

## Appendix N. Preliminary design



bonisch

# 7332

DUNEDIN TUNNELS TRAIL (CYT) - PRELIMINARY DESIGN

Revision A - for client comment



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SCOPE:

1. THE PLANS ARE FOR THE PURPOSE OF DETAILING THE BELOW SCOPE OF WORKS
- PRELIMINARY DESIGN OF THE PREFERRED ROUTE (DETERMINED THROUGH THE BUSINESS CASE PROCESS) FOR THE DUNEDIN TUNNELS TRAIL. THE ROUTE IS FROM THE INTERSECTION OF FACTORY ROAD / WINGATUI ROAD IN MOSGIEL TO BARNES DRIVE IN CAVERSHAM.

THE PURPOSE OF THIS PLAN-SET IS TO DETAIL THE PREFERRED ROUTE TO A PRELIMINARY DESIGN LEVEL TO SUPPORT THE BUSINESS CASE.

PLANS ARE INTENDED TO BE READ IN CONJUNCTION WITH THE BUSINESS CASE AND ASSOCIATED SUPPORTING DOCUMENTATION
2. THE PLANS INCLUDE THE FOLLOWING
- ON ROAD SECTIONS OF THE ROUTE INCLUDE 2D PLAN LAYOUT AND TYPICAL CROSS-SECTIONS. THIS INCLUDES PROPOSED ROADMARKING LAYOUT AND IDENTIFICATION OF AREAS OF PAVEMENT MODIFICATION

OFF ROAD SECTIONS OF THE ROUTE INCLUDE 3D DESIGN PLAN AND LONGSECTIONS PLUS CROSS SECTIONS AT 20M INTERVALS. (DESIGN IS BASED ON LIDAR SURFACE)

TUNNEL DESIGN IS BASED ON A TYPICAL CROSS SECTION

CONCEPT SKETCHES FOR NEW STRUCTURES
3. INVESTIGATIONS
- INVESTIGATIONS COMPLETED TO DATE INCLUDE
  - ARCHAEOLOGICAL ASSESSMENT (CONCEPT LEVEL)
  - CONTAMINATED LAND PRELIMINARY SITE INVESTIGATION (CONCEPT LEVEL)
  - PRELIMINARY GEOTECHNICAL APPRAISAL
  - STRUCTURAL ASSESSMENT OF EXISTING TUNNELS AND STRUCTURES

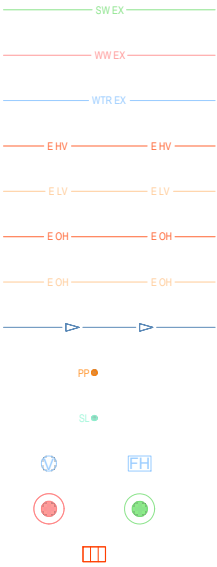
INVESTIGATIONS DEFERRED TO DETAILED DESIGN
  - GEOTECHNICAL SITE INVESTIGATIONS
  - TOPOGRAPHICAL SURVEY
  - CONTAMINATED LAND DETAILED SITE INVESTIGATION
  - POTHOLING FOR SERVICES
  - CARBON ASSESSMENT
  - AIR QUALITY ASSESSMENT
4. PRELIMINARY DESIGN LIMITATION NOTES
- DUE TO NO TOPOGRAPHICAL AND GEOTECHINCAL INVESTIGATIONS THE 3D DESIGN COMPONENTS SHOULD BE CONSIDERED CONCEPT LEVEL ONLY WITH ASSUMED BATTER SLOPES

STORMWATER DESIGN HAS BEEN COMPLETED TO CONCEPT LEVEL ONLY

SIGNS ARE NOT FULLY DOCUMENTED

LAND PURCHASE REQUIREMENTS ARE NOT SHOWN

EXISTING SERVICES KEY



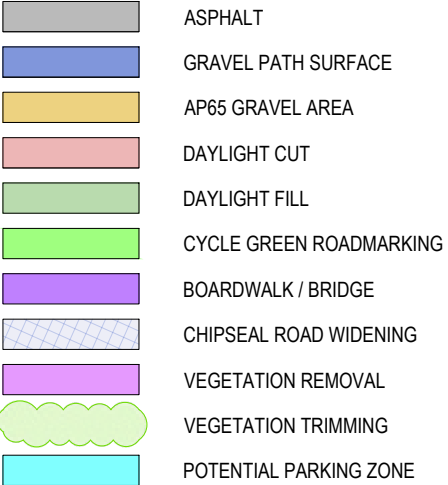
- EXISTING STORMWATER
- EXISTING WASTEWATER
- EXISTING WATER
- EXISTING HIGH VOLTAGE ELECTRICITY
- EXISTING LOW VOLTAGE ELECTRICITY
- EXISTING OVERHEAD HIGH VOLTAGE ELECTRICITY
- EXISTING OVERHEAD LOW VOLTAGE ELECTRICITY
- EXISTING STORMWATER FLOWPATH
- EXISTING POWER POLE
- EXISTING STREETLIGHT POLE
- EXISTING WATER VALVE / HYDRANT
- EXISTING WASTEWATER / STORMWATER STRUCTURE
- EXISTING DUCT PIT

EXISTING FEATURES KEY



- LAND XML BOUNDARIES
- LAND XML EASEMENTS
- EXISTING FENCELINE
- EXISTING TUNNEL
- EXISTING KERB INVERT / EDGE OF SEAL

PROPOSED PLAN KEY



- KERB AND CHANNEL
- FOOTPATH EDGE
- WATER TABLE
- DAYLIGHT TIE IN
- PLANTING
- STORMWