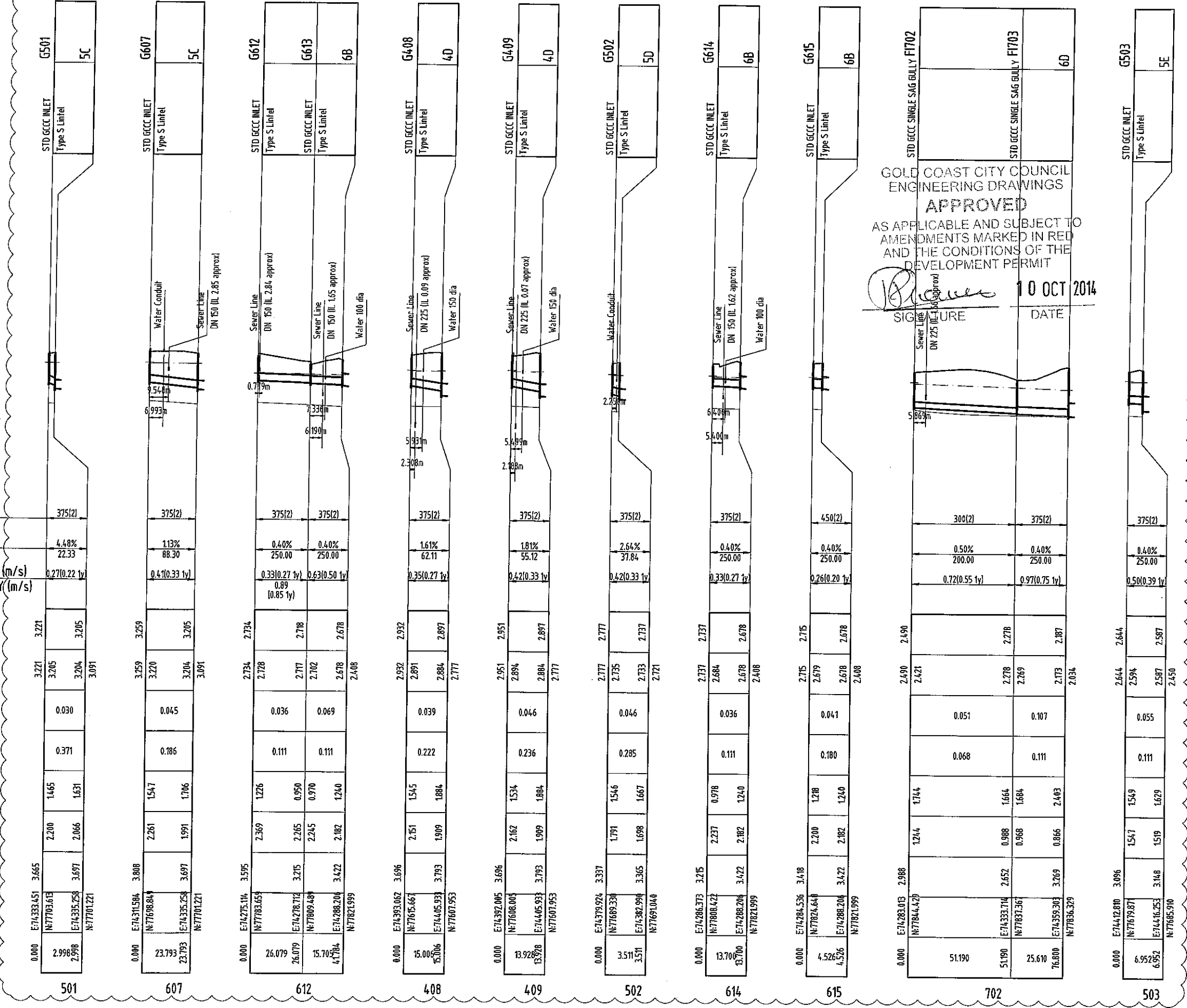
DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!



| |
|-----------------------|
| STRUCTURE NAME |
| STRUCTURE DESCRIPTION |

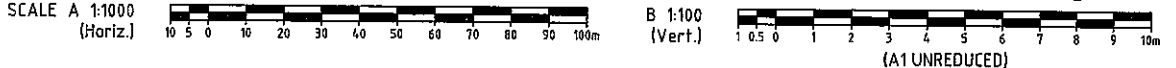
| | |
|-------------------------------|---------------|
| PIPE SIZEmm (Class) | 375(2) |
| PIPE GRADE % | 4.48% |
| PIPE SLOPE 1 in X | 22.33 |
| FULL PIPE FLOW VELOCITY (m/s) | 0.27(0.22 ty) |
| PART FULL FLOW VELOCITY (m/s) | |

| | | |
|---------------------------------|------------|------------|
| WATER LEVEL IN STRUCTURE | 3.221 | 3.205 |
| HYDRAULIC GRADE LEVEL | 3.221 | 3.205 |
| PIPE FLOW (Cumecs) | 0.030 | 0.045 |
| PIPE CAPACITY AT GRADE (Cumecs) | 0.371 | 0.186 |
| DEPTH TO INVERT | 1.465 | 1.631 |
| INVERT LEVEL OF DRAIN | 2.200 | 2.866 |
| DESIGN SURFACE LEVEL | 3.665 | 3.697 |
| SETOUT CO-ORDINATE | N77703.673 | N77701.221 |
| RUNNING CHAINAGE | 0.000 | 2.998 |



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[Signature] 10 OCT 2014
SIGNATURE DATE



| REVISIONS | | | |
|-----------|---------------------------------|--------|-----|
| No | Description | Date | By |
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SHEET NUMBERS ADDED, LS AMENDED | /07/14 | BJ |

Associated Consultants

VDM CONSULTING LANDPARTNERS
Form landscape architects DesignFlow

Client

Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

| | |
|------------|-----------|
| Approval | 13.8.14 |
| Drawn | ES |
| Designed | CH |
| Checked | GBG |
| Date | JUN 14 |
| Scale | AS SHOWN |
| Sheet | 99 of 137 |
| Revision | |
| Drawing No | A1 |
| 13-108-99 | B |

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REVISIONS

| No | Description | Date | By |
|----|---------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SHEET NUMBERS ADDED, LS AMENDED | /07/14 | BJ |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director APEO 1888
Mitchell 18.8.14

Drawing Title

STORMWATER
LONGITUDINAL SECTIONS
SHEET 6 OF 6



| | | | |
|-------------|----------------|----------------|----------------|
| Drawn ES | Designed CH | Checked GBG | Date JUN 14 |
|-------------|----------------|----------------|----------------|

| | |
|-------------------|--------------------|
| Scale AS SHOWN | Sheet 92 of 137 |
|-------------------|--------------------|

| | | |
|----|--------------------------|---------------|
| A1 | Drawing No 13-108-100 | Revision B |
|----|--------------------------|---------------|

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS

APPROVED

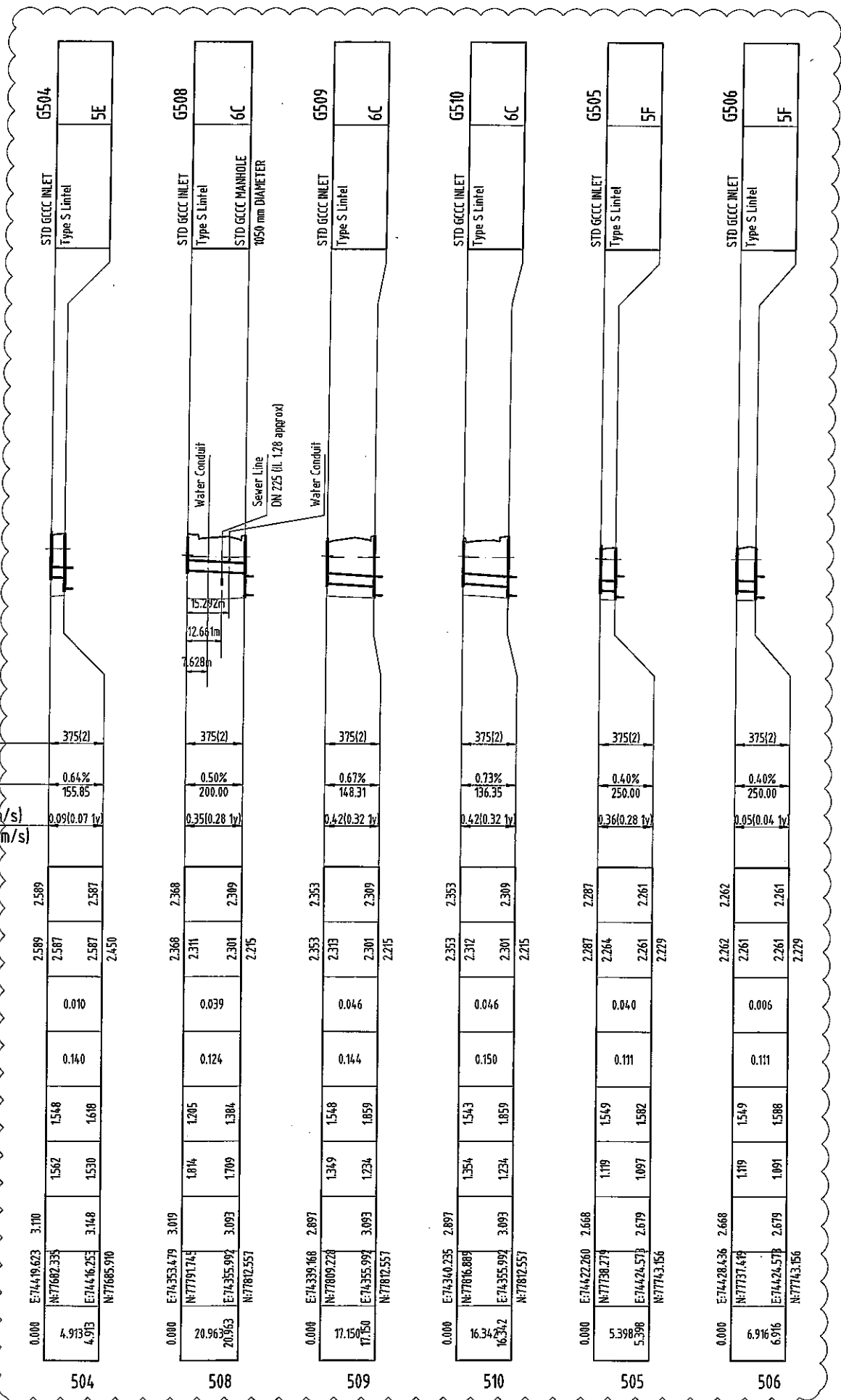
AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

Drew 10 OCT 2014
SIGNATURE DATE

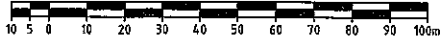
| |
|-----------------------|
| STRUCTURE NAME |
| STRUCTURE DESCRIPTION |

| | |
|-------------------------------|----------------|
| PIPE SIZEmm (Class) | 375(2) |
| PIPE GRADE % | 0.64% |
| PIPE SLOPE 1 in X | 155.85 |
| FULL PIPE FLOW VELOCITY (m/s) | 0.091(0.07 1v) |
| PART FULL FLOW VELOCITY (m/s) | |

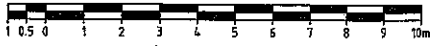
| | |
|---------------------------------|--|
| WATER LEVEL IN STRUCTURE | |
| HYDRAULIC GRADE LEVEL | |
| PIPE FLOW (Cumecs) | |
| PIPE CAPACITY AT GRADE (Cumecs) | |
| DEPTH TO INVERT | |
| INVERT LEVEL OF DRAIN | |
| DESIGN SURFACE LEVEL | |
| SETOUT CO-ORDINATE | |
| RUNNING CHAINAGE | |



SCALE A 1:1000
(Horiz.)



B 1:100
(Vert.)



(A1 UNREDUCED)

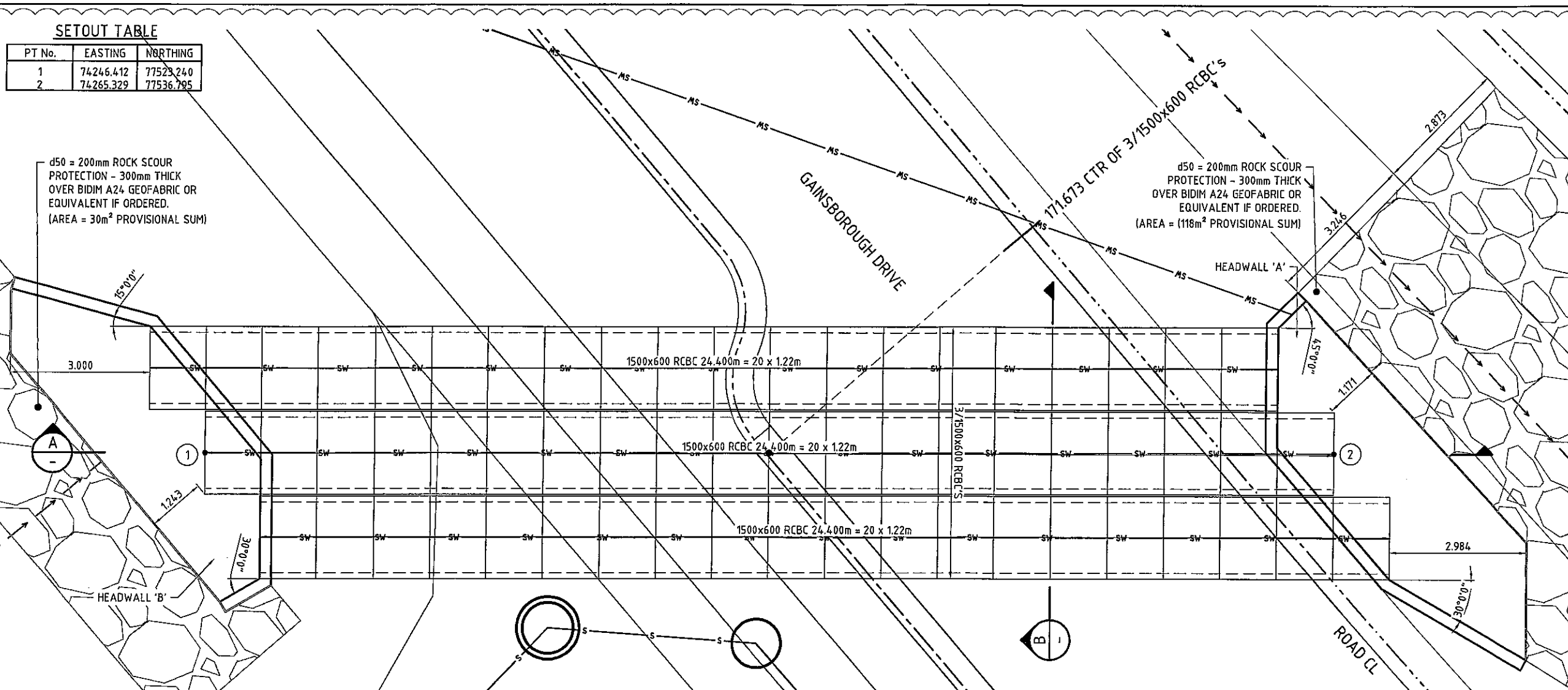
M:\2013\1308 Gainsborough Greens Precinct 5 Planning\Engineering\Acad\13 108 95 00 SW_L15.dwg: 08/08/2014 2:18:03 PM: es

SETOUT TABLE

| PT No. | EASTING | NORTHING |
|--------|-----------|-----------|
| 1 | 74246.412 | 77523.240 |
| 2 | 74265.329 | 77536.795 |

d50 = 200mm ROCK SCOUR PROTECTION - 300mm THICK OVER BIDIM A24 GEOFABRIC OR EQUIVALENT IF ORDERED. (AREA = 30m² PROVISIONAL SUM)

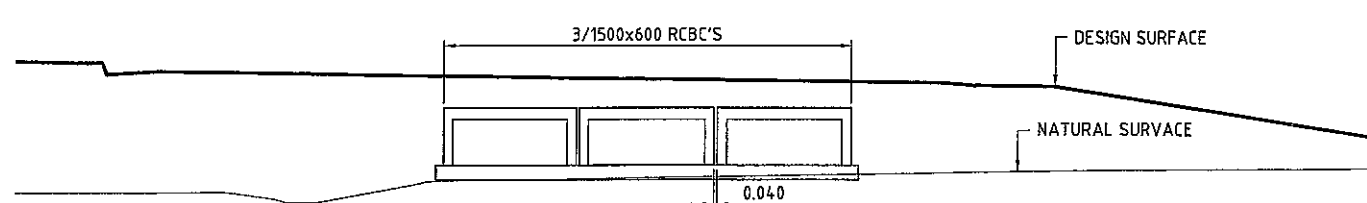
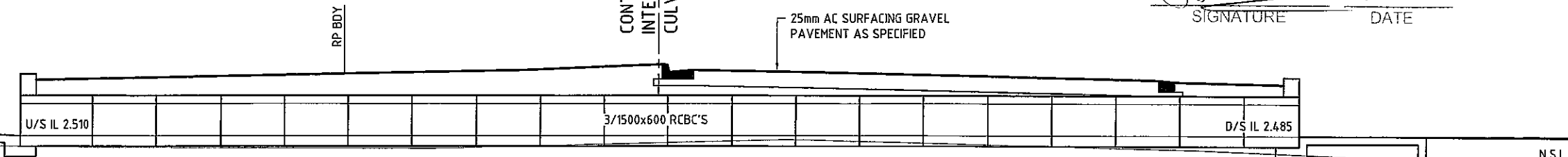
d50 = 200mm ROCK SCOUR PROTECTION - 300mm THICK OVER BIDIM A24 GEOFABRIC OR EQUIVALENT IF ORDERED. (AREA = 118m² PROVISIONAL SUM)



GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED

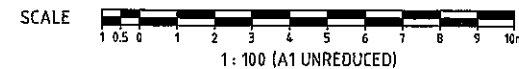
AS APPLICABLE AND SUBJECT TO AMENDMENTS MARKED IN RED AND THE CONDITIONS OF THE DEVELOPMENT PERMIT

Phenex 10 OCT 2014
SIGNATURE DATE



LEGEND

- BARRIER KERB AND CHANNEL TYPE J
- MOUNTABLE KERB TYPE F
- MOUNTABLE KERB TYPE G
- ⊙ SW PROPOSED STORMWATER DRAINAGE
- 36.0 FINISHED SURFACE CONTOURS



NOTE: REFER ALSO DTMR STD DWG 1316, 1317 FOR CULVERT DETAILS

DO NOT SCALE THIS DRAWING IF IN DOUBT - ASK!



REVISIONS

| No | Description | Date | By |
|----|-------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | CULVERT DETAILS AMENDED | AUG 14 | ES |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Designer - RP50 1999

Phenex 10 OCT 2014

Stormwater Culvert Details
SHEET 1 OF 2

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| CH | CH | GBG | JUN 14 |

| Scale | Sheet |
|-------|------------|
| 1:500 | 107 of 137 |

| Drawing No | Revision |
|------------|----------|
| 13-108-107 | B |



M:\2013\1308 Gainsborough Green Precinct 5 Planning\Engineering\A\c\13_108_107_111_CULVERT_DETAILS.dwg, 8/08/2014, 1:18:48 PM, ES

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

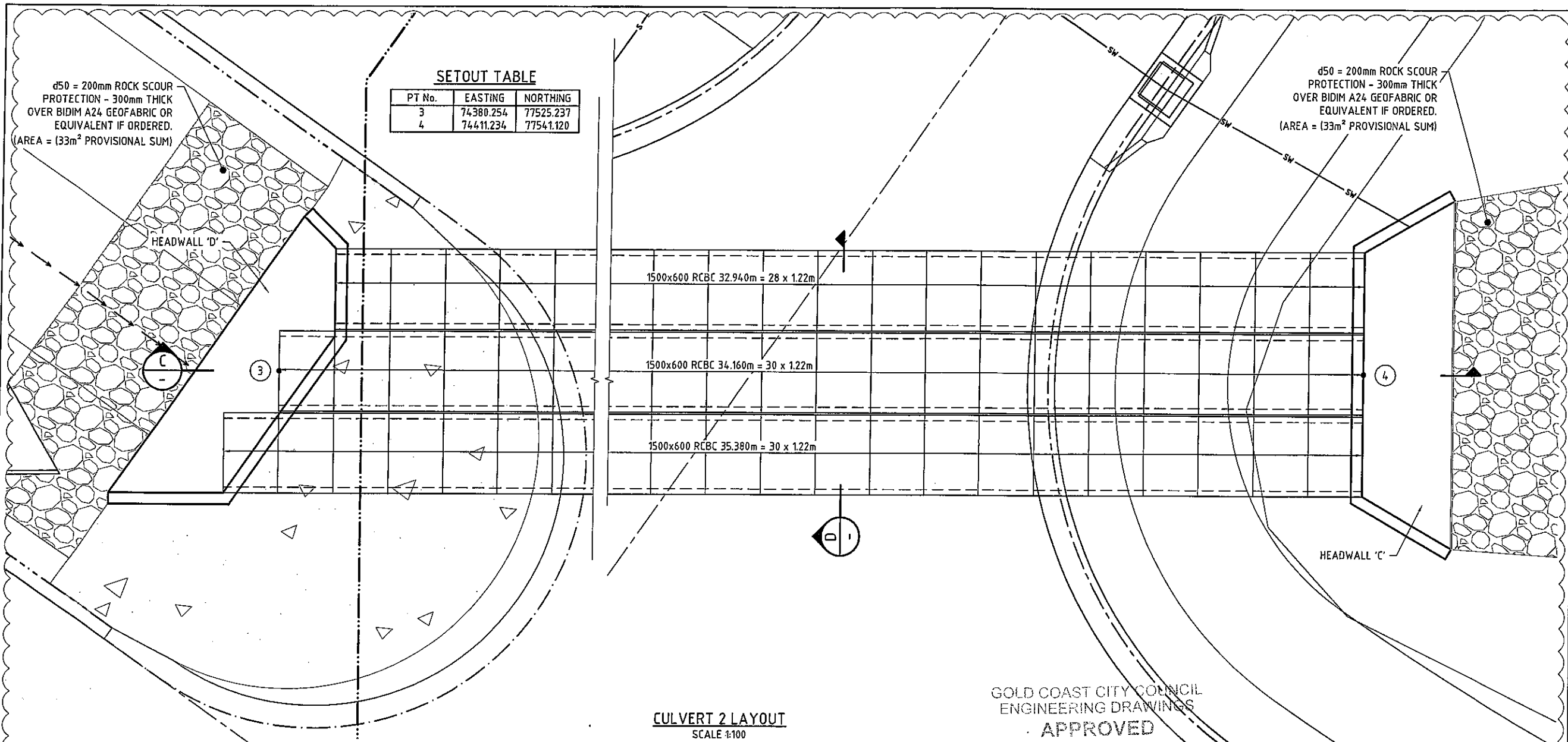


SETOUT TABLE

| PT No. | EASTING | NORTHING |
|--------|-----------|-----------|
| 3 | 74380.254 | 77525.237 |
| 4 | 74411.234 | 77541.120 |

d50 = 200mm ROCK SCOUR
PROTECTION - 300mm THICK
OVER BIDIM A24 GEOFABRIC OR
EQUIVALENT IF ORDERED.
(AREA = 133m² PROVISIONAL SUM)

d50 = 200mm ROCK SCOUR
PROTECTION - 300mm THICK
OVER BIDIM A24 GEOFABRIC OR
EQUIVALENT IF ORDERED.
(AREA = 133m² PROVISIONAL SUM)



CULVERT 2 LAYOUT
SCALE 1:100

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
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AMENDMENTS MARKED IN RED
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SIGNATURE DATE

REFER TO DETAIL
KN DWG 13-108-125

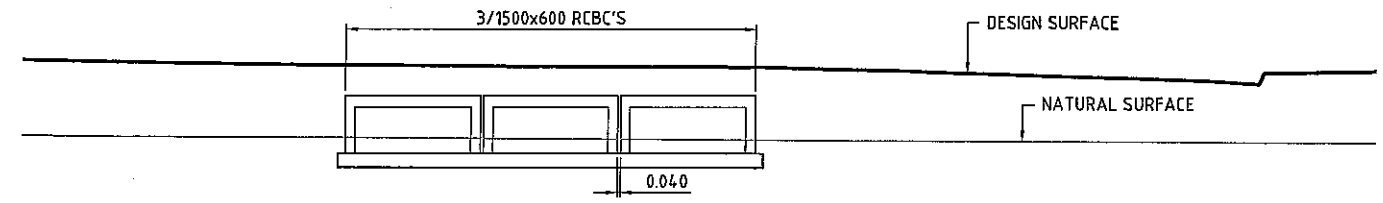
TRAFFIC ISLAND CONCRETE INFILL
REFER KNG DWG No 13-108-86

25mm AC SURFACING GRAVEL
PAVEMENT AS SPECIFIED

CONTROL LINE
INTERSECTION OF
CULVERTS CH 310.703



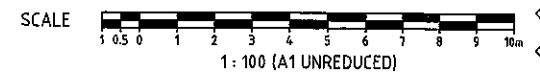
SECTION C
SCALE 1:100



SECTION D
SCALE 1:100

LEGEND

| | |
|--|---------------------------------|
| | BARRIER KERB AND CHANNEL TYPE J |
| | MOUNTABLE KERB TYPE F |
| | MOUNTABLE KERB TYPE G |
| | PROPOSED STORMWATER DRAINAGE |
| | FINISHED SURFACE CONTOURS |



NOTE: REFER ALSO DTMR STD DWG 1316, 1317 FOR CULVERT DETAILS

REVISIONS

| No | Description | Date | By |
|----|-------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | CULVERT DETAILS AMENDED | AUG 14 | ES |

Associated Consultants

VDM CONSULTING **LANDPARTNERS**
Form **DesignFlow**
landscape architects

Client

mirvac

Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director - PFC 1993
13.8.14

Drawn Title

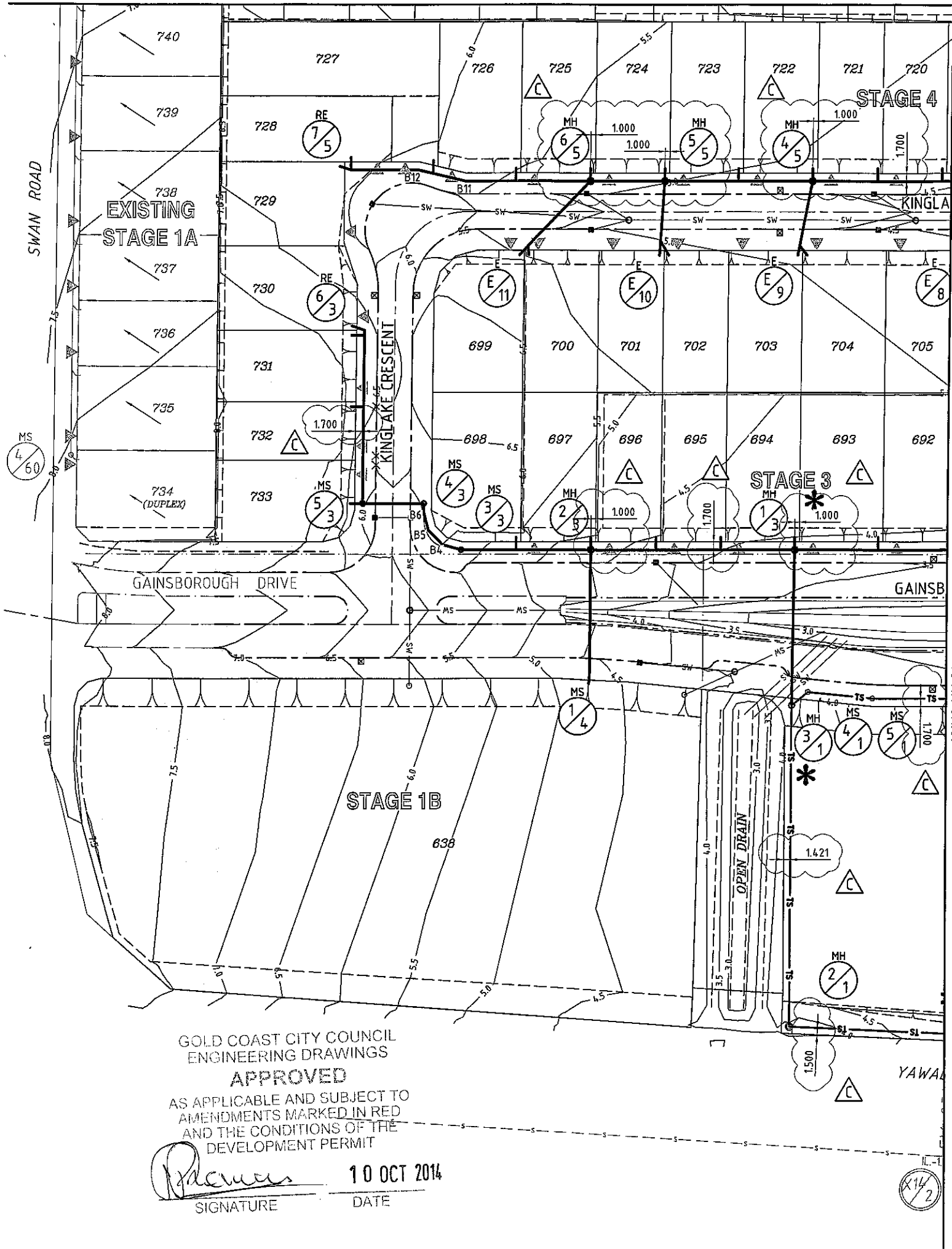
STORMWATER CULVERT DETAILS
SHEET 2 OF 2

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| CH | CH | GBG | JUN 14 |

| Scale | Sheet |
|-------|------------|
| 1:500 | 108 of 137 |

| Scale | Drawing No | Revision |
|-------|------------|----------|
| 1:100 | 13-108-108 | B |

P:\131013100_uarman\design\green\precinct 5.1\stormwater\engineering\kn\level 2\13-108-108.dwg
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GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT SOUTH EAST QUEENSLAND SEWERAGE DESIGN & CONSTRUCTION CODE, SPECIFICATIONS AND STANDARDS.
2. UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
3. THE CONSTRUCTION OF THE SEWERAGE WORK SHOWN ON THIS DRAWING SHALL BE SUPERVISED BY AN ENGINEER WHO HAS RPEQ REGISTRATION. SEWERAGE WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT INTO THE SEQ SERVICE PROVIDER SEWERAGE SYSTEM.
4. ALL WORKS ASSOCIATED WITH LIVE SEWERS OR MAINTENANCE HOLES SHALL BE CARRIED OUT BY THE DEVELOPER AT THE DEVELOPER'S EXPENSE.
5. ALL PIPES AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE "ACCEPTED PRODUCTS AND MATERIALS" LIST.
6. EACH ALLOTMENT SHALL BE SERVED BY A DN100 uPVC PROPERTY CONNECTION. FOR ALLOTMENTS OTHER THAN SINGLE RESIDENTIAL, A DN150 uPVC PROPERTY CONNECTION SHALL BE PROVIDED.
7. PROPERTY CONNECTION BRANCHES SHALL EXTEND INTO THE PROPERTY A MINIMUM OF 300mm AND A MAXIMUM OF 750mm.
8. WHERE PIPES ARE LAID IN FILL, THE FILLING SHALL BE CARRIED OUT IN LAYERS NOT EXCEEDING 300mm (LOOSE) IN DEPTH AND SHALL BE COMPACTIONED UNTIL THE COMPACTION IS NOT LESS THAN 95% OF THE MATERIALS MAXIMUM COMPACTION WHEN TESTED IN ACCORDANCE WITH A.S. 1289 (MODIFIED COMPACTION). TESTING SHALL BE CARRIED OUT AFTER EACH ALTERNATE LAYER. IN ALL SUCH CASES APPROVAL OF CONSTRUCTED SEWERS WILL NOT BE ISSUED BY THE SEQ SERVICE PROVIDER UNLESS CERTIFICATES ARE PRODUCED CERTIFYING THAT THE REQUIRED COMPACTION HAS BEEN ACHIEVED.
9. WHERE SEWERS HAVE A GRADE OF 1 IN 20 OR STEEPER, BULKHEADS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SOUTH EAST QUEENSLAND SEWERAGE DESIGN & CONSTRUCTION CODE.
10. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING SERVICES WITH RELEVANT AUTHORITIES BEFORE COMMENCING WORKS.
11. SEWERS SHALL BE DISUSED / ABANDONED IN ACCORDANCE WITH PROCEDURES SET OUT IN THE SOUTH EAST QUEENSLAND SEWERAGE DESIGN & CONSTRUCTION CODE.

12. BENCH MARK AND LEVELS TO AHD.
13. EXISTING ALLOTMENTS REQUIRING A PROPERTY CONNECTION FROM EXISTING SEWERS SHALL BE PROVIDED BY THE SEQ SERVICE PROVIDER AT DEVELOPERS COST

VEGETATION PROTECTION (WHERE APPLICABLE)

- A. TREES LOCATED ALONG THE FOOTPATH SHALL BE, TRANSPLANTED PRIOR TO CONSTRUCTION, OR REPLACED IF DESTROYED.
- B. WHEN WORKING WITHIN 4m OF TREES, RUBBER OR HARDWOOD GIRDLES SHALL BE CONSTRUCTED WITH 1.8m BATTENS CLOSELY SPACED AND ARRANGEMENT VERTICALLY FROM GROUND LEVEL. GIRDLES SHALL BE STRAPPED TO TREES PRIOR TO CONSTRUCTION AND REMAIN UNTIL COMPLETION.
- C. TREE ROOTS SHALL BE TUNNELLED UNDER, RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHALL BE TREATED WITH A SUITABLE FUNGICIDE. CONTRACT RELEVANT COUNCIL ARBORIST FOR FURTHER ADVICE.
- D. ANY TREE LOPPING REQUIRED SHOULD BE UNDERTAKEN BY AN APPROVED ARBORIST.

SOIL (WHERE APPLICABLE)

- A. TOPSOIL AND SUBSOIL SHALL BE STOCKPILED SEPARATELY.
- B. CARE SHOULD BE TAKEN TO PREVENT SEDIMENT FROM ENTERING THE STORMWATER SYSTEM. THIS MAY INVOLVE PLACING APPROPRIATE SEDIMENT CONTROLS AROUND STOCKPILES.

CREEK CROSSINGS (WHERE APPLICABLE)

- A. SILTATION CONTROL MEASURES SHALL BE PLACED DOWNSTREAM OF ANY EXCAVATION WORK.
- B. APPROPRIATE SEDIMENT CONTROLS SHALL BE USED TO PREVENT SEDIMENT FROM ENTERING THE CREEK.
- C. NO SOIL SHALL BE STOCKPILED WITHIN 5m OF CREEK.

REHABILITATION (WHERE APPLICABLE)

- A. PREDISTURBANCE SOIL PROFILES AND COMPACTION LEVELS ARE TO BE REINSTATED.
- B. PREDISTURBANCE VEGETATION PATTERNS SHOULD BE RESTORED.

SAFETY

- A. THE DESIGN AND CONSTRUCTION OF THE WORKS SHALL COMPLY WITH ALL QUEENSLAND LEGISLATION.

NOTE

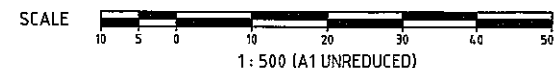
ALL LIVE CONNECTIONS TO EXISTING MAINS TO BE UNDERTAKEN BY GOLD COAST WATER

SEWER MANHOLE LEGEND

- MH 1/26 MANHOLE
- MS 2/26 MAINTENANCE SHAFT
- RE 3/26 RODDING END
- B BEND

LEGEND

- STAGE BOUNDARY
- TS --- PROPOSED 150mm SEWER MAIN
- S --- PROPOSED 225mm SEWER TRUNK MAIN
- S --- EXISTING SEWER MAIN
- W --- PROPOSED POTABLE WATER MAIN
- W --- EXISTING POTABLE WATER MAIN
- SW --- PROPOSED STORMWATER DRAINAGE
- ▲ DRIVEWAY POSITION INDICATED
- BATTER LINE
- KERB AND CHANNEL
- 36.0 --- FINISHED SURFACE CONTOURS
- 36.0 --- NATURAL SURFACE CONTOURS
- * DEFINES CONNECTION REQUIRED UNDER GOLD COAST WATER SUPERVISION



GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED

AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

Racman
SIGNATURE

10 OCT 2014
DATE

SEWERAGE RETICULATION LAYOUT PLAN
SCALE 1:500

REVISIONS

| No | Description | Date | By |
|----|---|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | STAGING LINWORK AMENDED + STREET NAMES AMENDED | JUL 14 | NJS |
| C | SEWER OFFSETS ADDED | SEP 14 | ES |

Associated Consultants



Client



Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
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EMAIL kn@knpl.com.au
ABN 35 112 053 611

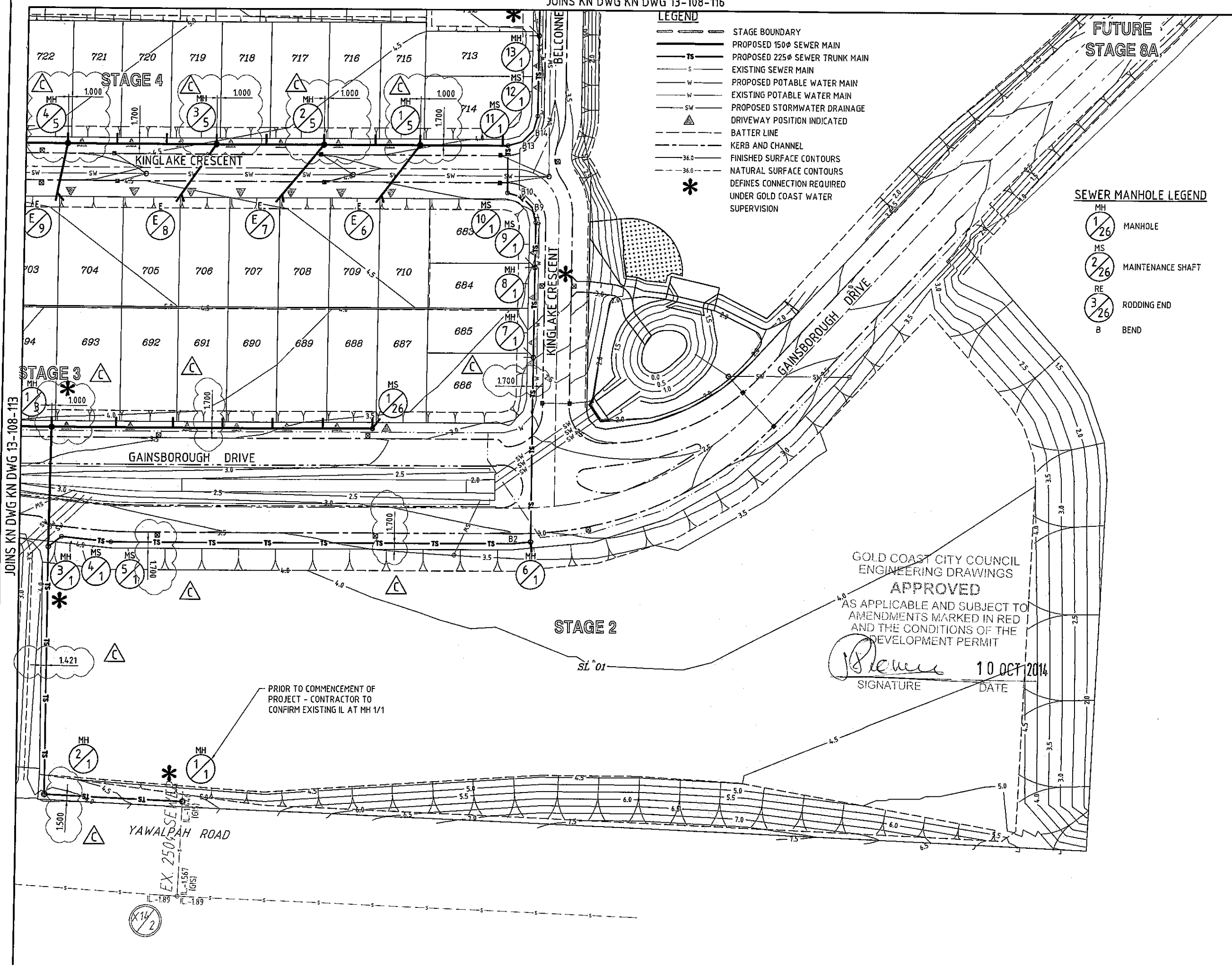
Approved by RPEQ 12914

SEWERAGE RETICULATION
LAYOUT PLAN
SHEET 1 OF 4

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

| Scale | Sheet |
|-------|------------|
| 1:500 | 113 of 137 |

| Revision | Drawing No | Date |
|----------|------------|------|
| A1 | 13-108-113 | C |



- LEGEND**
- STAGE BOUNDARY
 - PROPOSED 150Ø SEWER MAIN
 - TS — PROPOSED 225Ø SEWER TRUNK MAIN
 - S — EXISTING SEWER MAIN
 - W — PROPOSED POTABLE WATER MAIN
 - W — EXISTING POTABLE WATER MAIN
 - SW — PROPOSED STORMWATER DRAINAGE
 - ▲ DRIVEWAY POSITION INDICATED
 - BATTER LINE
 - KERB AND CHANNEL
 - 36.0 — FINISHED SURFACE CONTOURS
 - 36.0 — NATURAL SURFACE CONTOURS
 - * DEFINES CONNECTION REQUIRED UNDER GOLD COAST WATER SUPERVISION

- SEWER MANHOLE LEGEND**
- MH 1/26 MANHOLE
 - MS 2/26 MAINTENANCE SHAFT
 - RE 3/26 RODDING END
 - B BEND

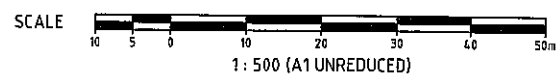
GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED

AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

[Signature] 10 OCT 2014
SIGNATURE DATE

PRIOR TO COMMENCEMENT OF
PROJECT - CONTRACTOR TO
CONFIRM EXISTING I.L. AT MH 1/1

SEWERAGE RETICULATION LAYOUT PLAN
SCALE 1:500



REVISIONS

| No | Description | Date | By |
|----|---|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | STAGING LINWORK AMENDED + STREET NAMES AMENDED | JUL 14 | NJS |
| C | SEWER OFFSETS ADDED | SEP 14 | ES |

Associated Consultants

Client

Project
**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
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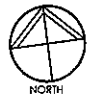
Approved/Author: *[Signature]* 12.9.14

Drawing Title
**SEWERAGE RETICULATION
LAYOUT PLAN
SHEET 2 OF 4**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

| Scale | Sheet |
|-------|------------|
| 1:500 | 114 of 137 |

| Drawing No | Revision |
|---------------|----------|
| A1 13-108-114 | C |



REVISIONS

| No | Description | Date | By |
|----|---|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | STAGING LINEWORK, SEWER LABELS & STREET NAMES AMENDED | JUL 14 | NJS |
| C | SEWER OFFSETS ADDED | SEP 14 | ES |

Associated Consultants

Client

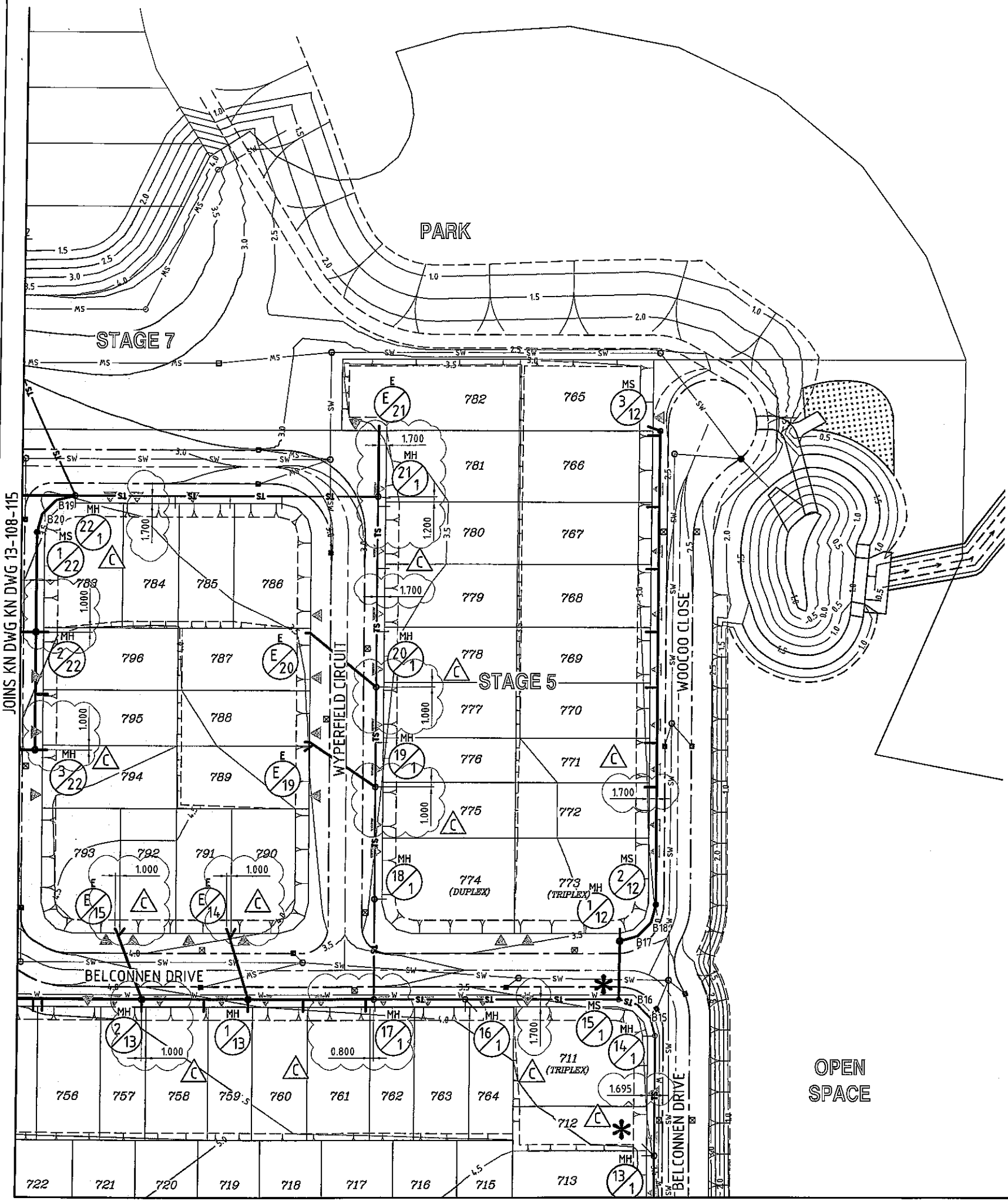
Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved for Construction: *[Signature]* 09/14

Drawing Title
SEWERAGE RETICULATION LAYOUT PLAN
SHEET 4 OF 4

| | | | |
|-------------------|--------------------------|----------------|---------------------|
| Drawn ES | Designed CH | Checked GBG | Date JUN 14 |
| Scale 1:500 | Drawing No 13-108-116 | | Sheet 116 of 137 |
| Revision No A1 | | Revision C | |



GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED
AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

[Signature] 10 OCT 2014
SIGNATURE DATE

SEWER MANHOLE LEGEND

- MANHOLE
- MAINTENANCE SHAFT
- RODDING END
- BEND

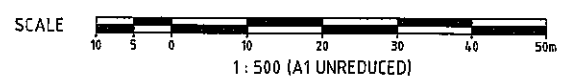
LEGEND

- STAGE BOUNDARY
- PROPOSED 150Ø SEWER MAIN
- PROPOSED 225Ø SEWER TRUNK MAIN
- EXISTING SEWER MAIN
- PROPOSED POTABLE WATER MAIN
- EXISTING POTABLE WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- DRIVEWAY POSITION INDICATED
- BATTER LINE
- KERB AND CHANNEL
- FINISHED SURFACE CONTOURS
- NATURAL SURFACE CONTOURS
- DEFINES CONNECTION REQUIRED UNDER GOLD COAST WATER SUPERVISION

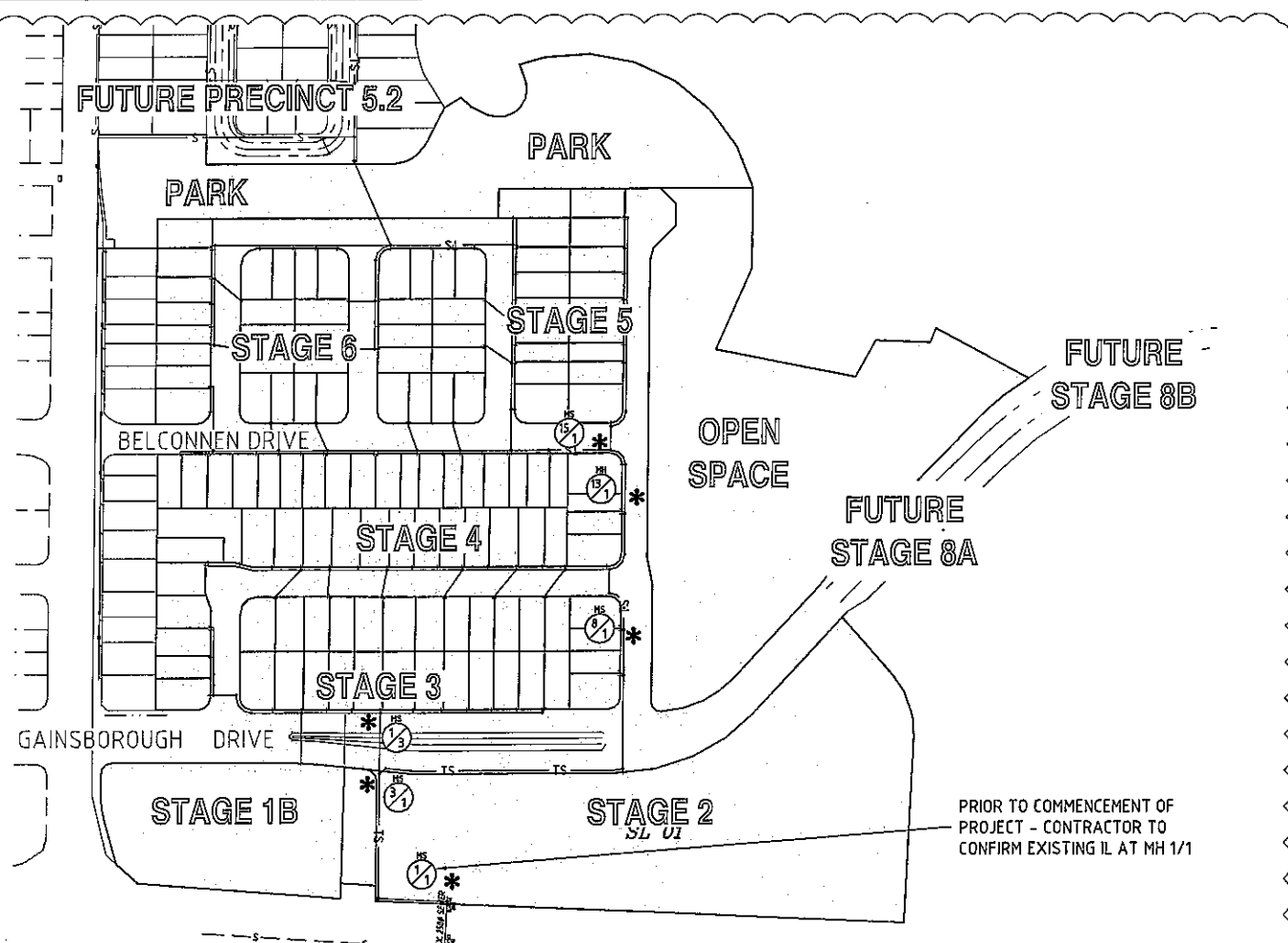
OPEN SPACE

SEWERAGE RETICULATION LAYOUT PLAN
SCALE 1:500

JOINS KN DWG KN DWG 13-108-114



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SEWERAGE RETICULATION LOCALITY PLAN
SCALE 1:2000

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED
AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT
P. Chen 10 OCT 2014
SIGNATURE DATE

PRIOR TO COMMENCEMENT OF
PROJECT - CONTRACTOR TO
CONFIRM EXISTING IL AT MH 1/1

LIVE SEWER WORKS TABLE

| No. | DESCRIPTION | DIA. SEWER | MH No. | MH/MS TYPE | COVER TYPE | LOT No. | F.S.L. | E.S.L. | IL. | DEPTH TO INVERT | |
|------|--|------------|--------|------------|------------|-----------------------------|--------|--------|--------|-----------------|----------|
| 1(A) | CONTRACTOR TO CONSTRUCT NEW MANHOLE 1/1 OVER EXISTING LINE. AFTER CLEANSING, TESTING AND INSPECTING, NOTIFY GCCC. | 225 | 1/1 | - | ⊖ | YAWALPAH RD LOT SL 01 | 4.833 | 4.298 | -1.400 | 6.233 | STAGE 1B |
| 1(B) | GCCC TO BREAK OUT EXISTING PIPE IN NEW MANHOLE 1/1 AND PROVIDE APPROPRIATE INTERNAL BENCHING AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION. | | | | | | | | | | |
| 2(A) | 0.5m FROM STUB END CAP, CONSTRUCTOR TO LAY NEW LINE 1. AFTER CLEANSING, TESTING AND INSPECTING, NOTIFY GCCC. | 225 | 3/1 | A | Ⓟ | LOT SL01 | 3.739 | 2.151 | -0.001 | 4.740 | STAGE 2 |
| 2(B) | GCCC TO REMOVE TEMPORARY END CAPS ON STUB & LINE 1 AND MAKE LIVE CONNECTIONS AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION. | | | | | | | | | | |
| 3(A) | 0.5m FROM STUB END CAP, CONSTRUCTOR TO LAY NEW LINE 1. AFTER CLEANSING, TESTING AND INSPECTING, NOTIFY GCCC. | 150 | 1/3 | A | Ⓟ | GAINSBOROUGH DRIVE LOT SL01 | 3.820 | 2.225 | 1.146 | 2.674 | STAGE 2 |
| 3(B) | GCCC TO REMOVE TEMPORARY END CAPS ON STUB & LINE 1 AND MAKE LIVE CONNECTIONS AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION. | | | | | | | | | | |
| 4(A) | 0.5m FROM STUB END CAP, CONSTRUCTOR TO LAY NEW LINE 1. AFTER CLEANSING, TESTING AND INSPECTING, NOTIFY GCCC. | 225 | 8/1 | A | Ⓟ | ROAD 4 LOT 684 | 3.964 | 1.405 | -0.112 | 4.076 | STAGE 4 |
| 4(B) | GCCC TO REMOVE TEMPORARY END CAPS ON STUB & LINE 1 AND MAKE LIVE CONNECTIONS AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION. | | | | | | | | | | |
| 5(A) | 0.5m FROM STUB END CAP, CONSTRUCTOR TO LAY NEW LINE 1. AFTER CLEANSING, TESTING AND INSPECTING, NOTIFY GCCC. | 225 | 13/1 | A | Ⓟ | ROAD 4 LOT 713 | 3.487 | 0.903 | 0.293 | 3.194 | STAGE 5 |
| 5(B) | GCCC TO REMOVE TEMPORARY END CAPS ON STUB & LINE 1 AND MAKE LIVE CONNECTIONS AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION. | | | | | | | | | | |
| 6(A) | 0.5m FROM STUB END CAP, CONSTRUCTOR TO LAY NEW LINE 1. AFTER CLEANSING, TESTING AND INSPECTING, NOTIFY GCCC. | 225 | 15/1 | A | Ⓟ | ROAD 1 LOT 711 | 3.381 | 0.938 | 0.495 | 2.886 | STAGE 6 |
| 6(B) | GCCC TO REMOVE TEMPORARY END CAPS ON STUB & LINE 1 AND MAKE LIVE CONNECTIONS AFTER SUCCESSFUL "ON MAINTENANCE" INSPECTION. | | | | | | | | | | |

| | | |
|---------------------------|---|---------|
| NAME OF ESTATE | GAINSBOROUGH GREENS PRECINCT 5.1 STAGE 1B | |
| SUBDIVIDER | MIRVAC | |
| APPLICATION No. | PN26770/12/DA5 & MCU201300930 | |
| SP DELEGATE APPROVAL DATE | 13TH FEBRUARY 2014 | |
| DRAWING PLAN No. | - | |
| No. OF ALLOTMENTS | 1 | |
| AREA IN Ha. | 1.484 Ha | |
| LENGTH | 225mm | - |
| OF SEWERS | 150mm | 26.315m |

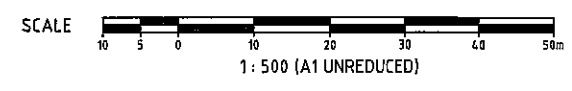
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| NAME OF ESTATE | GAINSBOROUGH GREENS PRECINCT 5.1 STAGE 2 | |
| SUBDIVIDER | MIRVAC | |
| APPLICATION No. | PN26770/12/DA5 & MCU201300930 | |
| SP DELEGATE APPROVAL DATE | 13TH FEBRUARY 2014 | |
| DRAWING PLAN No. | - | |
| No. OF ALLOTMENTS | 1 | |
| AREA IN Ha. | 3.670 Ha | |
| LENGTH | 225mm | 283.847m |
| OF SEWERS | 150mm | 203.957m |

| | | |
|---------------------------|--|----------|
| NAME OF ESTATE | GAINSBOROUGH GREENS PRECINCT 5.1 STAGE 3 | |
| SUBDIVIDER | MIRVAC | |
| APPLICATION No. | PN26770/12/DA5 & MCU201300930 | |
| SP DELEGATE APPROVAL DATE | 13TH FEBRUARY 2014 | |
| DRAWING PLAN No. | - | |
| No. OF ALLOTMENTS | 16 | |
| AREA IN Ha. | 0.804 Ha | |
| LENGTH | 225mm | - |
| OF SEWERS | 150mm | 136.613m |

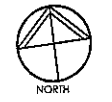
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|---------------------------|--|----------|
| NAME OF ESTATE | GAINSBOROUGH GREENS PRECINCT 5.1 STAGE 4 | |
| SUBDIVIDER | MIRVAC | |
| APPLICATION No. | PN26770/12/DA5 & MCU201300930 | |
| SP DELEGATE APPROVAL DATE | 13TH FEBRUARY 2014 | |
| DRAWING PLAN No. | - | |
| No. OF ALLOTMENTS | 33 | |
| AREA IN Ha. | 2.210 Ha | |
| LENGTH | 225mm | 111.098m |
| OF SEWERS | 150mm | 329.598m |

| | | |
|---------------------------|--|----------|
| NAME OF ESTATE | GAINSBOROUGH GREENS PRECINCT 5.1 STAGE 5 | |
| SUBDIVIDER | MIRVAC | |
| APPLICATION No. | PN26770/12/DA5 & MCU201300930 | |
| SP DELEGATE APPROVAL DATE | 13TH FEBRUARY 2014 | |
| DRAWING PLAN No. | - | |
| No. OF ALLOTMENTS | 37 | |
| AREA IN Ha. | 5.083 Ha | |
| LENGTH | 225mm | 251.709m |
| OF SEWERS | 150mm | 193.216m |

| | | |
|---------------------------|--|----------|
| NAME OF ESTATE | GAINSBOROUGH GREENS PRECINCT 5.1 STAGE 6 | |
| SUBDIVIDER | MIRVAC | |
| APPLICATION No. | PN26770/12/DA5 & MCU201300930 | |
| SP DELEGATE APPROVAL DATE | 13TH FEBRUARY 2014 | |
| DRAWING PLAN No. | - | |
| No. OF ALLOTMENTS | 37 | |
| AREA IN Ha. | 2.276 Ha | |
| LENGTH | 225mm | 74.417m |
| OF SEWERS | 150mm | 468.235m |



DO NOT SCALE THIS DRAWING IF IN DOUBT - ASK!



| REVISIONS | | | |
|--|---------------------------------|--------|-----|
| No | Description | Date | By |
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | LOCALITY PLAN ADDED, LIVE WORKS | JUL 14 | NIS |
| TABLE, DRAWING TITLE, STREET NAMES AMENDED | | | |

Associated Consultants

Client

Project
GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director - 13/08/14

SEWERAGE RETICULATION LOCALITY PLAN AND LIVE CONNECTION TABLES

| | | | |
|-------|----------|---------|--------|
| Drawn | Designed | Checked | Date |
| ES | CH | GBG | JUN 14 |

Scale 1:500 Sheet 117 of 137

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| A1 | Drawing No 13-108-117 | Revision B |
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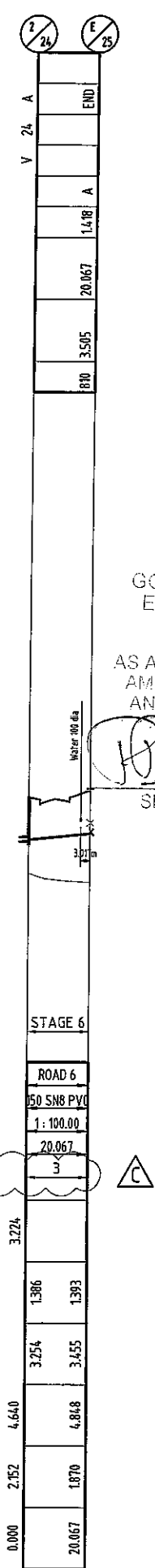
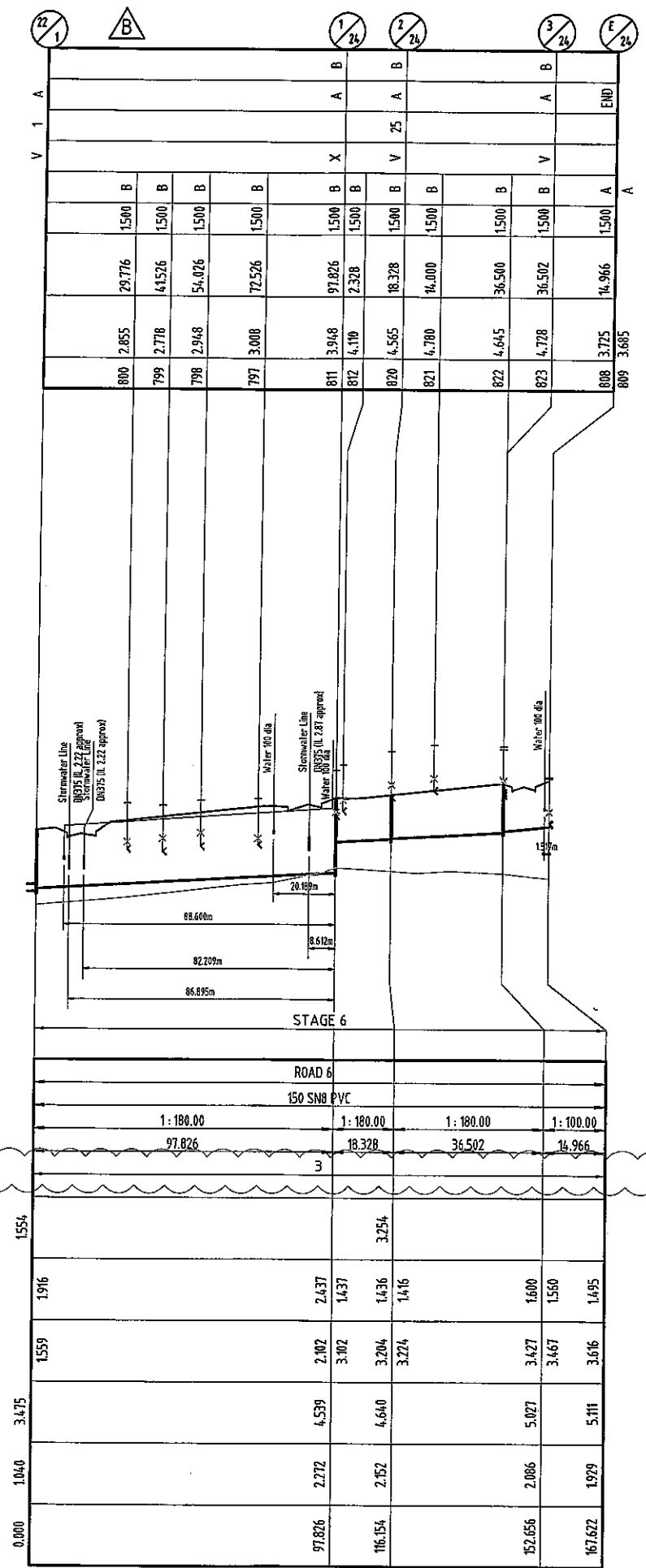
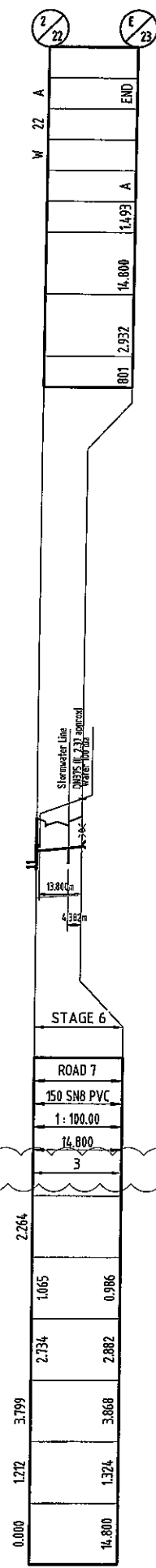
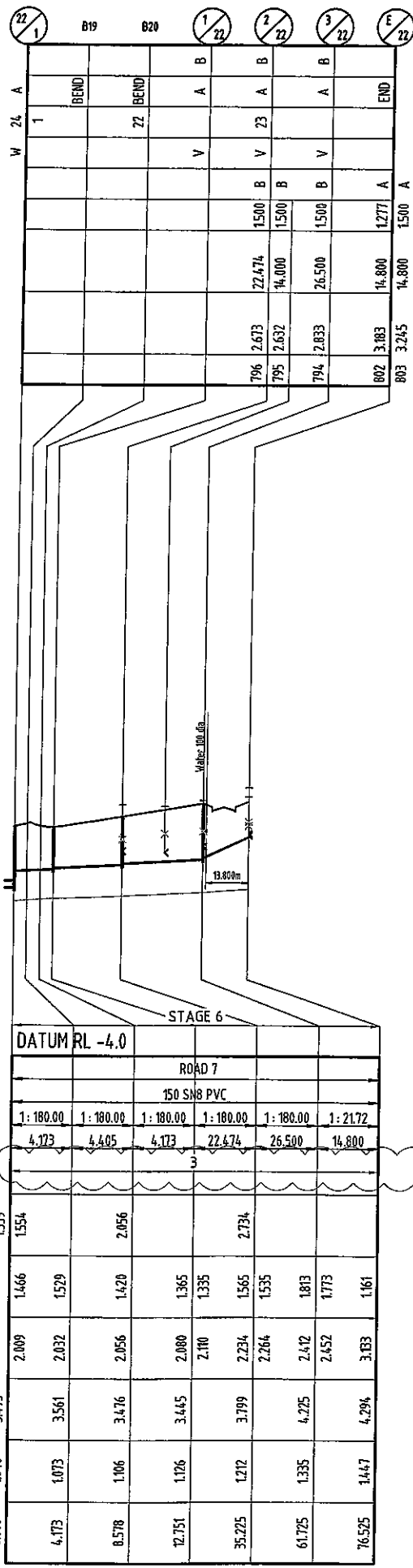
M:\2013\108 Gainsborough Greens Precinct 5 Planning\Engineering\Acad\13 108 117 Sewer.dwg, 10/08/2014, 2:15:51 PM, es

| |
|----------------------------|
| MAINTENANCE HOLE/SHAFT No. |
| MH/MS COVER TYPE |
| MH/MS TYPE |
| BRANCH LINE No. |
| BRANCH DROP TYPE |
| HC TYPE |
| HC DEPTH |
| HC CH. TO DS MH/MS |
| HC INVERT LEVEL |
| HC LOT No. |

NOTES:

- HOUSE CONNECTION BRANCHES TO BE IN ACCORDANCE WITH SEQ DESIGN & CONSTRUCTION CODE.
- TYPE D HOUSE CONNECTION BRANCH OPTIONS TO BE IN ACCORDANCE WITH JUNCTION TABLE ON SEQ DESIGN & CONSTRUCTION CODE.
- HOUSE CONNECTION BRANCHES TO BE 100mm DIA UNLESS NOTED OTHERWISE.

| |
|------------------------------|
| LOCATION |
| PIPE DIAMETER |
| GRADE |
| LENGTH |
| EMBEDMENT TYPE |
| JUNCTION |
| INVERT LEVEL |
| DEPTH OF INVERT BELOW FSL |
| INVERT LEVEL (IL) |
| FINISHED SURFACE LEVEL (FSL) |
| EXISTING SURFACE LEVEL (ESL) |
| CHAINAGE (CH) |



GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED
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AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

Promer 10 OCT 2014
SIGNATURE DATE

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!

NORTH

| REVISIONS | | | |
|-----------|------------------------------|--------|-----|
| No | Description | Date | By |
| A | COUNCIL APPROVAL | JUN 14 | G8G |
| B | LONG SECTIONS AMENDED | JUL 14 | ES |
| C | EMBEDMENT TYPE, NOTE AMENDED | SEP 14 | ES |

Associated Consultants:

VDM CONSULTING LANDPARTNERS
Form landscape architects DesignFlow

Client: mirvac

Project: GAINSBOROUGH GREENS PRECINCT 5.1 STAGE 1B TO STAGE 7

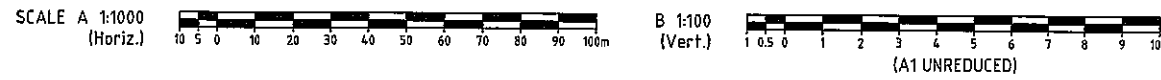
KN GROUP PTY LTD CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved by: *Promer* 10 OCT 2014

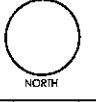
Drawing Title: SEWERAGE RETICULATION LONGITUDINAL SECTIONS SHEET 1 OF 7

| | | | |
|-----------------|------------------------|--------------|--------------|
| Drawn: ES | Designed: CH | Checked: G8G | Date: JUN 14 |
| Scale: AS SHOWN | Sheet: 118 of 137 | | Revision: C |
| A1 | Drawing No: 13-108-118 | | |



| | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|------------|-----|-----|-----|-----|------------|-------|-------|-------|-------|------|------|-------|-------|------|------|-------|-------|-------|-------|------|------|---|---|
| MAINTENANCE HOLE/SHAFT No. | 1/1 | 2/1 | 3/1 | 4/1 | 5/1 | B2 | 6/1 | 7/1 | 8/1 | 9/1 | B9 | B10 | 10/1 | 11/1 | B13 | B14 | 12/1 | 13/1 | 14/1 | B15 | B16 | 15/1 | | |
| MH/MS COVER TYPE | | | A | B | A | A | B | A | B | A | BEND | BEND | A | B | BEND | BEND | A | B | A | B | BEND | BEND | A | B |
| MH/MS TYPE | | | A | B | A | A | B | A | B | A | BEND | BEND | A | B | BEND | BEND | A | B | A | B | BEND | BEND | A | B |
| BRANCH LINE No. | | | 3 | | | 1 | 2 | | | | | 1 | | | | 1 | | | | | 1 | 12 | | |
| BRANCH DROP TYPE | | V | V | V | V | V | V | V | V | V | | | V | V | | | V | V | V | V | | | | |
| HC TYPE | B | | | | | B | B | B | B | B | | | B | B | | | B | B | B | B | | | | |
| HC DEPTH | 1500 | | | | | 1500 | 1500 | 1500 | 1500 | 1500 | | | 1500 | 1500 | | | 1500 | 1500 | 1500 | 1500 | | | | |
| HC CH. TO DS MH/MS | | | | | | | | | | | | | | | | | | | | | | | | |
| HC INVERT LEVEL | 0.000 | | | | | 5.314 | 5.314 | 5.314 | 5.314 | 5.314 | | | 5.314 | 5.314 | | | 5.314 | 5.314 | 5.314 | 5.314 | | | | |
| HC LOT No. | SL02 3.683 | | | | | SL01 2.370 | | | | | | | | | | | | | | | | | | |

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IF IN DOUBT - ASK!



REVISIONS

| No | Description | Date | By |
|----|------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | LONG SECTIONS AMENDED | JUL 14 | ES |
| C | EMBEDMENT TYPE, NOTE AMENDED | SEP 14 | ES |

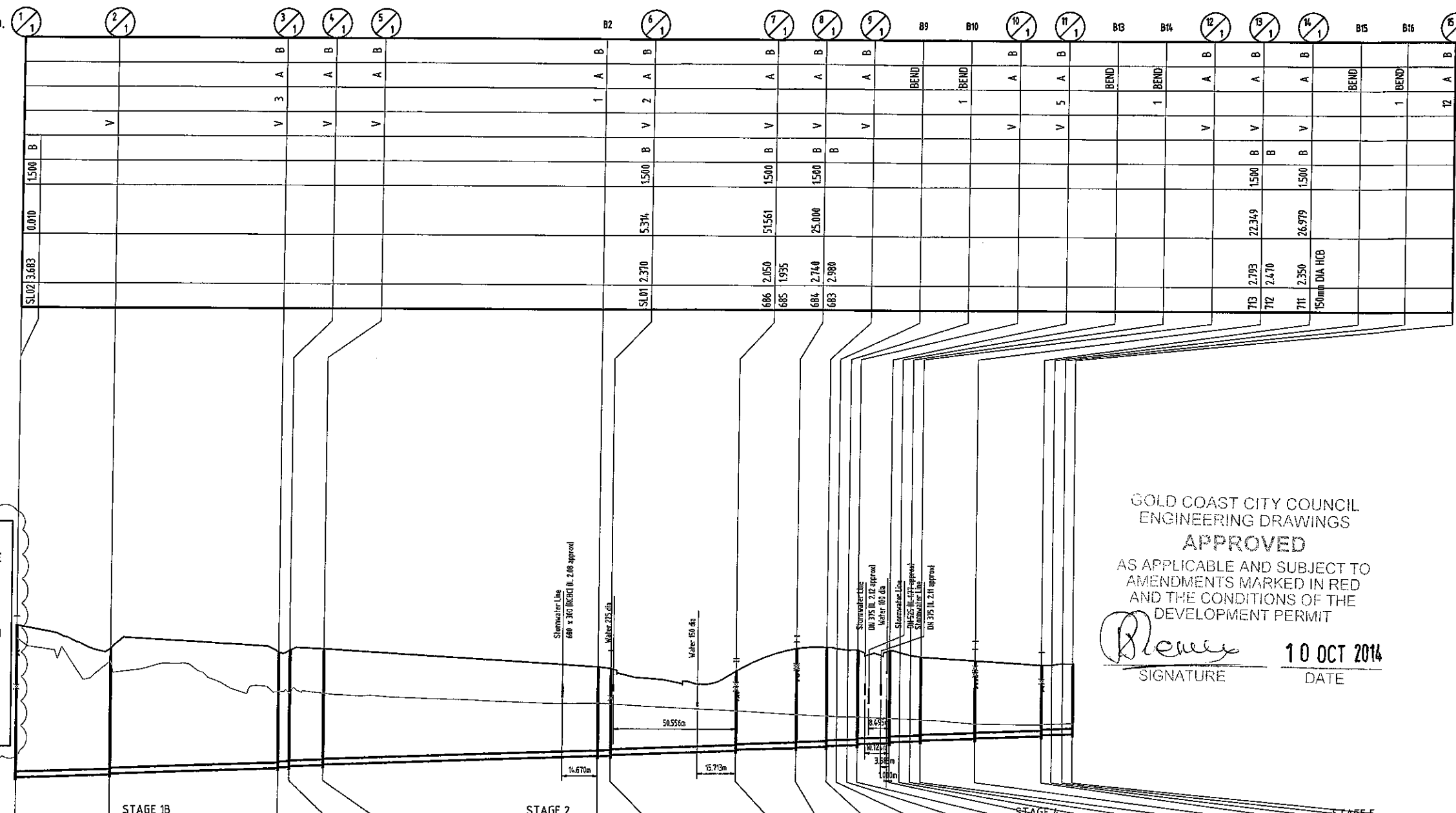
- NOTES:**
- HOUSE CONNECTION BRANCHES TO BE IN ACCORDANCE WITH SEQ DESIGN & CONSTRUCTION CODE.
 - TYPE D HOUSE CONNECTION BRANCH OPTIONS TO BE IN ACCORDANCE WITH JUNCTION TABLE ON SEQ DESIGN & CONSTRUCTION CODE.
 - HOUSE CONNECTION BRANCHES TO BE 100mm DIA UNLESS NOTED OTHERWISE.

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AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

P. Dewey
SIGNATURE

10 OCT 2014
DATE



| LINE | STAGE 1B | STAGE 2 | STAGE 4 | STAGE 5 |
|------------------------------|-------------|--------------------|---------|---------|
| DATUM RL | -4.0 | | | |
| ALLOTMENT | ALLOTMENT | GAINSBOROUGH DRIVE | | ROAD 1 |
| PIPE DIAMETER | 225 SN8 PVC | | | |
| GRADE | 1:300.00 | | | |
| LENGTH | 38.500 | 69.145 | 4.525 | 13.928 |
| EMBEDMENT TYPE | | | | |
| JUNCTION INVERT LEVEL | | 1.034 | | |
| DEPTH OF INVERT BELOW FSL | 6.233 | 4.740 | 3.657 | 4.734 |
| INVERT LEVEL (IL) | -1.400 | -1.001 | -0.465 | -0.884 |
| FINISHED SURFACE LEVEL (FSL) | 4.833 | 3.739 | 3.192 | 3.894 |
| EXISTING SURFACE LEVEL (ESL) | 4.298 | 2.151 | 1.703 | 2.080 |
| CHAINAGE (CH) | 38.500 | 107.645 | 238.597 | 426.098 |

| LOCATION | PIPE DIAMETER | GRADE | LENGTH | EMBEDMENT TYPE | JUNCTION INVERT LEVEL | DEPTH OF INVERT BELOW FSL | INVERT LEVEL (IL) | FINISHED SURFACE LEVEL (FSL) | EXISTING SURFACE LEVEL (ESL) | CHAINAGE (CH) |
|----------|---------------|-------|--------|----------------|-----------------------|---------------------------|-------------------|------------------------------|------------------------------|---------------|
| | | | | | | | | | | |

Associated Consultants

VDM CONSULTING **LANDPARTNERS**
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landscape architects

Client

mirvac

Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
CONSULTING ENGINEERS

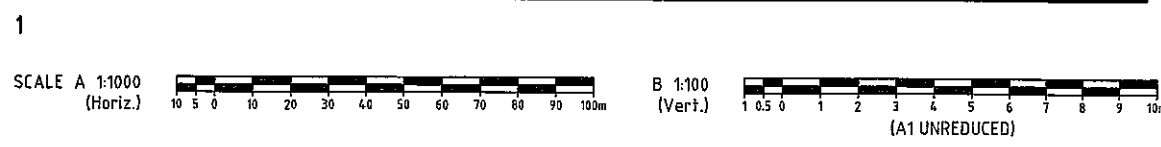
LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL: kn@knpl.com.au
ABN 35 112 053 611

Approved Director: *[Signature]* 12.9.14

Drawing Title

**SEWERAGE RETICULATION
LONGITUDINAL SECTIONS
SHEET 2 OF 7**

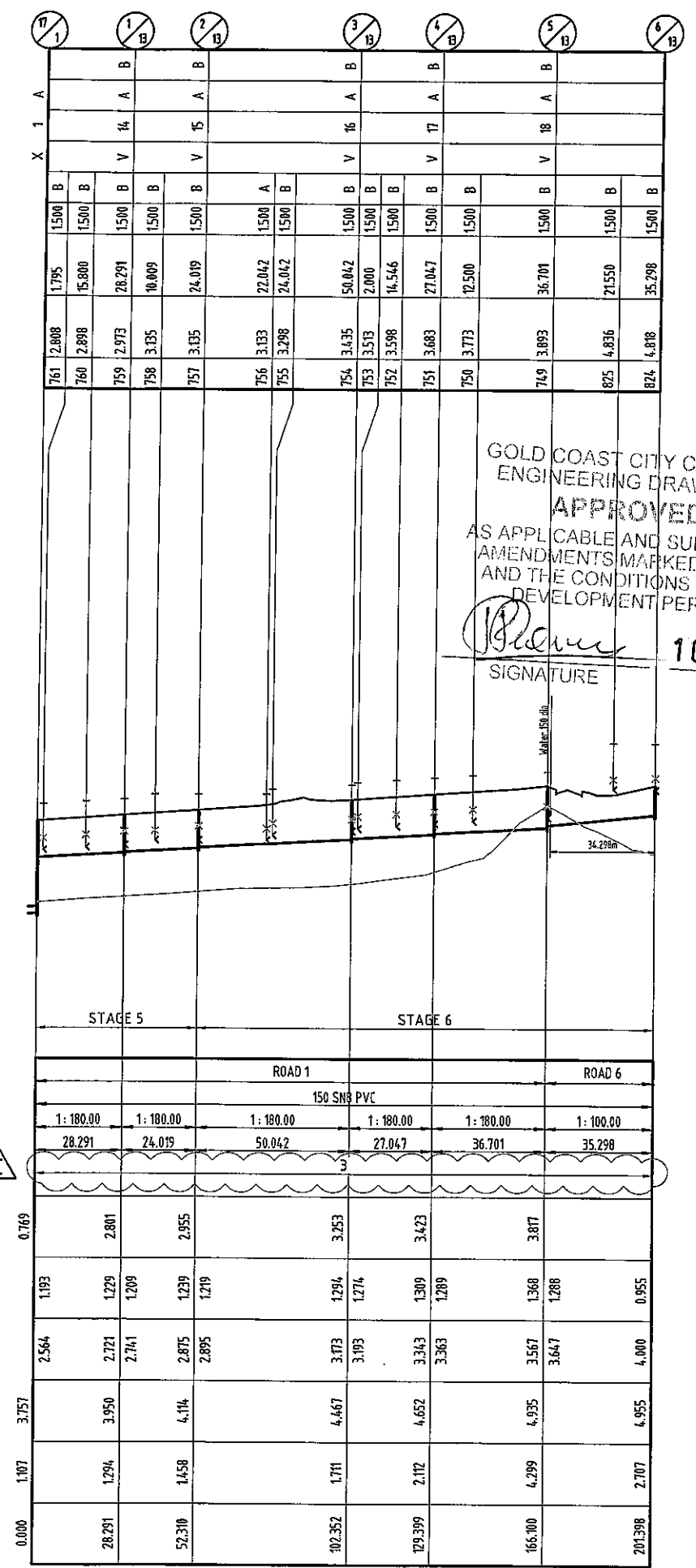
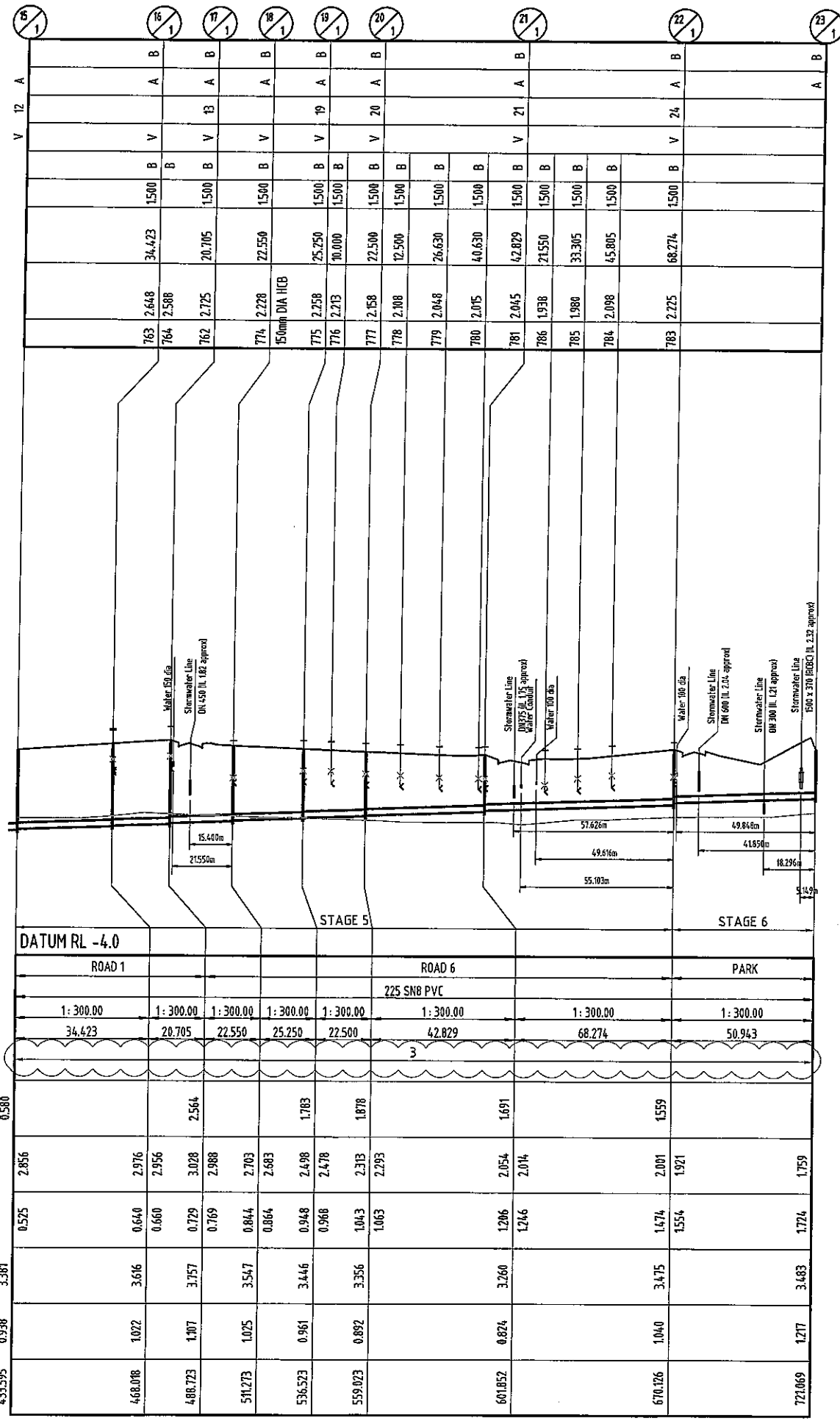
| | | | |
|----------|------------|----------|----------|
| Drawn | Designed | Checked | Date |
| ES | CH | GBG | JUN 14 |
| Scale | Sheet | | Revision |
| AS SHOWN | 119 of 137 | | |
| A1 | Drawing No | Revision | |
| | 13-108-119 | C | |



| |
|----------------------------|
| MAINTENANCE HOLE/SHAFT No. |
| MH/MS COVER TYPE |
| MH/MS TYPE |
| BRANCH LINE No. |
| BRANCH DROP TYPE |
| HC TYPE |
| HC DEPTH |
| HC CH. TO DS MH/MS |
| HC INVERT LEVEL |
| HC LOT No. |

- NOTES:**
- HOUSE CONNECTION BRANCHES TO BE IN ACCORDANCE WITH SEQ DESIGN & CONSTRUCTION CODE.
 - TYPE D HOUSE CONNECTION BRANCH OPTIONS TO BE IN ACCORDANCE WITH JUNCTION TABLE ON SEQ DESIGN & CONSTRUCTION CODE.
 - HOUSE CONNECTION BRANCHES TO BE 100mm DIA UNLESS NOTED OTHERWISE.

| |
|------------------------------|
| LOCATION |
| PIPE DIAMETER |
| GRADE |
| LENGTH |
| EMBEDMENT TYPE |
| JUNCTION |
| INVERT LEVEL |
| DEPTH OF INVERT BELOW FSL |
| INVERT LEVEL (IL) |
| FINISHED SURFACE LEVEL (FSL) |
| EXISTING SURFACE LEVEL (ESL) |
| CHAINAGE (CH) |



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SIGNATURE

10 OCT 2014
DATE

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NORTH

| REVISIONS | | | |
|-----------|-----------------------------|--------|-----|
| No | Description | Date | By |
| A | COUNCIL APPROVAL | JUN 14 | G&G |
| B | LONG SECTIONS AMENDED | JUL 14 | ES |
| C | EMBEDMENT TYPE NOTE AMENDED | SEP 14 | ES |

Associated Consultants

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mirvac

Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
CONSULTING ENGINEERS

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SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

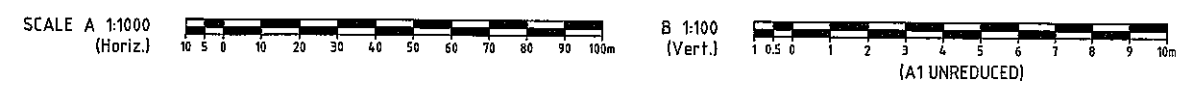
Approved Inspector: *[Signature]* 12.9.14

Drawing Title
**SEWERAGE RETICULATION
LONGITUDINAL SECTIONS
SHEET 3 OF 7**

| | | | |
|-------|----------|---------|--------|
| Drawn | Designed | Checked | Date |
| ES | CH | GBG | JUN 14 |

Scale: AS SHOWN Sheet: 120 of 137

Drawing No: 13-108-120 Revision: C

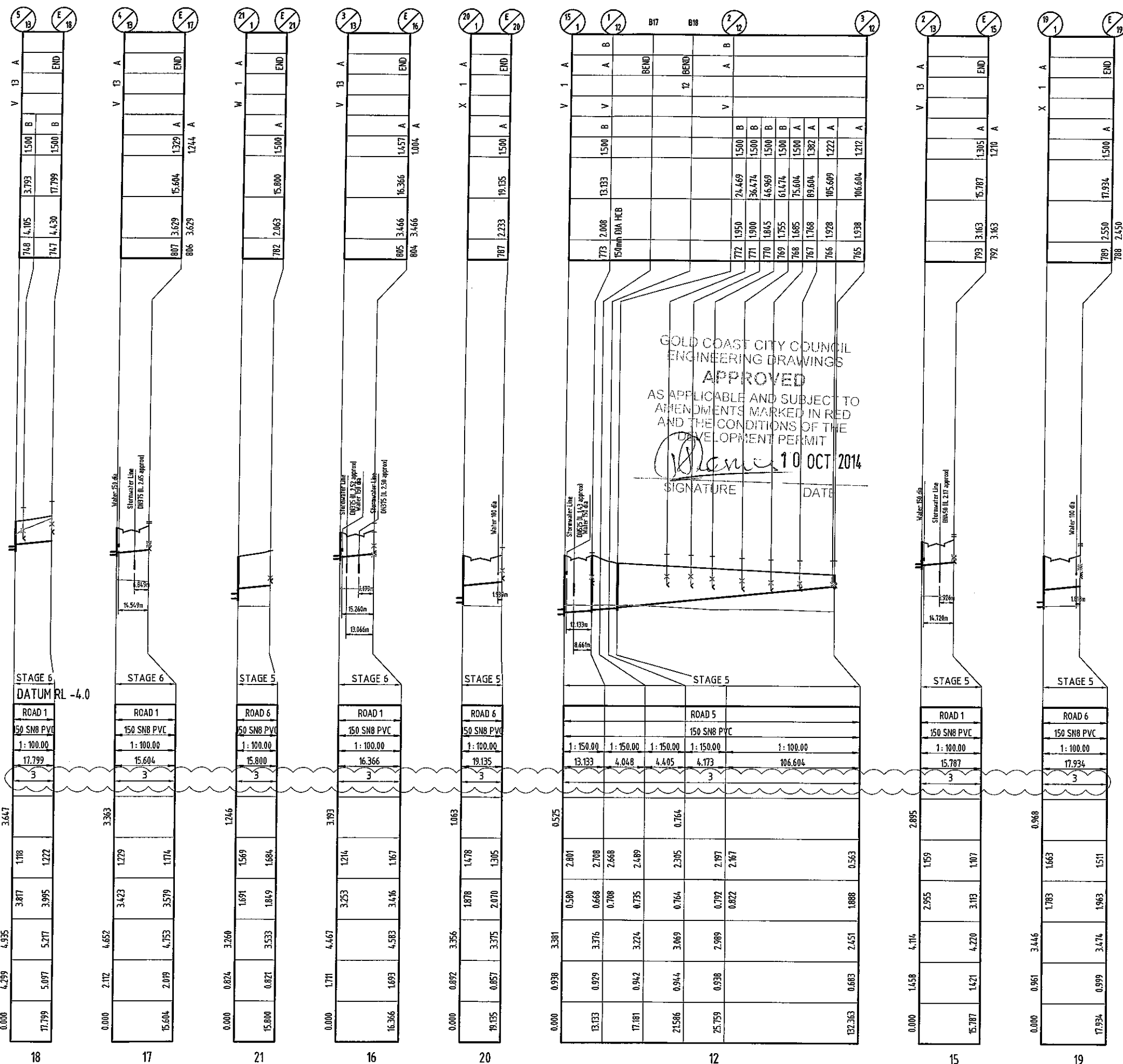


| |
|----------------------------|
| MAINTENANCE HOLE/SHAFT No. |
| MH/MS COVER TYPE |
| MH/MS TYPE |
| BRANCH LINE No. |
| BRANCH DROP TYPE |
| HC TYPE |
| HC DEPTH |
| HC CH. TO DS MH/MS |
| HC INVERT LEVEL |
| HC LOT No. |

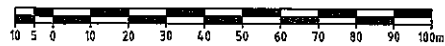
NOTES:

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- HOUSE CONNECTION BRANCHES TO BE 100mm DIA UNLESS NOTED OTHERWISE.

| |
|------------------------------|
| LOCATION |
| PIPE DIAMETER |
| GRADE |
| LENGTH |
| EMBEDMENT TYPE |
| JUNCTION |
| INVERT LEVEL |
| DEPTH OF INVERT BELOW FSL |
| INVERT LEVEL (IL) |
| FINISHED SURFACE LEVEL (FSL) |
| EXISTING SURFACE LEVEL (ESL) |
| CHAINAGE (CH) |



SCALE A 1:1000 (Horiz.)

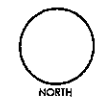


B 1:100 (Vert.)



(A1 UNREDUCED)

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REVISIONS

| No | Description | Date | By |
|----|-----------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | LONG SECTIONS AMENDED | JUL 14 | ES |
| C | EMBEDMENT TYPE NOTE AMENDED | SEP 14 | ES |

Associated Consultants

Client

Project
GAINSBOROUGH GREENS PRECINCT 5.1
STAGE 1B TO STAGE 7

LEVEL 2 - 71 GREY STREET
 SOUTH BRISBANE
 QUEENSLAND 4101
 PHONE 07 3017 1900
 FAX 07 3017 1911
 EMAIL kng@knpl.com.au
 ABN 35 112 053 611

Approved Prior - RPEQ 1988
[Signature] 12-9-14
 Drawing Title
SEWERAGE RETICULATION LONGITUDINAL SECTIONS SHEET 4 OF 7

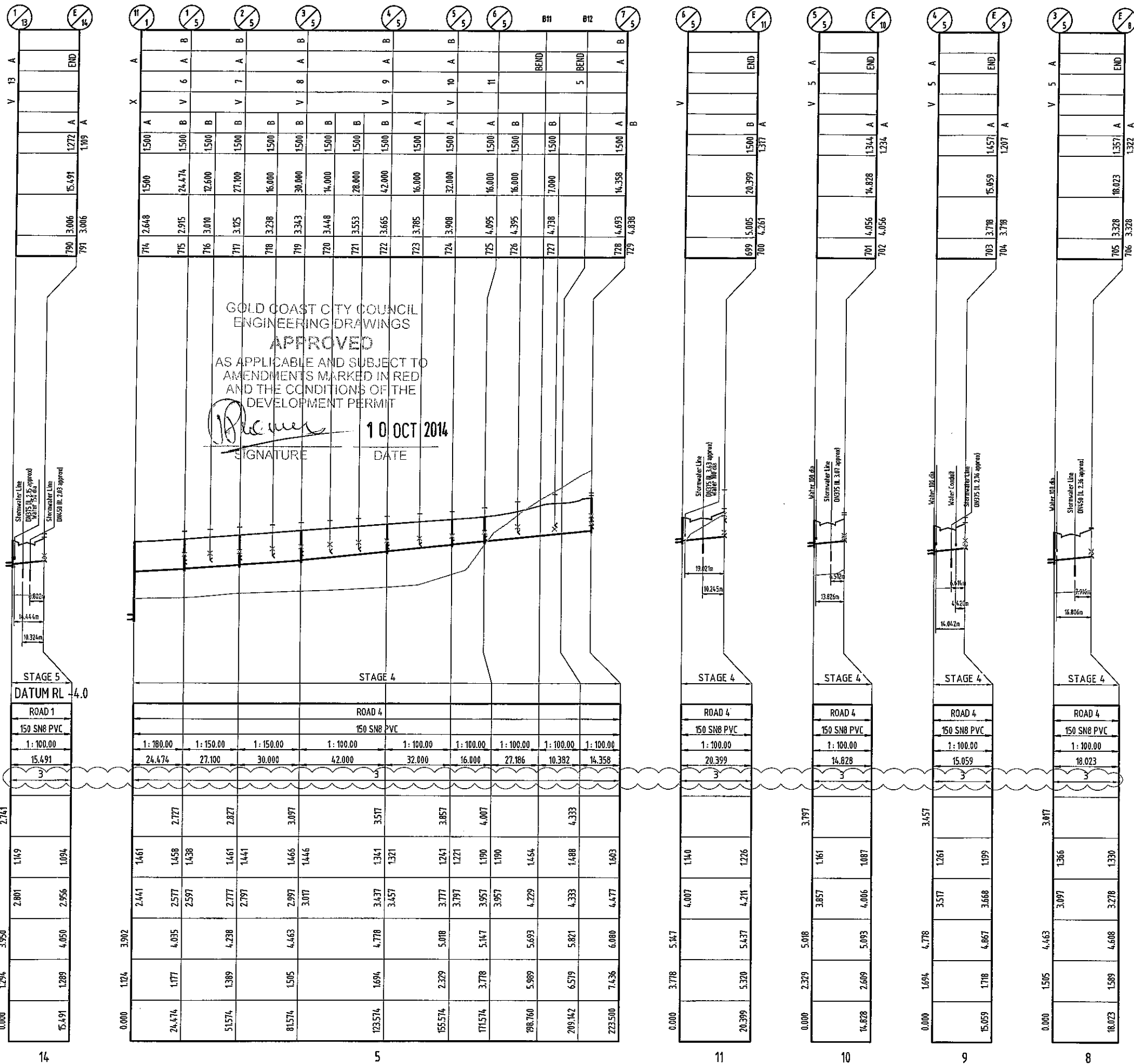
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|-------------------|--------------------------|----------------|---------------------|
| Drawn ES | Designed CH | Checked GBG | Date JUN 14 |
| Scale AS SHOWN | Drawing No 13-108-121 | | Sheet 121 of 137 |
| Revision A1 | | Revision C | |

M:\01\13108 Gainsborough Greens Precinct 5 Planning\Engineering\Design\PC Sewer\PCSLong\2D\XF Scale: Horiz 1 in 1000 Vert 1 in 100

| |
|----------------------------|
| MAINTENANCE HOLE/SHAFT No. |
| MH/MS COVER TYPE |
| MH/MS TYPE |
| BRANCH LINE No. |
| BRANCH DROP TYPE |
| HC TYPE |
| HC DEPTH |
| HC CH. TO DS MH/MS |
| HC INVERT LEVEL |
| HC LOT No. |

- NOTES:**
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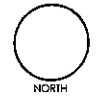
| |
|------------------------------|
| LOCATION |
| PIPE DIAMETER |
| GRADE |
| LENGTH |
| EMBEDMENT TYPE |
| JUNCTION |
| INVERT LEVEL |
| DEPTH OF INVERT BELOW FSL |
| INVERT LEVEL (IL) |
| FINISHED SURFACE LEVEL (FSL) |
| EXISTING SURFACE LEVEL (ESL) |
| CHAINAGE (CH) |



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REVISIONS

| No | Description | Date | By |
|----|-----------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | CBG |
| B | LONG SECTIONS AMENDED | JUL 14 | ES |
| C | EMBEDMENT TYPE NOTE AMENDED | SEP 14 | ES |

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**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
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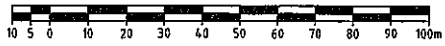
LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved by: *[Signature]* 12.9.14
Drawing title

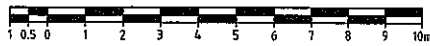
**SEWERAGE RETICULATION
LONGITUDINAL SECTIONS
SHEET 5 OF 7**

| | | | |
|-------------------|--------------------------|----------------|---------------------|
| Drawn ES | Designed CH | Checked CBG | Date JUN 14 |
| Scale AS SHOWN | Drawing No 13-108-122 | | Sheet 122 of 137 |
| Revision A1 | | Revision C | |

SCALE A 1:1000
(Horiz.)



B 1:100
(Vert.)



(A1 UNREDUCED)

| |
|----------------------------|
| MAINTENANCE HOLE/SHAFT No. |
| MH/MS COVER TYPE |
| MH/MS TYPE |
| BRANCH LINE No. |
| BRANCH DROP TYPE |
| HC TYPE |
| HC DEPTH |
| HC CH. TO DS MH/MS |
| HC INVERT LEVEL |
| HC LOT No. |

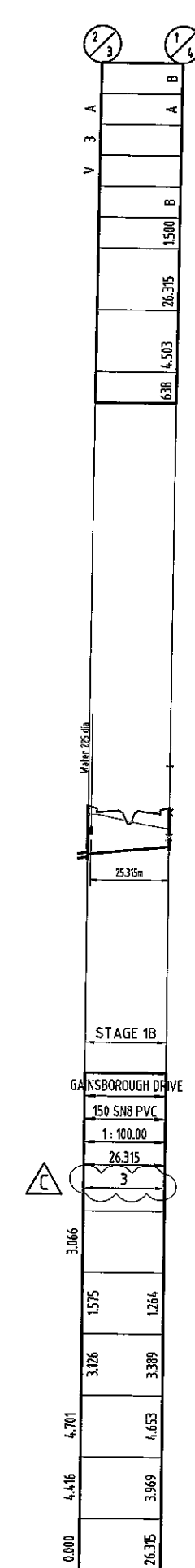
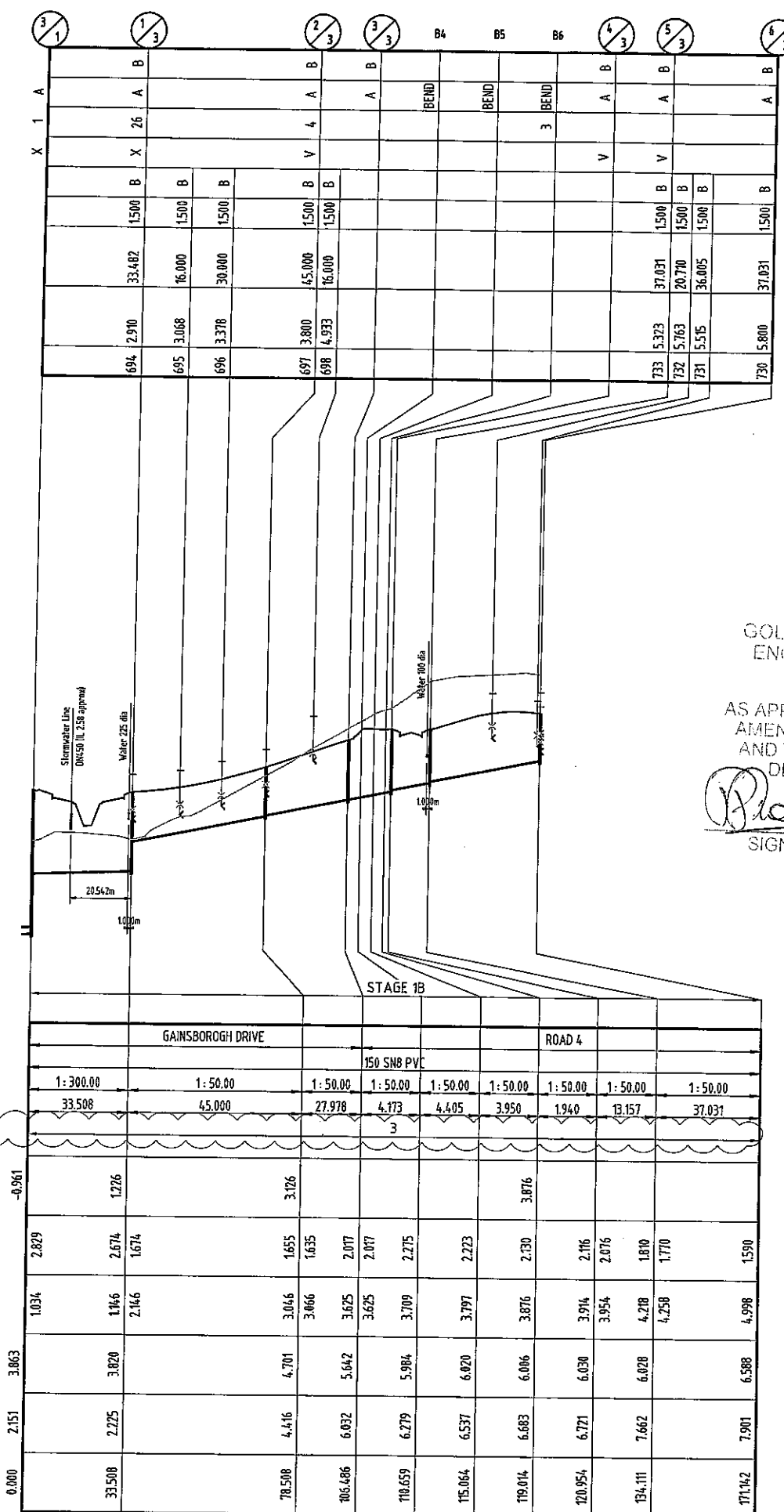
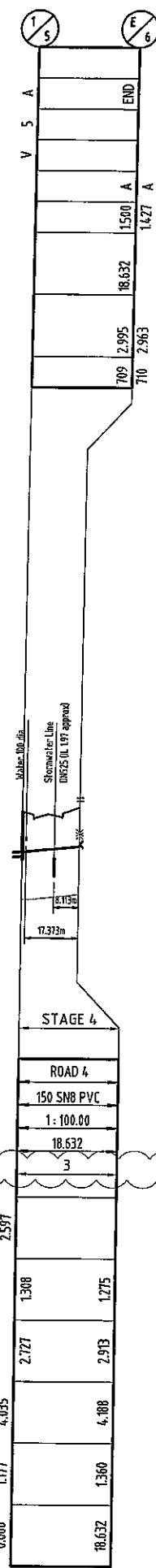
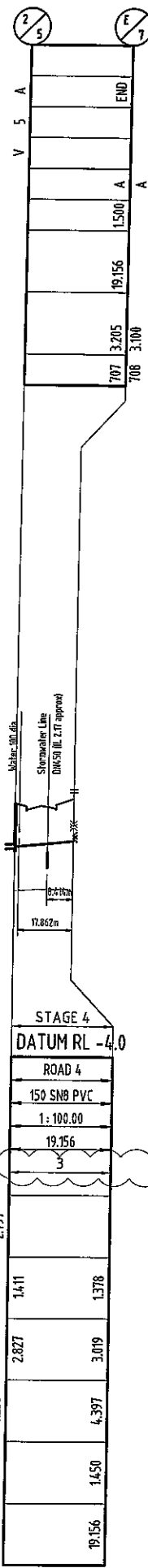
NOTES:

- HOUSE CONNECTION BRANCHES TO BE IN ACCORDANCE WITH SEQ DESIGN & CONSTRUCTION CODE.
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- HOUSE CONNECTION BRANCHES TO BE 100mm DIA UNLESS NOTED OTHERWISE.

LOCATION
PIPE DIAMETER
GRADE
LENGTH
EMBEDMENT TYPE

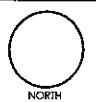
JUNCTION
INVERT LEVEL
DEPTH OF INVERT
BELOW FSL
INVERT LEVEL (IL)
FINISHED SURFACE
LEVEL (FSL)
EXISTING SURFACE
LEVEL (ESL)
CHAINAGE (CH)

LINE



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SIGNATURE 10 OCT 2014
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REVISIONS

| No | Description | Date | By |
|----|------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | LONG SECTIONS AMENDED | JUL 14 | ES |
| C | EMBEDMENT TYPE, NOTE AMENDED | SEP 14 | ES |

Associated Consultants

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Client

mirvac

Project

**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
CONSULTING ENGINEERS

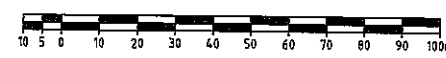
LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
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PHONE 07 3017 1900
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EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved Director - SEQ 12-9-14

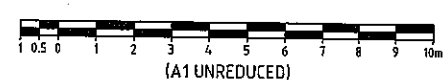
Drawing Title
**SEWERAGE RETICULATION
LONGITUDINAL SECTIONS
SHEET 6 OF 7**

| | | | |
|-------------------|--------------------------|----------------|---------------------|
| Drawn ES | Designed CH | Checked GBG | Date JUN 14 |
| Scale AS SHOWN | Drawing No 13-108-123 | | Sheet 123 of 137 |
| Revision A1 | | Revision C | |

SCALE A 1:1000
(Horiz.)



B 1:100
(Vert.)



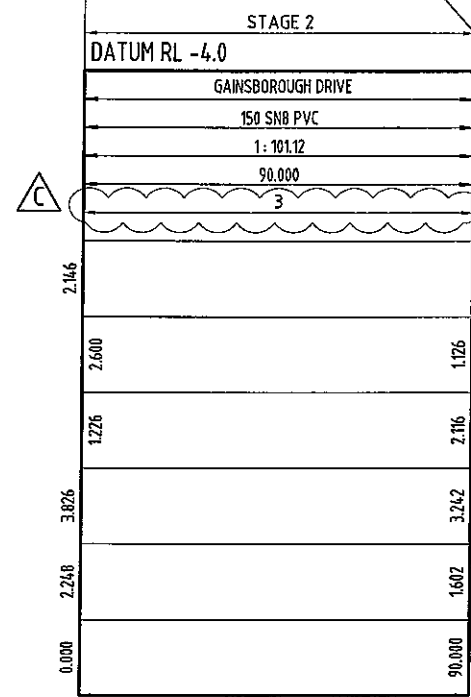
| |
|----------------------------|
| MAINTENANCE HOLE/SHAFT No. |
| MH/MS COVER TYPE |
| MH/MS TYPE |
| BRANCH LINE No. |
| BRANCH DROP TYPE |
| HC TYPE |
| HC DEPTH |
| HC CH. TO DS MH/MS |
| HC INVERT LEVEL |
| HC LOT No. |

| | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|
| 1/3 | 1/26 | | | | | |
| V 3 A | | | | | | |
| B | B | B | B | B | A | A |
| 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 |
| 36.000 | 34.000 | 48.000 | 62.000 | 76.000 | 89.800 | 89.800 |
| 2.788 | 2.775 | 2.640 | 2.558 | 2.440 | 2.160 | 2.300 |
| 693 | 692 | 691 | 690 | 689 | 687 | 688 |

NOTES:

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- HOUSE CONNECTION BRACHES TO BE 100mm DIA UNLESS NOTED OTHERWISE.

| |
|------------------------------|
| LOCATION |
| PIPE DIAMETER |
| GRADE |
| LENGTH |
| EMBEDMENT TYPE |
| JUNCTION INVERT LEVEL |
| DEPTH OF INVERT BELOW FSL |
| INVERT LEVEL (IL) |
| FINISHED SURFACE LEVEL (FSL) |
| EXISTING SURFACE LEVEL (ESL) |
| CHAINAGE (CH) |



LINE

26

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Plummer 10 OCT 2014
SIGNATURE DATE

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REVISIONS

| No | Description | Date | By |
|----|-----------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | LONG SECTIONS AMENDED | JUL 14 | ES |
| C | EMBEDMENT TYPE NOTE AMENDED | SEP 14 | ES |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
QUEENSLAND 4101
PHONE 07 3017 1900
FAX 07 3017 1911
EMAIL knp@knpl.com.au
ABN 35 112 053 611

Approved Director RPEQ 1988

Marking 11.9.14
Drawing Title

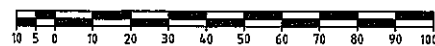
SEWERAGE RETICULATION
LONGITUDINAL SECTIONS
SHEET 7 OF 7

| | | | |
|-------|----------|---------|--------|
| Drawn | Designed | Checked | Date |
| ES | CH | GBG | JUN 14 |

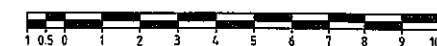
| | |
|----------|------------|
| Scale | Sheet |
| AS SHOWN | 124 of 137 |

| | |
|---------------|----------|
| Drawing No | Revision |
| A1 13-108-124 | C |

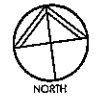
SCALE A 1:1000
(Horiz.)



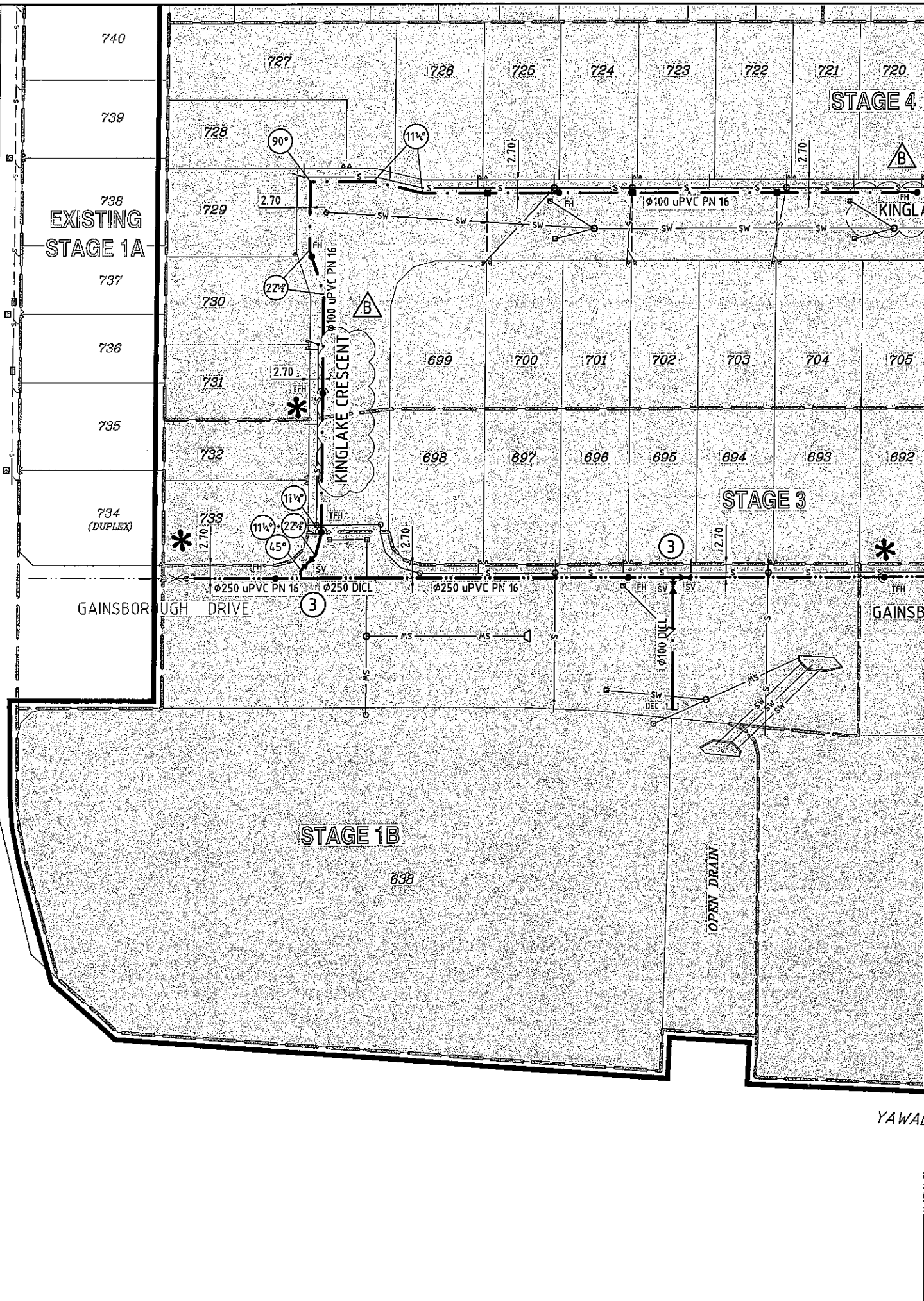
B 1:100
(Vert.)



(A1 UNREduced)



SWAN ROAD



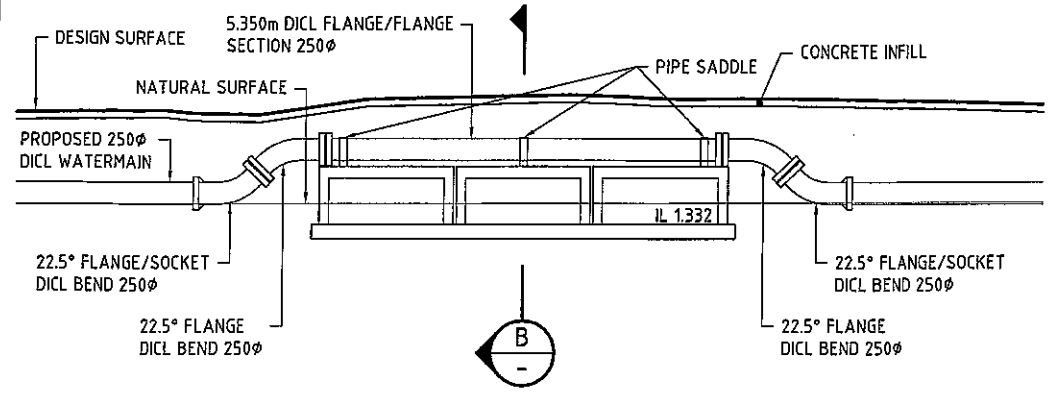
JOINS KN DWG KN DWG 13-108-126

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
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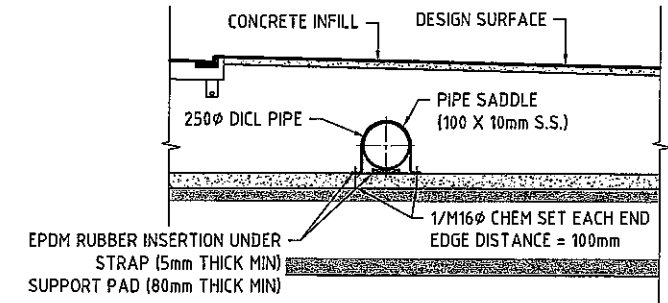
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DEVELOPMENT PERMIT

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A SECTION
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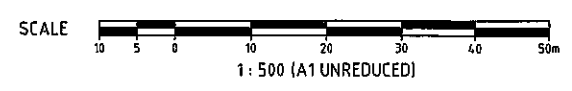
B SECTION
SCALE NTS

LEGEND

- PROP. WATER 100φ MAIN POTABLE ———— φ100 uPVC PN 16
- PROP. WATER 150φ MAIN POTABLE ———— φ150 uPVC PN 16
- PROP. WATER 250φ MAIN POTABLE ———— φ250 uPVC PN 16
- PROPOSED 100φ DICL WATER MAIN ———— φ100 DICL
- PROPOSED 150φ DICL WATER MAIN ———— φ150 DICL
- PROPOSED 250φ DICL WATER MAIN ———— φ250 DICL
- PROPOSED CONDUIT ———— C
- PROPOSED VALVE ———— SV
- PROPOSED FIRE HYDRANT ———— FH
- PROPOSED TEMPORARY FIRE HYDRANT ———— TFH
- DEAD END CAP ———— DEC
- WATER SERVICE CONNECTION ———— WSC
- REDUCER ———— R
- FLUSHING POINT ———— FP
- PIPE MATERIAL CHANGED ———— P
- PROPERTY SERVICE ———— P
- EXISTING 250φ MAIN RECYCLED ———— RCW
- EXISTING 250φ MAIN POTABLE ———— W
- PROP./EXIST. STORMWATER ———— SW
- PROP./EXIST. SEWER ———— S

DEFINES LIVE CONNECTION
REQUIRED BY G.C.C.C. *

NOTE: EACH LOT IS TO BE PROVIDED WITH A SEPARATE TAPPING
BAND POLY AND METER BOX. WATER METER BY OTHERS AFTER
ON MAINTENANCE ACCEPTANCE. ALL LIVE WORKS TO BE
UNDERTAKEN BY DEVELOPER AT DEVELOPER'S EXPENSE.



REVISIONS

| No | Description | Date | By |
|----|---------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | LIVE CONNECTION LOCATIONS ADDED | JUL 14 | BJ |
| | STREET NAMES AMENDED | | |

Associated Consultants

Client

Project
**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

LEVEL 2 - 71 GREY STREET
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EMAIL kn@knpl.com.au
ABN 35 112 053 611

Approved By: *[Signature]* 13.08.14
Drawing Title

**WATER RETICULATION
LAYOUT PLAN
SHEET 1 OF 4**

| Drawn | Designed | Checked | Date |
|-------|-----------------------|------------|------------------|
| ES | CH | GBG | JUN 14 |
| Scale | 1:500 | | Sheet 125 of 137 |
| A1 | Drawing No 13-108-125 | Revision B | |

WATER RETICULATION LAYOUT PLAN
SCALE 1:500



REVISIONS

| No | Description | Date | By |
|----|-----------------------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | LIVE CONNECTION LOCATIONS ADDED | JUL 14 | BJ |
| | WATER MAIN & STREET NAMES AMENDED | | |

Associated Consultants

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Approved Director - 19/09/1988

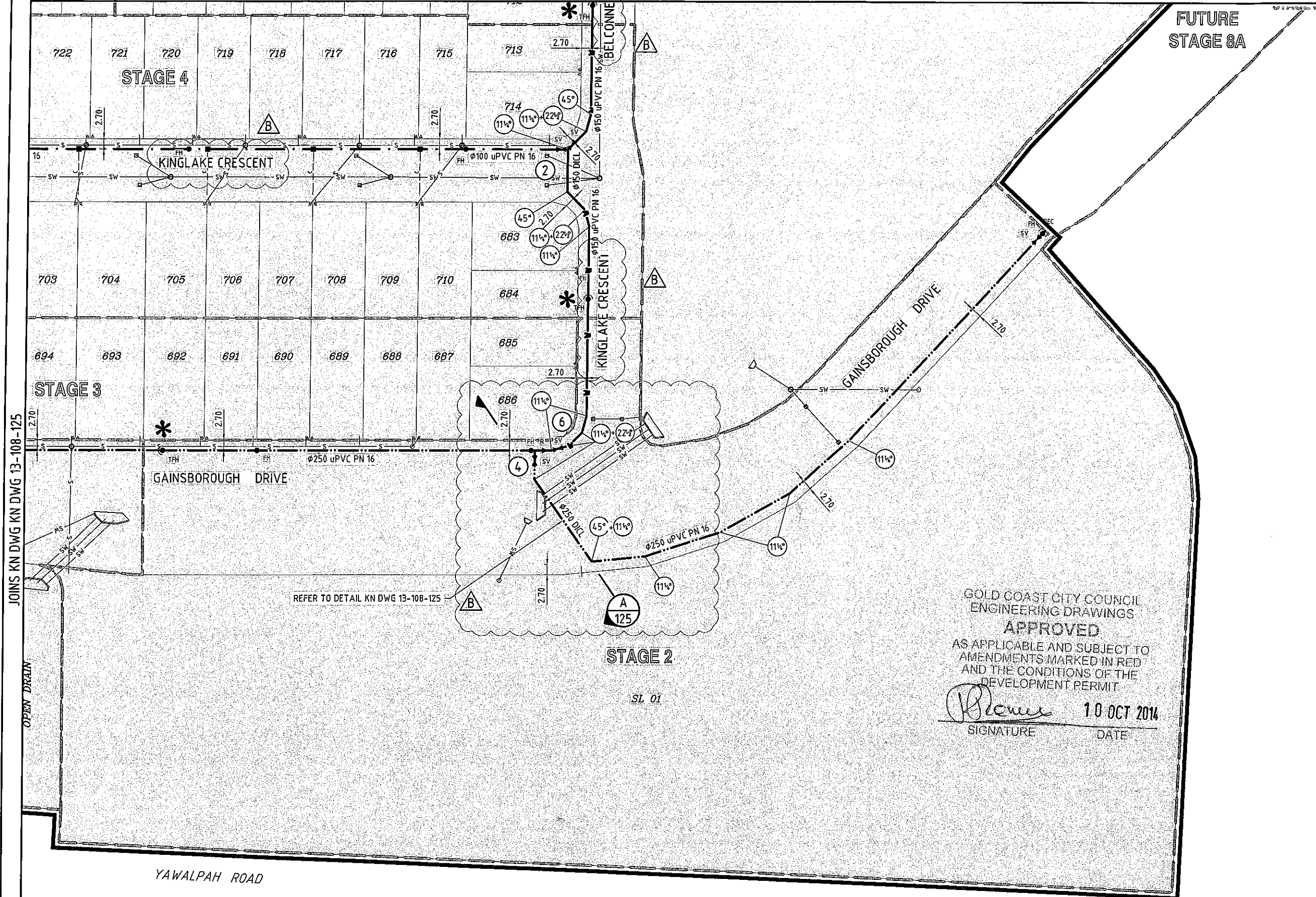
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Project Title: WATER RETICULATION LAYOUT PLAN SHEET 2 OF 4

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBG | JUN 14 |

| Scale | Sheet |
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| 1:500 | 126 of 137 |

| Revision | Revision |
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| A1 | 13-108-126 |
| B | |



GOLD COAST CITY COUNCIL
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AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

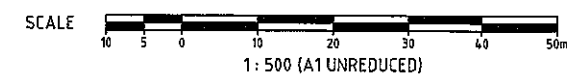
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SIGNATURE DATE

LEGEND

| | | | | | | | |
|--------------------------------|---------------------------|---------------------------------|---------------|-----------------------------|------------------|---|-----------------|
| PROP. WATER 100# MAIN POTABLE | — $\phi 100$ uPVC PN 16 — | PROPOSED CONDUIT | — c — c — c — | REDUCER | — \downarrow — | PROP./EXIST. STORMWATER | — SW — |
| PROP. WATER 150# MAIN POTABLE | — $\phi 150$ uPVC PN 16 — | PROPOSED VALVE | — SV — | FLUSHING POINT | — FP — | PROP./EXIST. SEWER | — S — |
| PROP. WATER 250# MAIN POTABLE | — $\phi 250$ uPVC PN 16 — | PROPOSED FIRE HYDRANT | — FH — | PIPE MATERIAL CHANGED | — — — | DEFINES LIVE CONNECTION REQUIRED BY G.C.C.C. | * (star symbol) |
| PROPOSED 100# DI CL WATER MAIN | — $\phi 100$ DI CL — | PROPOSED TEMPORARY FIRE HYDRANT | — TFH — | PROPERTY SERVICE | — — — | | |
| PROPOSED 150# DI CL WATER MAIN | — $\phi 150$ DI CL — | DEAD END CAP | — DEC — | EXISTING 250# MAIN RECYCLED | — RCW — | | |
| PROPOSED 250# DI CL WATER MAIN | — $\phi 250$ DI CL — | WATER SERVICE CONNECTION | — — — | EXISTING 250# MAIN POTABLE | — W — | | |

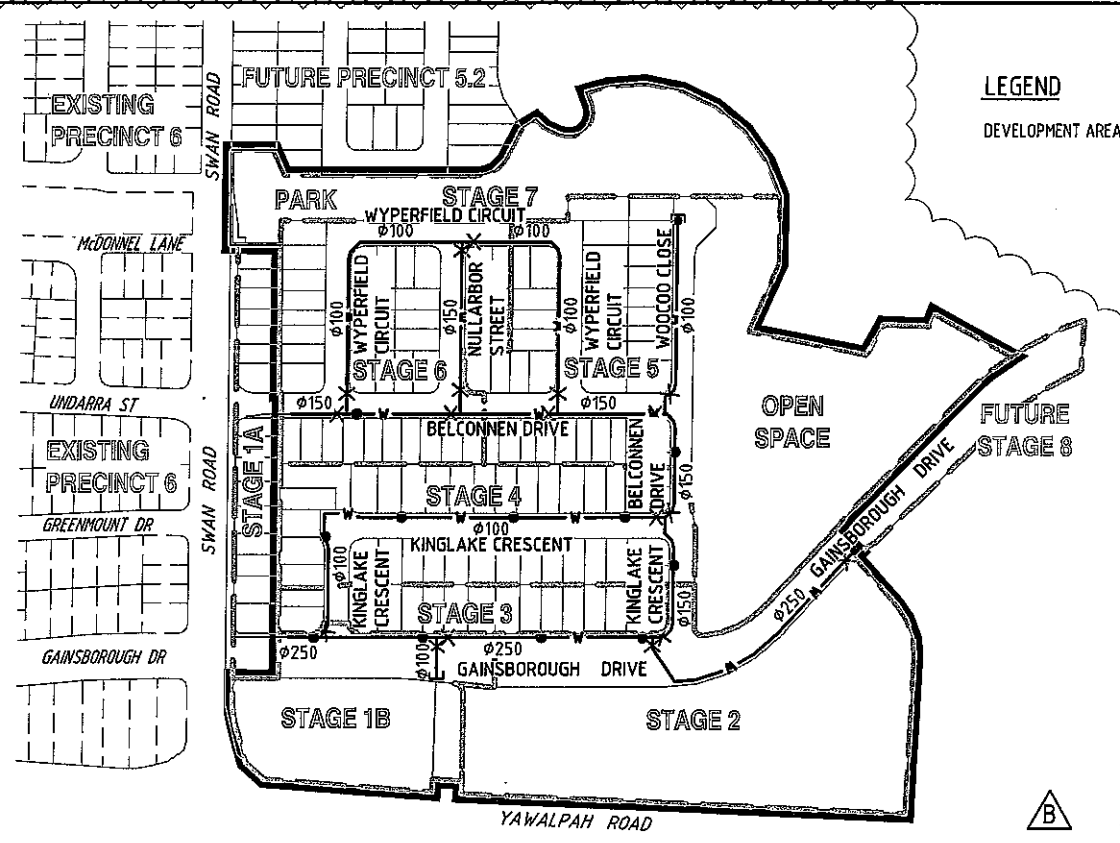
NOTE: EACH LOT IS TO BE PROVIDED WITH A SEPARATE TAPPING BAND POLY AND METER BOX. WATER METER BY OTHERS AFTER ON MAINTENANCE ACCEPTANCE. ALL LIVE WORKS TO BE UNDERTAKEN BY DEVELOPER AT DEVELOPER'S EXPENSE.

WATER RETICULATION LAYOUT PLAN
SCALE 1:500



JOINS KN DWG KN DWG 13-108-125

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LEGEND
DEVELOPMENT AREA ———

ALL ENVIRONMENT PROTECTION MEASURES SHOULD BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK, INCLUDING CLEARING, COMMENCING.

ALL WATER AND SEWER CONSTRUCTION WORK UNDERTAKEN BY THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE WORKPLACE HEALTH AND SAFETY LEGISLATION.

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED

AS APPLICABLE AND SUBJECT TO AMENDMENTS MARKED IN RED AND THE CONDITIONS OF THE DEVELOPMENT PERMIT

[Signature] **10 OCT 2014**
SIGNATURE DATE

LOCALITY PLAN
SCALE 1:2500

GENERAL NOTES

- ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT SOUTH EAST WATER SUPPLY CODE SPECIFICATIONS AND STANDARDS.
- UNLESS SPECIFIED OTHERWISE ALL MATERIALS AND WORK SHALL COMPLY WITH THE RELEVANT AUSTRALIAN STANDARDS.
- ADOPT LIP OF KERB OR SHOULDER OF ROAD AS PERMANENT LEVEL.
- COVER OVER MAINS FROM PERMANENT LEVEL TO BE AS SHOWN IN STANDARD DRAWING No. SEQ-WAT-1200-2.
- MINIMUM EMBEDMENT SHALL BE IN ACCORDANCE WITH STANDARD DRAWING Nos. SEQ-WAT-1200-2 TO SEQ-WAT-1203-1.
- THRUST BLOCKS SHALL BE IN ACCORDANCE WITH AND PRESSURE TESTED TO 1200kPa AS PER STANDARD DRAWING No. SEQ-WAT-1205-1 AND SEQ-WAT-1206-1.
- CONDUITS TO BE INSTALLED IN ACCORDANCE WITH THE STANDARD DRAWING No. SEQ-WAT-1105-1A.
- A WATER METER SUPPLIED AT THE DEVELOPER'S COST, IS TO BE INSTALLED AT THE SERVICE POINT OF EACH LOT IN ACCORDANCE WITH STANDARD DRAWING No. SEQ-WAT-1106-1A.
- ALL MATERIALS USED IN THE WORKS SHALL BE AS FOLLOWS:
 - ALL CAST IRON FITTINGS SHALL BE TO AS2544 WITH SOCKET ENDS DESIGNED FOR USE WITH uPVC OR DUCTILE IRON PIPES AS APPLICABLE AND SHALL BE 'LIGHT' CEMENT LINED.
 - PRESSURE PIPES USED FOR WATER SUPPLY INSTALLATION SHALL BE RUBBER RING JOINTED PIPES AND SHALL BE uPVC CLASS 18 (HARDIE IPLEX 'BLUE BRUTE').
 - PIPES MUST BE AC/DUCTILE IRON OD COMPATIBLE. OTHER TYPES AND CLASSES OF PIPES SHALL NOT BE INSTALLED.
 - CAST IRON GATE (SLUICE) VALVES SHALL CONFORM TO AS2638.
 - ALL VALVES AND HYDRANTS SHALL BE COATED INTERNALLY AND EXTERNALLY WITH A FUSION BONDED EPOXY.
 - ALL NUTS AND WASHES SHALL BE STAINLESS STEEL GRADE 316.
- ALL CONCRETE FOOTPATHS TO BE CLEAR OF WATER MAINS (WHERE APPLICABLE).
- MARKERS SHALL BE INSTALLED FOR ALL SERVICE CROSSINGS, HYDRANTS AND VALVES IN ACCORDANCE WITH STANDARD DRAWING Nos. SEQ-WAT-1106-1A, SEQ-WAT-1300-1A AND SEQ-WAT-1300-2A.
- THE CONSTRUCTION OF THE WATER RETICULATION WORK SHOWN ON THIS DRAWING MUST BE SUPERVISED BY AN ENGINEER WHO HAS R.P.E.Q. REGISTRATION. WORKS NOT COMPLYING WITH THIS REQUIREMENT WILL NOT BE PERMITTED TO CONNECT TO THE RETICULATION SYSTEM.
- WHERE PERMANENT HYDRANTS ARE NOT INSTALLED AT END OF MAINS OF EACH STAGE, A TEMPORARY HYDRANT WILL BE INSTALLED INSTEAD.

VEGETATION PROTECTION (WHERE APPLICABLE)

- TREES LOCATED ALONG THE FOOTPATH SHALL BE, TRANSPLANTED PRIOR TO CONSTRUCTION, OR REPLACED IF DESTROYED.
- WHEN WORKING WITHIN 4m OF TREES, RUBBER OR HARDWOOD GIRDLES SHALL BE CONSTRUCTED WITH 1.8m BATTENS CLOSELY SPACED AND ARRANGED VERTICALLY FROM GROUND LEVEL. GIRDLES SHALL BE STRAPPED TO TREES PRIOR TO CONSTRUCTION AND REMAIN UNTIL COMPLETION.
- TREE ROOTS SHALL BE TUNNELLED UNDER, RATHER THAN SEVERED. IF ROOTS ARE SEVERED THE DAMAGED AREA SHALL BE TREATED WITH A SUITABLE FUNGICIDE. CONTACT RELEVANT COUNCIL ARBORIST FOR FURTHER ADVICE.
- ANY TREE LOPPING REQUIRED SHOULD BE UNDERTAKEN BY AN APPROVED ARBORIST.

SOIL (WHERE APPLICABLE)

- TOPSOIL AND SUBSOIL SHOULD BE STOCKPILED SEPARATELY.
- CARE SHOULD BE TAKEN TO PREVENT SEDIMENT FROM ENTERING THE STORMWATER SYSTEM. THIS MAY INVOLVE PLACING APPROPRIATE SEDIMENT CONTROL AROUND STOCKPILES.

CREEK CROSSINGS (WHERE APPLICABLE)

- SILTATION CONTROL MEASURES SHALL BE PLACED DOWNSTREAM OF ANY EXCAVATION WORK.
- APPROPRIATE SEDIMENT CONTROLS SHALL BE USED TO PREVENT SEDIMENT FROM ENTERING THE CREEK.
- NO SOIL SHOULD BE STOCKPILED WITHIN 5m OF CREEK.

REHABILITATION (WHERE APPLICABLE)

- PREDISTURBANCE SOIL PROFILES AND COMPACTION LEVELS SHALL BE REINSTATED.
- PREDISTURBANCE VEGETATION PATTERNS SHALL BE RESTORED.

SCHEDULE OF PIPES & FITTINGS STAGE 1B - POTABLE WATER SUPPLY

| PIPE SIZE | LENGTH | VALVE | REDI TAP FITTING | HYDRANT | END CAP | 11¼° BEND | 22½° BEND | 45° BEND | 90° BEND |
|---------------|----------|-------|------------------|---------|---------|-----------|-----------|----------|----------|
| φ100 u.P.V.C. | 10.841m | 1 | - | 1 | - | 2 | 1 | 1 | - |
| φ100 DI/CL | 22m | - | - | - | - | - | - | - | - |
| φ250 u.P.V.C. | 126.485m | 1 | - | 3 | - | - | - | - | - |
| φ250 DI/CL | 11m | - | - | - | - | - | - | - | - |

SCHEDULE OF FITTINGS STAGE 1B

- ③ φ250 x φ250 x φ100 TEE 2 REQUIRED

SCHEDULE OF PIPES & FITTINGS STAGE 2 - POTABLE WATER SUPPLY

| PIPE SIZE | LENGTH | VALVE | REDI TAP FITTING | HYDRANT | END CAP | 11¼° BEND | 22½° BEND | 45° BEND | 90° BEND |
|---------------|----------|-------|------------------|---------|---------|-----------|-----------|----------|----------|
| φ150 u.P.V.C. | 45.046m | 1 | - | 1 | - | 2 | 1 | - | - |
| φ250 u.P.V.C. | 273.105m | - | - | - | - | 1 | 1 | 1 | - |
| φ250 DI/CL | 27.5m | 2 | - | 3 | 1 | 6 | - | - | - |

SCHEDULE OF FITTINGS STAGE 2

- ④ φ250 x φ250 x φ250 TEE 1 REQUIRED
- ⑥ φ250 x φ150 REDUCER 1 REQUIRED

SCHEDULE OF PIPES & FITTINGS STAGE 3 - POTABLE WATER SUPPLY

| PIPE SIZE | LENGTH | VALVE | REDI TAP FITTING | HYDRANT | END CAP | 11¼° BEND | 22½° BEND | 45° BEND | 90° BEND |
|---------------|---------|-------|------------------|---------|---------|-----------|-----------|----------|----------|
| φ100 u.P.V.C. | 23.550m | - | - | 1 | - | - | - | - | - |

SCHEDULE OF FITTINGS STAGE 4

- ② φ150 x φ150 x φ100 TEE 1 REQUIRED

SCHEDULE OF PIPES & FITTINGS STAGE 4 - POTABLE WATER SUPPLY

| PIPE SIZE | LENGTH | VALVE | REDI TAP FITTING | HYDRANT | END CAP | 11¼° BEND | 22½° BEND | 45° BEND | 90° BEND |
|---------------|----------|-------|------------------|---------|---------|-----------|-----------|----------|----------|
| φ100 u.P.V.C. | 272.609m | 1 | 6 | 4 | - | 2 | 2 | - | 1 |
| φ150 u.P.V.C. | 70.068m | - | - | 2 | - | 4 | 2 | 2 | - |
| φ150 DI/CL | 11.0m | 1 | - | - | - | - | - | - | - |

SCHEDULE OF FITTINGS STAGE 5

- ② φ150 x φ150 x φ100 TEE 2 REQUIRED

SCHEDULE OF PIPES & FITTINGS STAGE 5 - POTABLE WATER SUPPLY

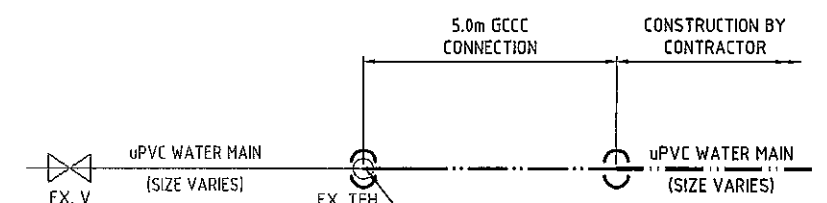
| PIPE SIZE | LENGTH | VALVE | REDI TAP FITTING | HYDRANT | END CAP | 11¼° BEND | 22½° BEND | 45° BEND | 90° BEND |
|---------------|----------|-------|------------------|---------|---------|-----------|-----------|----------|----------|
| φ100 u.P.V.C. | 248.111m | 2 | 5 | 2 | 1 | - | - | - | - |
| φ100 DI/CL | 22m | - | - | - | - | - | - | - | - |
| φ150 u.P.V.C. | 157.065m | 2 | 3 | 2 | - | 4 | 3 | 2 | - |

SCHEDULE OF FITTINGS STAGE 6

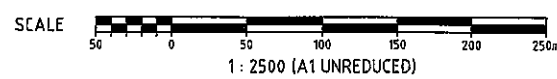
- ① φ100 x φ100 x φ100 TEE 1 REQUIRED
- ② φ150 x φ150 x φ100 TEE 2 REQUIRED

SCHEDULE OF PIPES & FITTINGS STAGE 6 - POTABLE WATER SUPPLY

| PIPE SIZE | LENGTH | VALVE | REDI TAP FITTING | HYDRANT | END CAP | 11¼° BEND | 22½° BEND | 45° BEND | 90° BEND |
|---------------|----------|-------|------------------|---------|---------|-----------|-----------|----------|----------|
| φ100 u.P.V.C. | 292.937m | 4 | 6 | - | - | 4 | 2 | 2 | - |
| φ100 DI/CL | 33m | - | - | - | - | - | - | - | - |
| φ150 u.P.V.C. | 126.506m | 2 | 2 | 1 | - | - | - | - | - |



TYPICAL LIVE CONNECTION DETAIL
SCALE: NTS.



REVISIONS

| No | Description | Date | By |
|----|--|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | LOCALITY PLAN & NOTES ADDED, SCHEDULE STAGE 2 & STREET NAMES AMENDED | JUL 14 | ES |

Associated Consultants

Client

Project
**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

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CONSULTING ENGINEERS

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Approved Director: *[Signature]* 13/07/2014

Drawn Title
WATER RETICULATION LOCALITY PLAN, NOTES AND TABLES

| Drawn | Designed | Checked | Date |
|--------|------------|------------|----------|
| ES | CH | GBG | JUN 14 |
| Scale | Drawing No | Sheet | Revision |
| 1:2500 | A1 | 129 of 137 | B |

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BASIN NOTES

1. AN APPROPRIATELY MARKED (E.G. PAINTED) DE-SILTING MARKER POST MUST BE INSTALLED IN THE BASIN TO INDICATE THE TOP OF THE SEDIMENT STORAGE ZONE. THE BASIN MUST BE DE-SILTED IF THE NEXT STORM IS LIKELY TO CAUSE SEDIMENT TO SETTLE ABOVE THIS MARKER POINT, OR IF THE SEDIMENT IS ALREADY ABOVE THIS MARKER POINT. PRIOR TO DISCHARGE OF WATER FROM A SEDIMENT BASIN, IT IS ESSENTIAL FOR THE WATER QUALITY TO COMPLY WITH ALL SPECIFIED WATER QUALITY OBJECTIVES (WQOS) (E.G. WATER PH IN THE RANGE OF 6.5 - 8.5).
2. THE RECOMMENDED WATER QUALITY STANDARD FOR SEDIMENT BASINS IS PRESENTED IN TABLE B18.

TABLE B18 - RECOMMENDED DISCHARGE STANDARD FOR DE-WATERING OPERATIONS

| SITE CONDITIONS | DISCHARGE WATER QUALITY STANDARD |
|--|--|
| POST-STORM DE-WATERING OF SEDIMENT BASINS (E.G. TYPE F AND D BASINS, AND TYPE C BASINS OPERATING AS WET-BASINS). | 90 PERCENTILE TOTAL SUSPENDED SOLIDS (TSS) CONCENTRATION NOT EXCEEDING 50MG/L. |

TECHNICAL NOTES B5 - GYPSUM DOSING

PROCEDURE FOR THE MANUAL DOSING OF GYPSUM (DEVELOPED FROM LANDCOM, 2004):

1. PLACE REQUIRED GYPSUM QUANTITY (SAY 32KG/100M³ OF WATER) IN APPROXIMATELY 50L DRUM PERFORATED WITH 25MM HOLES AT 150MM SPACING.
2. SUSPEND THE SCREENED, RECIRCULATING PUMP INTAKE INTO THE DRUM.
3. LIFT THE DRUM INTO THE BASIN SUCH THAT BASIN WATER CAN ENTER AND CIRCULATED THROUGH THE DRUM.
4. USING THE PUMP, SPRAY THE GYPSUM-RICH SOLUTION EVENLY OVER THE SURFACE OF THE BASIN UNTIL THE GYPSUM IS FULLY REMOVED FROM THE DRUM. THE PUMP OUTLET MUST SPRAY THE MIXTURE OVER A WIDE AREA RATHER THAN JUST DISCHARGING AS A CONFINED "JET".
5. ALTERNATIVELY, IF TWO PUMPS ARE AVAILABLE, USE THE TWO PUMPS TO CIRCULATE BASIN WATER FIRST TO THE ON-SHORE TANK, AND THEN FROM THE TANK OVER THE SURFACE OF THE BASIN. A LARGE MIXING TANK WILL USUALLY BE REQUIRED.

B3 BASIN CONSTRUCTION AND MAINTENANCE MATERIALS

- EARTH FILL: CLEAN SOIL WITH EMERSON CLASS 2(1), 3, 4, OR 5, AND FREE OF ROOTS, WOODY VEGETATION, ROCKS AND OTHER UNSUITABLE MATERIAL. SOIL WITH EMERSON CLASS 4 AND 5 MAY NOT BE SUITABLE DEPENDING ON PARTICLE SIZE AND DISTRIBUTION AND DEGREE OF DISPERSION. CLASS 2(1) SHOULD ONLY BE USED UPON RECOMMENDATION FROM GEOTECHNICAL SPECIALIST. (ALTERNATIVELY, SET A STANDARD BASED ON EXCHANGEABLE SODIUM PERCENTAGE - SEEK EXPERT ADVICE.)
- RISER PIPE: MINIMUM 250MM DIAMETER.
- SPILLWAY ROCK: HARD, ANGULAR, DURABLE, WEATHER RESISTANT AND EVENLY GRADED ROCK WITH 50% BY WEIGHT LARGER THAN THE SPECIFIED NOMINAL (D50) ROCK SIZE. LARGER ROCK SHOULD DOMINATE, WITH SUFFICIENT SMALL ROCK TO FILL THE VOIDS BETWEEN THE LARGER ROCK. THE DIAMETER OF THE LARGEST ROCK SIZE SHOULD BE NO LARGER THAN 1.5 TIMES THE NOMINAL ROCK SIZE. THE SPECIFIC GRAVITY SHOULD BE AT LEAST 2.5.
- GEOTEXTILE FABRIC: HEAVY-DUTY, NEEDLE-PUNCHED, NON-WOVEN FILTER CLOTH, MINIMUM BIDIM A24 OR EQUIVALENT.

CONSTRUCTION

1. NOTWITHSTANDING ANY DESCRIPTION CONTAINED WITHIN THE APPROVED PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SATISFYING THEMSELVES AS TO THE NATURE AND EXTENT OF THE SPECIFIED WORKS AND THE PHYSICAL AND LEGAL CONDITIONS UNDER WHICH THE WORKS WILL BE CARRIED OUT. THIS SHALL INCLUDE MEANS OF ACCESS, EXTENT OF CLEARING, NATURE OF MATERIAL TO BE EXCAVATED, TYPE AND SIZE OF MECHANICAL PLAN REQUIRED, LOCATION AND SUITABILITY OF WATER SUPPLY FOR CONSTRUCTION AND TESTING PURPOSES, AND ANY OTHER LIKE MATTERS AFFECTING THE CONSTRUCTION OF THE WORKS.
2. REFER TO APPROVED PLANS FOR LOCATION, DIMENSIONS, AND CONSTRUCTION DETAILS. IF THERE ARE QUESTIONS OR PROBLEMS WITH THE LOCATION, DIMENSIONS, OR METHOD OF INSTALLATION, CONTACT THE ENGINEER OR RESPONSIBLE ON-SITE OFFICER FOR ASSISTANCE.
3. BEFORE STARTING ANY CLEARING OR CONSTRUCTION, ENSURE ALL THE NECESSARY MATERIALS AND COMPONENTS ARE ON THE SITE TO AVOID DELAYS IN COMPLETING THE POND ONCE WORKS BEGIN.
4. INSTALL REQUIRED SHORT-TERM SEDIMENT CONTROL MEASURES DOWNSTREAM OF THE PROPOSED EARTHWORKS TO CONTROL SEDIMENT RUNOFF DURING CONSTRUCTION OF THE BASIN.
5. THE AREA TO BE COVERED BY THE EMBANKMENT, BORROW PITS AND INCIDENTAL WORKS, TOGETHER WITH AN AREA EXTENDING BEYOND THE LIMITS OF EACH FOR A DISTANCE NOT EXCEEDING FIVE (5) METRES ALL AROUND MUST BE CLEARED OF ALL TREES, SCRUB, STUMPS, ROOTS, DEAD TIMBER AND RUBBISH AND DISPOSED OF IN A SUITABLE MANNER. DELAY CLEARING THE MAIN POND AREA UNTIL THE EMBANKMENT IS COMPLETE. (MODIFY AS NECESSARY TO LIMIT TOTAL AREA OF DISTURBANCE AND ANY DAMAGE TO PROTECTED VEGETATION).
6. ENSURE ALL HOLES MADE BY GRUBBING WITHIN THE EMBANKMENT FOOTPRINT ARE FILLED WITH SOUND MATERIAL, ADEQUATELY COMPACTED, AND FINISHED FLUSH WITH THE NATURAL SURFACE.
7. IS SUITABLE AND IT IS PLACED IN THE CORRECT ZONE ACCORDING TO ITS CLASSIFICATION.

CUT-OFF TRENCH

1. BEFORE CONSTRUCTION OF THE CUT-OFF TRENCH OR ANY ANCILLARY WORKS WITHIN THE EMBANKMENT FOOTPRINT, ALL GRASS GROWTH AND TOPSOIL MUST BE REMOVED FROM THE AREA TO BE OCCUPIED BY THE EMBANKMENT AND MUST BE DEPOSITED CLEAR OF THIS AREA AND RESERVED FOR TOPDRESSING THE COMPLETING EMBANKMENT.
2. EXCAVATE A CUT-OFF TRENCH ALONG THE CENTRE LINE OF THE EARTH FILL EMBANKMENT. CUT THE TRENCH TO STABLE SOIL MATERIAL, BUT IN NO CASE MAKE IT LESS THAN 600MM DEEP. THE CUT-OFF TRENCH MUST EXTEND INTO BOTH ABUTMENTS TO AT LEAST THE ELEVATION OF THE RISER PIPE CREST. MAKE THE MINIMUM BOTTOM WIDTH WIDE ENOUGH TO PERMIT OPERATION OF EXCAVATION AND COMPACTION EQUIPMENT, BUT IN NO CASE LESS THAN 600MM. MAKE THE SIDE SLOPES OF THE TRENCH NO STEEPER THAN 1:1 (H:V).
3. ENSURE ALL WATER, LOOSE SOIL, AND ROCK ARE REMOVED FROM THE TRENCH BEFORE BACKFILLING COMMENCES. THE CUT-OFF TRENCH MUST BE BACKFILLED WITH SELECTED EARTH-FILL OF THE TYPE SPECIFIED FOR THE EMBANKMENT, AND THIS SOIL MUST HAVE A MOISTURE CONTENT AND DEGREE OF COMPACTION THE SAME AS THAT SPECIFIED FOR THE SELECTED CORE ZONE.
4. MATERIAL EXCAVATED FROM THE CUT-OFF TRENCH MAY BE USED IN CONSTRUCTION OF THE EMBANKMENT PROVIDED IT IS SUITABLE AND IT IS PLACED IN THE CORRECT ZONE ACCORDING TO ITS CLASSIFICATION.

EMBANKMENT

1. SCARIFY AREAS ON WHICH FILL IS TO BE PLACED BEFORE PLACING THE FILL.
2. ENSURE ALL FILL MATERIAL USED TO FORM THE EMBANKMENT MEETING THE SPECIFICATIONS CERTIFIED BY A SOIL SCIENTIST OR GEOTECHNICAL SPECIALIST.
3. THE FILL MATERIAL MUST CONTAIN SUFFICIENT MOISTURE SO IT CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. PLACE FILL MATERIAL IN 150 TO 250MM CONTINUOUS LAYERS OVER THE ENTIRE LENGTH OF THE FILL AREA THEN COMPACT BEFORE PLACEMENT OF FURTHER FILL.
4. PLACE RISER PIPE OUTLET SYSTEM, IF SPECIFIED, IN APPROPRIATE SEQUENCE WITH THE EMBANKMENT FILLING. REFER TO SPECIFICATIONS SUPPLIED BELOW.
5. UNLESS OTHERWISE SPECIFIED ON THE APPROVED PLANS, COMPACT THE SOIL AT ABOUT 1% TO 2% WET OF OPTIMUM AND TO 95% MODIFIED OR 100% STANDARD COMPACTION.
6. WHERE BOTH DISPERSIVE AND NON-DISPERSIVE CLASSIFIED EARTH-FILL MATERIALS ARE AVAILABLE, NON-DISPERSIVE EARTH-FILL MUST BE USED IN THE CORE ZONE. THE REMAINING CLASSIFIED EARTH-FILL MATERIALS MUST ONLY BE USED AS DIRECTED BY [INSERT TITLE].
7. WHERE SPECIFIED, CONSTRUCT THE EMBANKMENT TO AN ELEVATION 10% HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLING; OTHERWISE FINISHED DIMENSIONS OF THE EMBANKMENT AFTER SPREADING OF TOPSOIL MUST CONFORM TO THE DRAWING WITH A TOLERANCE OF 75MM FORM THE SPECIFIED DIMENSIONS.
8. ENSURE DEBRIS AND OTHER UNSUITABLE BUILDING WASTE IN NOT PLACED WITHIN THE EARTH EMBANKMENT.
9. AFTER COMPLETION OF THE EMBANKMENT ALL LOOSE UNCOMPACTED EARTH-FILL MATERIAL OF THE UPSTREAM AND DOWNSTREAM BATTER MUST BE REMOVED PRIOR TO SPREADING OF TOPSOIL.
10. TOPSOIL AND REVEGETATE/STABILISED ALL EXPOSED EARTH AS DIRECTED WITHIN THE APPROVED PLANS.

ESTABLISHMENT OF SETTLING POND

1. THE AREA TO BE COVERED BY THE STORED WATER OUTSIDE THE LIMITS OF THE BORROW PITS MUST BE CLEARED OF ALL SCRUB AND RUBBISH. TREES MUST BE CUT DOWN STUMP HIGH AND REMOVED FROM THE IMMEDIATE VICINITY OF THE WORK.
2. ESTABLISH ALL REQUIRED INFLOW CHUTES AND INLET BAFFLES, IF SPECIFIED, TO ENABLE WATER TO DISCHARGE INTO THE BASIN IN A MANNER THAT WILL NOT CAUSE SOIL EROSION NOR THE RE-SUSPENSION OF SETTLED SEDIMENT.
3. INSTALL A SEDIMENT STORAGE LEVEL MARKER POST WITH A CROSS MEMBER SET JUST BELOW THE TOP OF THE SEDIMENT STORAGE ZONE (AS SPECIFIED ON THE APPROVED PLANS). USE AT LEAST A 75MM WIDE POST FIRMLY SET INTO THE BASIN FLOOR.
4. IF SPECIFIED, INSTALL INTERNAL SETTLING POND BAFFLES. ENSURE THE CREST OF THESE BAFFLES IS SET LEVEL WITH OR JUST BELOW, THE ELEVATION OF THE EMERGENCY SPILLWAY CREST.
5. INSTALL ALL APPROPRIATE MEASURE TO MINIMISE SAFETY RISK TO ON-SITE PERSONNEL AND THE PUBLIC CAUSED BY THE PRESENCE OF THE SETTLING POND. AVOID STEEP, SMOOTH INTERNAL SLOPES. APPROPRIATELY FENCE THE SETTLING POND AND POST WARNING SIGNS IF UNSUPERVISED ACCESS IS LIKELY OR THERE IS CONSIDERED TO BE AN UNACCEPTABLE RISK TO THE PUBLIC.

GOLD COAST CITY COUNCIL
ENGINEERING DRAWINGS
APPROVED

AS APPLICABLE AND SUBJECT TO
AMENDMENTS MARKED IN RED
AND THE CONDITIONS OF THE
DEVELOPMENT PERMIT

[Handwritten Signature]

10 OCT 2014

SIGNATURE

DATE

SPILLWAY CONSTRUCTION

1. THE SPILLWAY MUST BE EXCAVATED AS SHOWN ON THE PLANS, AND THE EXCAVATED MATERIAL IF CLASSIFIED AS SUITABLE, MUST BE USED IN THE EMBANKMENT, AND IF NOT SUITABLE IT MUST BE DISPOSED OF INTO SPOIL HEAPS.
2. ENSURE EXCAVATED DIMENSIONS ALLOW ADEQUATE BOXING-OUT SUCH THAT THE SPECIFIED ELEVATIONS, GRADES, CHUTE WIDTH, AND ENTRANCE AND EXIT SLOPES FOR THE EMERGENCY SPILLWAY WILL BE ACHIEVED AFTER PLACEMENT OF THE ROCK OR OTHER SCOUR PROTECTION MEASURES AS SPECIFIED IN THE PLANS.
3. PLACE SPECIFIED SCOUR PROTECTION MEASURES ON THE EMERGENCY SPILLWAY. ENSURE THE FINISHED GRADE BLENDS WITH THE SURROUNDING AREA TO ALLOW A SMOOTH FLOW TRANSITION FROM SPILLWAY TO DOWNSTREAM CHANNEL.
4. IF A SYNTHETIC FILTER FABRIC UNDERLAY IS SPECIFIED, PLACE THE FILTER FABRIC DIRECTLY ON THE PREPARED FOUNDATION. IF MORE THAN 1 SHEET OF FILTER FABRIC IS REQUIRED, OVERLAP THE EDGES BY AT LEAST 300MM AND PLACE ANCHOR PINS AT MINIMUM 1M SPACING ALONG THE OVERLAP. BURY THE UPSTREAM END OF THE FABRIC A MINIMUM 300MM BELOW GROUND AND WHERE NECESSARY, BURY THE LOWER END OF THE FABRIC OR OVERLAP A MINIMUM 300MM OVER THE NEXT DOWNSTREAM SECTION AS REQUIRED. ENSURE THE FILTER FABRIC EXTENDS AT LEAST 1000MM UPSTREAM OF THE SPILLWAY CREST.
5. TAKE CARE NOT TO DAMAGE THE FABRIC DURING OR AFTER PLACEMENT. IF DAMAGE OCCURS, REMOVE THE ROCK AND REPAIR THE SHEET BY ADDING ANOTHER LAYER OF FABRIC WITH A MINIMUM OVERLAP OF 300MM AROUND THE DAMAGED AREA. IF EXTENSIVE DAMAGE IS SUSPECTED, REMOVE AND REPLACE THE ENTIRE SHEET.
6. WHERE LARGE ROCK IS USED, OR MACHINE PLACEMENT IS DIFFICULT, A MINIMUM 100MM LAYER OF FINE GRAVEL, AGGREGATE, OR SAND MAY BE NEEDED TO PROTECT THE FABRIC.
7. PLACEMENT OF ROCK SHOULD FOLLOW IMMEDIATELY AFTER PLACEMENT OF THE FILTER FABRIC. PLACE ROCK SO THAT IF FORMS A DENSE, WELL-GRADED MASS OF ROCK WITH A MINIMUM OF VOIDS. THE DESIRED DISTRIBUTION OF ROCK THROUGHOUT THE MASS MAY BE OBTAINED BY SELECTIVE LOADING AT THE QUARRY AND CONTROLLED DUMPING DURING FINAL PLACEMENT.
8. THE FINISHED SLOPE SHOULD BE FREE OF POCKETS OF SMALL ROCK OR CLUSTERS OF LARGE ROCKS. HAND PLACING MAY BE NECESSARY TO ACHIEVE THE PROPER DISTRIBUTION OF ROCK SIZES TO PRODUCE A RELATIVELY SMOOTH, UNIFORM SURFACE. THE FINISHED GRADE OF THE ROCK SHOULD BLEND WITH THE SURROUNDING AREA. NO OVERFALL OR PROTRUSION OF ROCK SHOULD BE APPARENT.
9. ENSURE THAT THE FINAL ARRANGEMENT OF THE SPILLWAY CREST WILL NOT PROMOTE EXCESSIVE FLOW THROUGH THE ROCK SUCH THAT THE WATER CAN BE RETAINED WITHIN THE SETTLING BASIN AN ELEVATION NO LESS THAN 50MM ABOVE OR BELOW THE NOMINATED SPILLWAY CREST ELEVATION.

MAINTENANCE OF SEDIMENT BASIN

1. INSPECT THE SEDIMENT BASIN DURING THE FOLLOWING PERIODS:
 - (i) DURING CONSTRUCTION TO DETERMINE WHETHER MACHINERY, FALLING TREES, OR CONSTRUCTION ACTIVITY HAS DAMAGED ANY COMPONENTS OF THE SEDIMENT BASIN. IF DAMAGE HAS OCCURRED, REPAIR IT.
 - (ii) AFTER EACH RUNOFF EVENT. INSPECT THE EROSION DAMAGE AT FLOW ENTRY AND EXIT POINTS. IF DAMAGE HAS OCCURRED, MAKE THE NECESSARY REPAIRS.
 - (iii) AT LEAST WEEKLY DURING THE NOMINATED WET SEASON (IF ANY) OTHERWISE AT LEAST FORTNIGHTLY.
 - (iv) PRIOR TO, AND IMMEDIATELY AFTER, PERIOD OF "STOP WORK" OR SITE "SHUTDOWN".
2. CLEAN OUT ACCUMULATED SEDIMENT WHEN IT REACHES THE MARKER BOARD/POST, AND RESTORE THE ORIGINAL STORAGE VOLUME. PLACE SEDIMENT IN A DISPOSABLE AREA OR, IF APPROPRIATE, MIX WITH DRY SOIL ON THE SITE.
3. DO NOT DISPOSE OF SEDIMENT IN A MANNER THAT WILL CREATE AN EROSION OR POLLUTION HAZARD.
4. CHECK ALL VISIBLE PIPE CONNECTIONS FOR LEAKS, AND REPAIR AS NECESSARY.
5. CHECK FILL MATERIAL IN THE DAM FOR EXCESSIVE SETTLEMENT, SLUMPING OF THE SLOPES OR PIPING BETWEEN THE CONDUIT AND THE EMBANKMENT; MAKE ALL NECESSARY REPAIRS.
6. REMOVE ALL TRASH AND OTHER DEBRIS FROM THE BASIN AND RISER.
7. SUBMERGED INFLOW PIPES MUST BE INSPECTED AND DE-SILTED (AS REQUIRED) AFTER EACH INFLOW EVENT.

REMOVAL OF SEDIMENT BASIN

1. WHEN GRADING AND CONSTRUCTION IN THE DRAINAGE AREA ABOVE A TEMPORARY SEDIMENT BASIN IS COMPLETED AND THE DISTURBED AREAS ARE ADEQUATELY STABILISED, THE BASIN MUST BE REMOVED OR OTHERWISE INCORPORATED INTO THE PERMANENT STORMWATER DRAINAGE SYSTEM. IN EITHER CASE, SEDIMENT SHOULD BE CLEARED AND PROPERLY DISPOSED OF AND THE BASIN AREA STABILISED.
2. BEFORE STARTING ANY MAINTENANCE WORK ON THE BASIN OR SPILLWAY, INSTALL ALL NECESSARY SHORT-TERM SEDIMENT CONTROL MEASURES DOWNSTREAM OF THE SEDIMENT BASIN.
3. ALL WATER AND SEDIMENT MUST BE REMOVED FROM THE BASIN PRIOR TO THE DAM'S REMOVAL. DISPOSE OF SEDIMENT AND WATER IN A MANNER THAT WILL NOT CREATE AN EROSION OR POLLUTION HAZARD.
4. BRING THE DISTURBED AREA TO A PROPER GRADE, THEN SMOOTH, COMPACT, AND STABILISE AND/OR REVEGETATE AS REQUIRED TO ESTABLISH A STABLE LAND SURFACE.

REVISIONS

| No | Description | Date | By |
|----|------------------|--------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| | | | |
| | | | |
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| | | | |
| | | | |
| | | | |
| | | | |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



LEVEL 2 - 71 GREY STREET
SOUTH BRISBANE
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FAX 07 3017 1911
EMAIL knp@knp.com.au
ABN 35 112 053 611

Approved/checked (RPE) 1988

[Handwritten Signature] 10.08.14

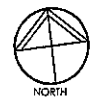
Drawing Title

SEDIMENT BASIN NOTES

| Drawn | Designed | Checked | Date |
|------------|------------|---------|------------|
| ES | CH | GBG | JUN 14 |
| Scale | AS SHOWN | | Sheet |
| A1 | 13-108-134 | | 134 of 137 |
| Drawing No | Revision | | |
| 13-108-134 | A | | |

14/01/13/08 Gainsborough Green Precinct 5 Planning/Engineering/Asst/13 08 130 185 SED.dwg 10/08/2014 2:14:49 PM es

DO NOT SCALE THIS DRAWING IF IN DOUBT - ASK!



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ENGINEERING DRAWINGS
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[Signature] 10 OCT 2014
SIGNATURE DATE

REVISIONS

| No | Description | Date | By |
|----|---|---------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SANDBAG CHECK DAMS ADDED + CATCHMENT AREAS REMOVED + STREET NAMES AMENDED | JULY 14 | RW |
| C | ADDITIONAL SED FENCE AND NOTE ADDED 10/9/14 | 10/9/14 | CH |

Associated Consultants

Client

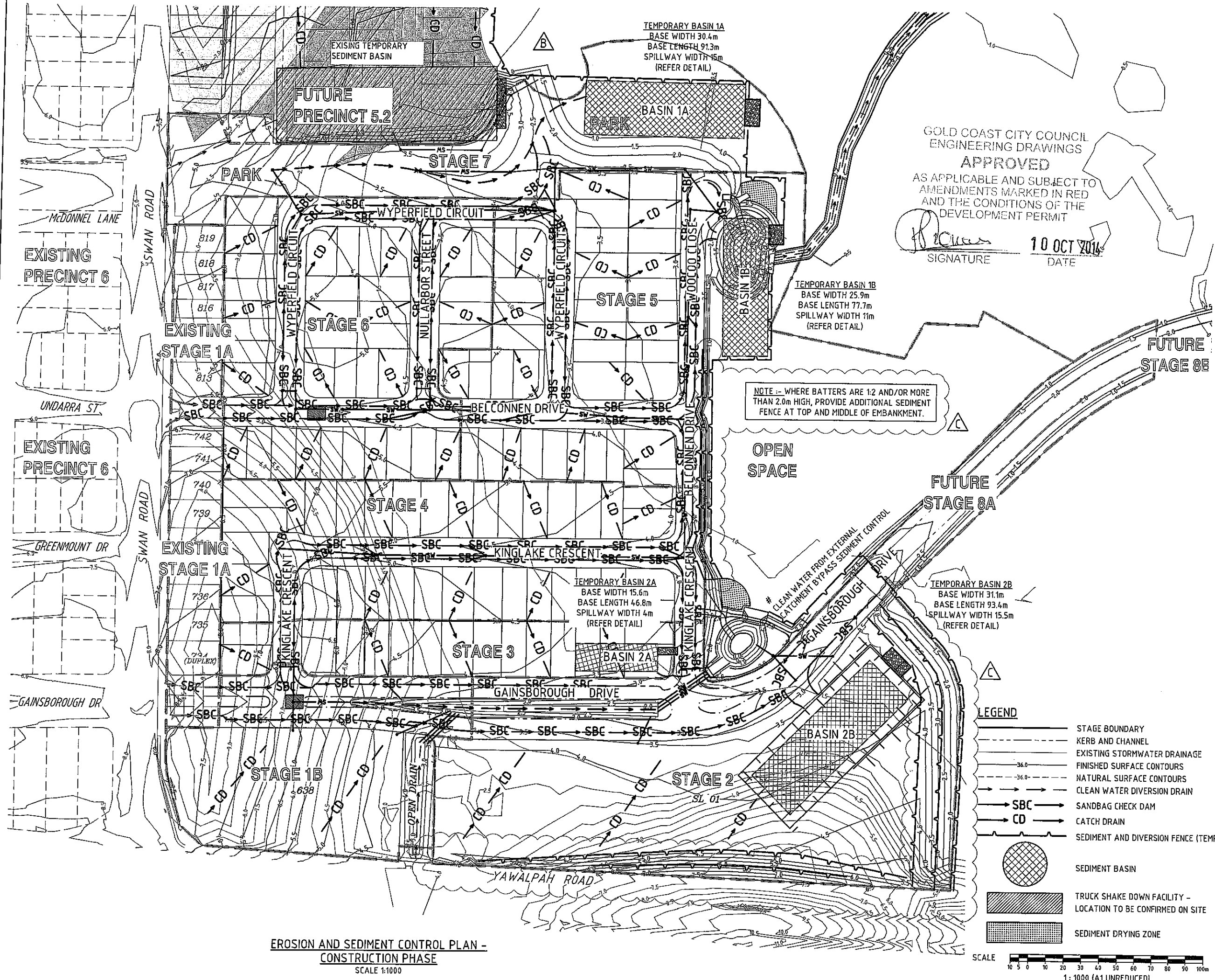
Project
**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

LEVEL 2 - 71 GREY STREET
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Approved by: *[Signature]* 12.9.14

Drawing Title
**EROSION AND SEDIMENT
CONTROL PLAN - SHEET 1 OF 2
CONSTRUCTION PHASE**

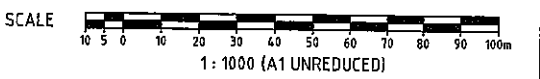
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|-----------------|--------------------------|----------------|---------------------|
| Drawn ES | Designed CH | Checked GBG | Date JUN 14 |
| Scale 1:1000 | Drawing No 13-108-130 | | Sheet 130 of 137 |
| Revision A1 | | Revision C | |



NOTE :- WHERE BATTERS ARE 1:2 AND/OR MORE THAN 2.0m HIGH, PROVIDE ADDITIONAL SEDIMENT FENCE AT TOP AND MIDDLE OF EMBANKMENT.

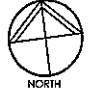
LEGEND

- STAGE BOUNDARY
- - - KERB AND CHANNEL
- - - EXISTING STORMWATER DRAINAGE
- FINISHED SURFACE CONTOURS
- - - NATURAL SURFACE CONTOURS
- CLEAN WATER DIVERSION DRAIN
- SBC SANDBAG CHECK DAM
- CD CATCH DRAIN
- SEDIMENT AND DIVERSION FENCE (TEMP)
- SEDIMENT BASIN
- ▨ TRUCK SHAKE DOWN FACILITY - LOCATION TO BE CONFIRMED ON SITE
- ▩ SEDIMENT DRYING ZONE



**EROSION AND SEDIMENT CONTROL PLAN -
CONSTRUCTION PHASE**
SCALE 1:1000

DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!



REVISIONS

| No | Description | Date | By |
|----|---|---------|-----|
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SEDIMENT & DIVERSION FENCE ADDED + CATCHMENT AREAS REMOVED + STREET NAMES AMENDED | JULY 14 | RW |
| C | ADDITIONAL SED FENCE AND NOTE ADDED | 10/9/14 | CH |

Associated Consultants



Client



Project

GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7



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Approved Inspector - 8950 1998

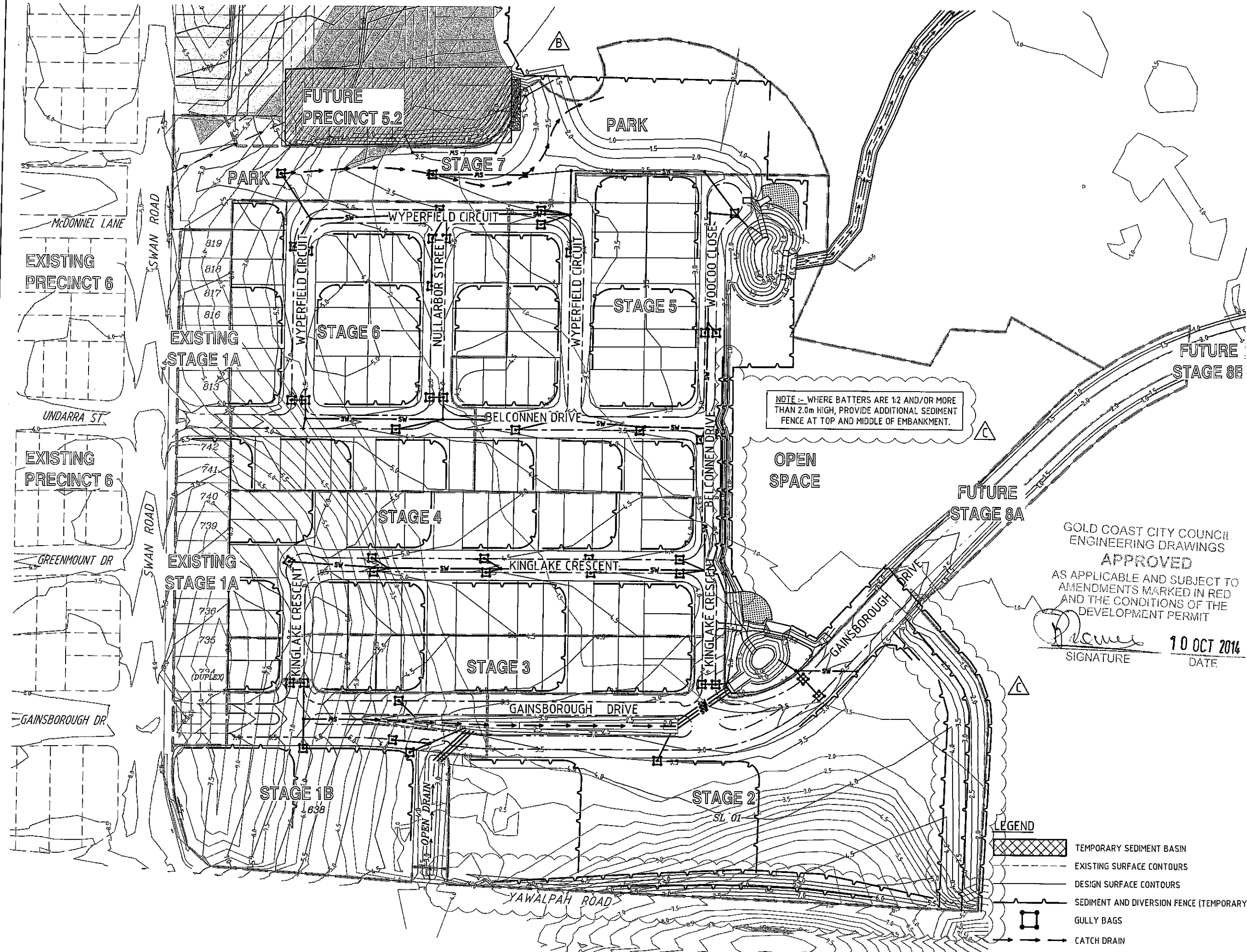
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EROSION AND SEDIMENT
CONTROL PLAN -
POST CONSTRUCTION PHASE

| | | | |
|-------------|----------------|----------------|----------------|
| Drawn ES | Designed CH | Checked GBG | Date JUN 14 |
|-------------|----------------|----------------|----------------|

| | |
|-----------------|---------------------|
| Scale 1:1000 | Sheet 131 of 137 |
|-----------------|---------------------|

| | | |
|----|--------------------------|---------------|
| A1 | Drawing No 13-108-131 | Revision C |
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NOTE: - WHERE BATTERS ARE 1:2 AND/OR MORE THAN 2.0m HIGH, PROVIDE ADDITIONAL SEDIMENT FENCE AT TOP AND MIDDLE OF EMBANKMENT.

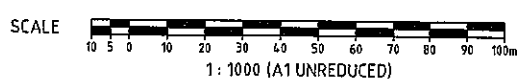
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DATE

LEGEND

| | |
|--|--|
| | TEMPORARY SEDIMENT BASIN |
| | EXISTING SURFACE CONTOURS |
| | DESIGN SURFACE CONTOURS |
| | SEDIMENT AND DIVERSION FENCE (TEMPORARY) |
| | GULLY BAGS |
| | CATCH DRAIN |

EROSION AND SEDIMENT CONTROL PLAN -
POST CONSTRUCTION PHASE
SCALE 1:1000





Job No. 13-108
Client: Mirvac
Project: Gainsborough Greens 5.1 Stage 1B to 7



GAINSBOROUGH GREENS STAGE 5.1

| Basin Design | Temp Basin 1A | Temp Basin 1B |
|------------------------------|---------------|-----------------------|
| R(y%5day) | 48.8 | 48.8 mm |
| Soil Type | Clay | Clay |
| Cv | 0.8 | 0.8 |
| Effective catchment area (A) | 4.27 | 3.09 Ha |
| Vs (volume of settling zone) | 1667.0 | 1206.3 m ³ |
| settling depth | 0.6 | 0.6 m |
| Area of basin | 2778.3 | 2010.6 m ² |
| Base width | 30.4 | 25.9 m |
| Base length | 91.3 | 77.7 m |
| settling zone Volume check | 1667.0 | 1206.3 m ³ |

Table B5 (85th%)

Table B7 (Clay)

$V_s = 10.R(y\%5day).C_v.A$

= required volume therefore ok
Volume matches ultimate volume for ultimate bio-basin

Spillway Design

| | | |
|--------------------------------------|-------|-----------------------|
| Less than 3month operation | Q10 | Q10 |
| 3-12month operation | Q20 | Q20 |
| greater than 12 months | Q100 | Q100 |
| Intensity for a 20 year, 6 min event | 217.0 | 217.0 mm/hr |
| C10 value | 0.88 | 0.88 |
| Effective catchment area (a) | 4.3 | 3.1 Ha |
| Q (flow rate) | 2.4 | 1.7 m ³ /s |
| (n) | 0.025 | 0.025 |
| width of spillway | 15.0 | 11.0 m |
| depth of flow over spillway | 0.15 | 0.15 m |
| gradient of spill way "wings" | 2.0 | 2.0 :1 |
| area spillway (using gradient 2:1) | 2.24 | 1.66 |
| perimeter | 15.7 | 11.7 m |
| Spillway outlet slope (S) | 0.01 | 0.01 |
| (R) | 0.14 | 0.14 m |
| Velocity (V) | 1.1 | 1.1 m/s |
| Check against design flow (Q) | 2.5 | 1.8 m ³ /s |
| Bottom velocity (V) | 0.8 | 0.8 m/s |

(GCCC)
Factor by 1.05 for C20

flow to design for
(velocity check for rock rtp rap)

(Maximum 0.45m, IECA 2008, Page B.35)

area (cross section) of spillway
wetted perimeter

(area/wetted perimeter)

$V = R^{2/3} \cdot S^{1/2} / n$
OK

Maximum Depth above weir
OK refer Table A21 IECA

Summary Basin 1A Basin 1B

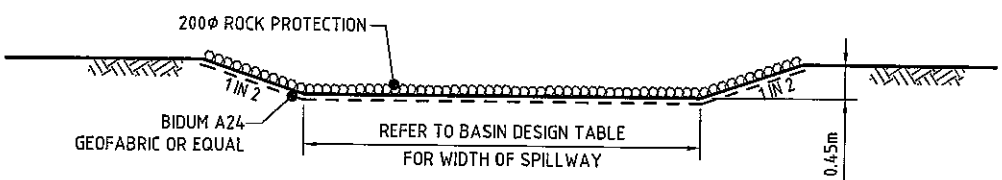
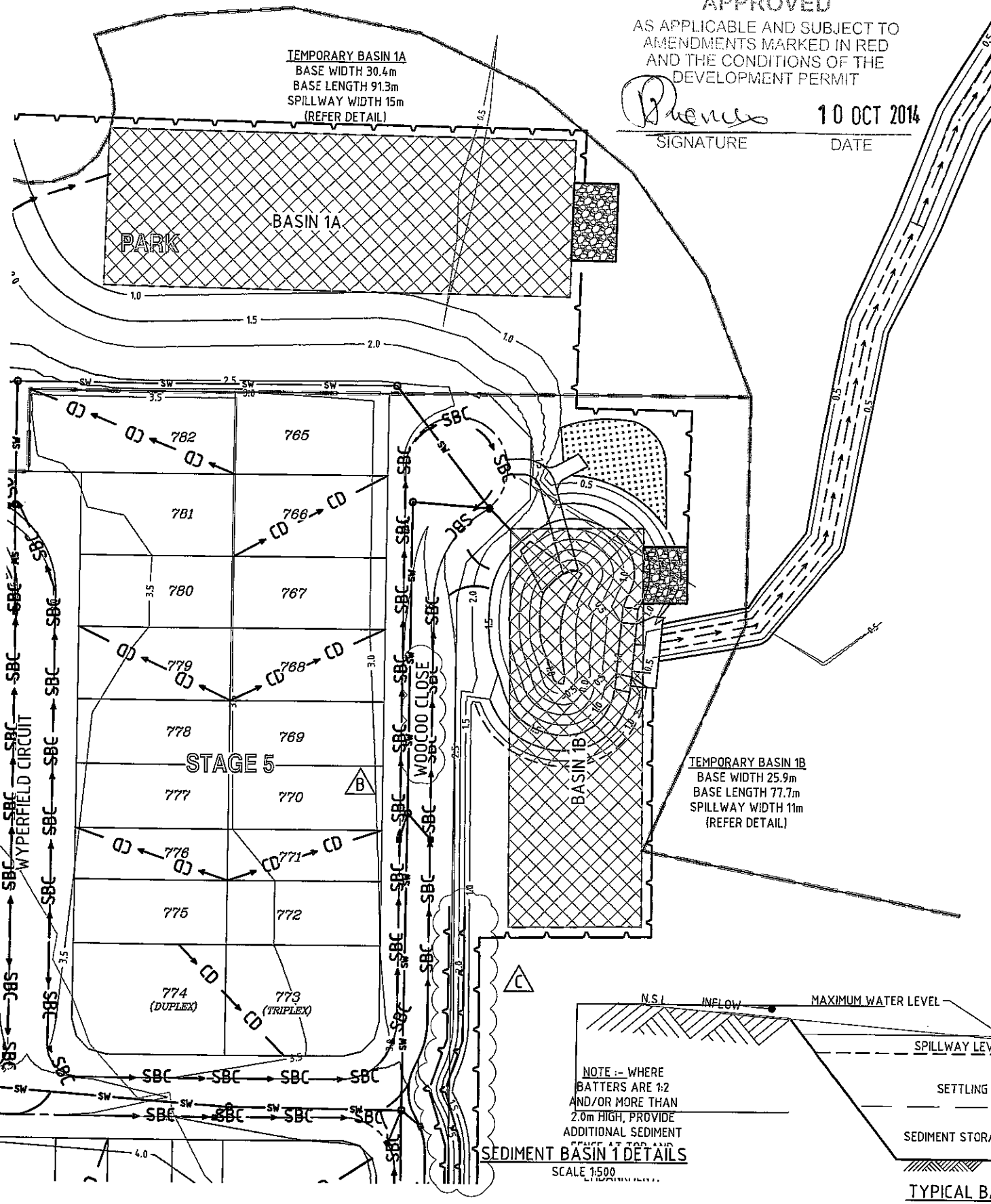
| | | |
|-------------------------|------|--------|
| Depth of weir | 0.45 | 0.45 m |
| settling depth | 0.60 | 0.60 m |
| storage depth | 0.3 | 0.3 m |
| Total depth | 1.35 | 1.35 m |
| Base width | 30.4 | 25.9 m |
| Base Length | 91.3 | 77.7 m |
| Spillway width | 15.0 | 11.0 m |
| Weir Rock Diameter Size | 200 | 200 mm |

Sized using QUDM figure 8.13

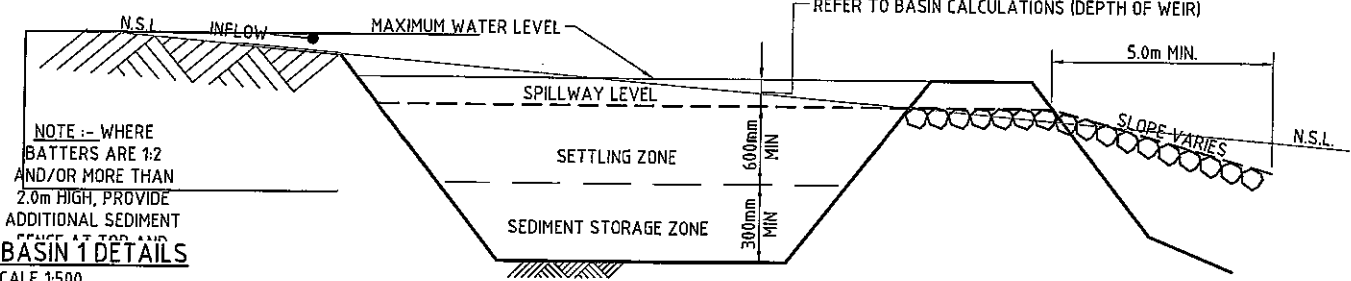
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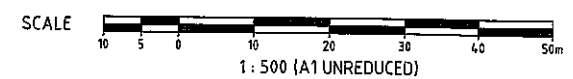


SPILLWAY DETAIL
N.T.S.



TYPICAL BASIN DETAIL
N.T.S.

NOTE -- WHERE
BATTERS ARE 1:2
AND/OR MORE THAN
2.0m HIGH, PROVIDE
ADDITIONAL SEDIMENT
PROTECTION AT TOP AND
SCALE 1:500



| REVISIONS | | | |
|-----------|---|---------|-----|
| No | Description | Date | By |
| A | COUNCIL APPROVAL | JUN 14 | GBG |
| B | SEDIMENT BASIN INFO ADDED | JULY 14 | RW |
| | + STREET NAMES AMENDED | | |
| C | ADDITIONAL SED FENCE AND NOTE ADDED 10/9/14 | | CH |

Associated Consultants

Client

Project
**GAINSBOROUGH GREENS
PRECINCT 5.1
STAGE 1B TO STAGE 7**

KN GROUP PTY LTD
CONSULTING ENGINEERS

LEVEL 2 - 71 GREY STREET
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FAX 07 3017 1911
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ABN 35 112 053 611

Approved Director - RPEO 129.14

**SEDIMENT BASIN DETAILS
SHEET 1 OF 2**

| | | | | | | | |
|-------|------------|----------|------------|------------|----------|----------|--------|
| Drawn | ES | Designed | CH | Checked | GBG | Date | JUN 14 |
| Scale | AS SHOWN | | Sheet | 135 of 137 | | Revision | |
| A1 | Drawing No | | 13-108-135 | | Revision | | |



GAINSBOROUGH GREENS STAGE 5.1

| Basin Design | Temp | | Table B5 (85th%) |
|------------------------------|----------|-----------------------|---|
| | Basin 2A | Basin 2B | |
| R(y%5day) | 48.8 | 48.8 mm | |
| Soil Type | Clay | Clay | Table B7 (Clay) |
| Cv | 0.8 | 0.8 | |
| Effective catchment area (A) | 1.12 | 4.47 Ha | |
| Vs (volume of settling zone) | 437.2 | 1745.1 m ³ | Vs = 10.R(y%5day).Cv.A |
| settling depth | 0.6 | 0.6 m | |
| Area of basin | 728.7 | 2908.5 m ² | |
| Base width | 15.6 | 31.1 m | |
| Base length | 46.8 | 93.4 m | |
| settling zone Volume check | 437.2 | 1745.1 m ³ | = required volume therefore ok Volume matches ultimate volume for ultimate bio-basin |

| Spillway Design | | |
|--------------------------------------|-------|-----------------------|
| Less than 3month operation | Q10 | Q10 |
| 3-12month operation | Q20 | Q20 |
| greater than 12 months | Q100 | Q100 |
| Intensity for a 20 year, 6 min event | 217.0 | 217.0 mm/hr |
| C10 value | 0.88 | 0.88 |
| Effective catchment area (a) | 1.1 | 4.5 Ha |
| Q (flow rate) | 0.6 | 2.5 m ³ /s |
| (n) | 0.025 | 0.025 |
| width of spillway | 4.0 | 15.5 m |
| depth of flow over spillway | 0.15 | 0.15 m |
| gradient of spill way "wings" | 2.0 | 2.0 :1 |
| area spillway (using gradient 2:1) | 0.63 | 2.32 |
| perimeter | 4.7 | 16.2 m |
| Spillway outlet slope (S) | 0.01 | 0.01 |
| (R) | 0.14 | 0.14 m |
| Velocity (V) | 1.1 | 1.1 m/s |
| Check against design flow (Q) | 0.7 | 2.5 m ³ /s |
| Bottom velocity (V) | 0.7 | 0.8 m/s |

| Weir Flow Calculation | | |
|---------------------------------------|------|-----------------------|
| (H) | 0.22 | 0.22 m |
| Check on against design flow rate (Q) | 0.8 | 2.8 m ³ /s |

| Summary Basin 2A Basin 2B | | |
|---------------------------|------|--------|
| Depth of weir | 0.45 | 0.45 m |
| settling depth | 0.60 | 0.60 m |
| storage depth | 0.3 | 0.3 m |
| Total depth | 1.35 | 1.35 m |
| Base width | 15.6 | 31.1 m |
| Base Length | 46.8 | 93.4 m |
| Spillway width | 4.0 | 15.5 m |
| Weir Rock Diameter Size | 200 | 200 mm |

(GCCC)
 Factor by 1.05 for C20
 flow to design for
 (velocity check for rock rip rap)
 (Maximum 0.45m, IECA 2008, Page B.35)
 area (cross section) of spillway
 wetted perimeter
 (area/wetted perimeter)
 $V=R^{2/3} \cdot S^{1/2} / n$
 OK
 Maximum Depth above weir
 OK refer Table A21 IECA
 Sized using QUDM figure 8.13

| REVISIONS | | | |
|-----------|-------------------------------------|---------|-----|
| No | Description | Date | By |
| A | COUNCIL APPROVAL | JUN 14 | GBC |
| B | SEDIMENT BASIN INFO ADDED | JULY 14 | RW |
| C | + STREET NAMES AMENDED | | |
| | ADDITIONAL SED FENCE AND NOTE ADDED | 10/9/14 | CH |

Associated Consultants

Client

Project
**GAINSBOROUGH GREENS
 PRECINCT 5.1
 STAGE 1B TO STAGE 7**

LEVEL 2 - 71 GREY STREET
 SOUTH BRISBANE
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 ABN 35 112 053 611

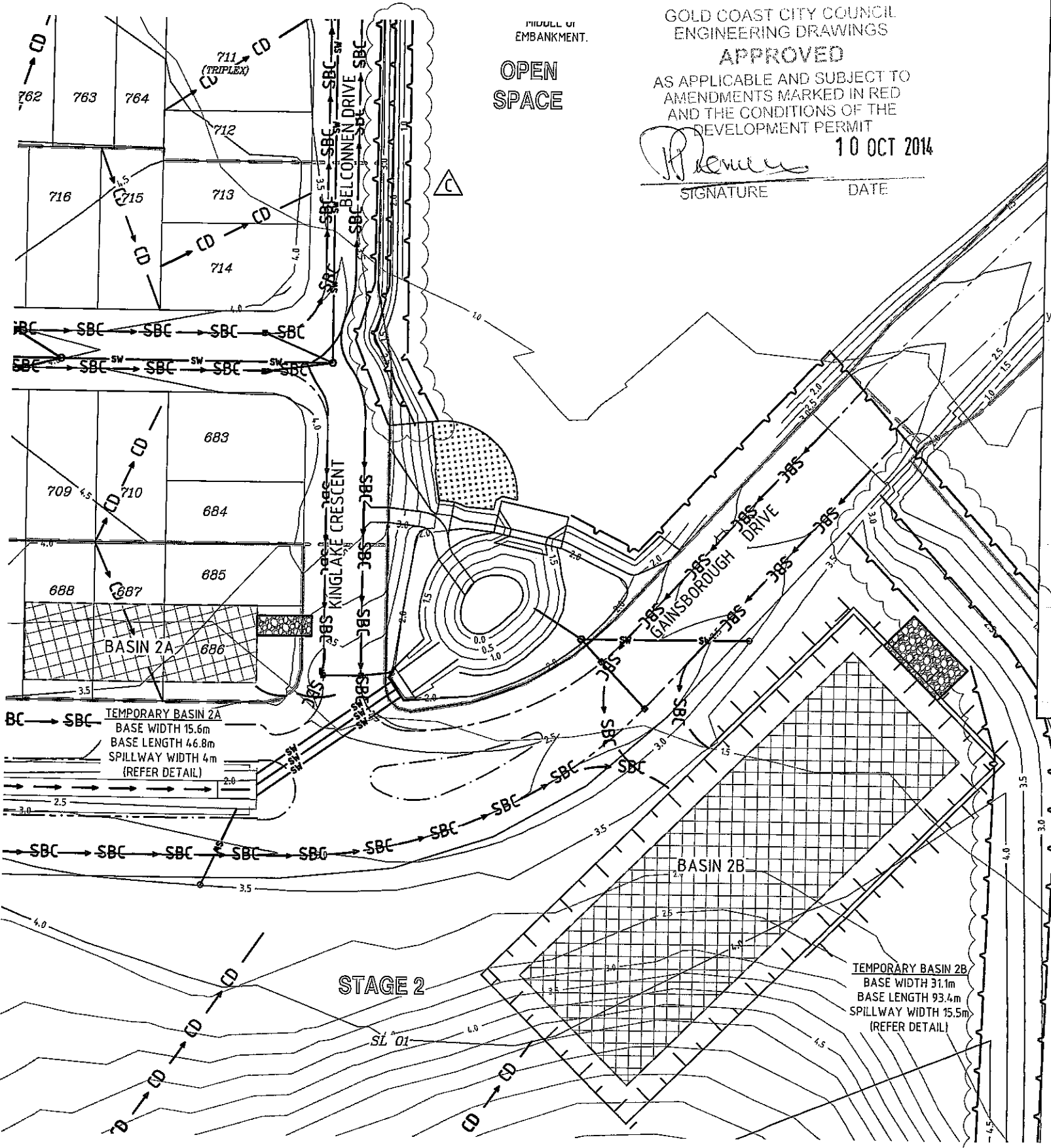
Approved by: *[Signature]* 12.9.14

Drawn by:
**SEDIMENT BASIN DETAILS
 SHEET 2 OF 2**

| Drawn | Designed | Checked | Date |
|-------|----------|---------|--------|
| ES | CH | GBC | JUN 14 |

| Scale | Sheet |
|----------|------------|
| AS SHOWN | 136 of 137 |

| Drawing No | Revision |
|------------|----------|
| A1 | C |



GOLD COAST CITY COUNCIL
 ENGINEERING DRAWINGS
APPROVED
 AS APPLICABLE AND SUBJECT TO
 AMENDMENTS MARKED IN RED
 AND THE CONDITIONS OF THE
 DEVELOPMENT PERMIT
[Signature] 10 OCT 2014
 SIGNATURE DATE

TEMPORARY BASIN 2A
 BASE WIDTH 15.6m
 BASE LENGTH 46.8m
 SPILLWAY WIDTH 4m
 (REFER DETAIL)

TEMPORARY BASIN 2B
 BASE WIDTH 31.1m
 BASE LENGTH 93.4m
 SPILLWAY WIDTH 15.5m
 (REFER DETAIL)

SEDIMENT BASIN 2 DETAILS
 SCALE 1:500

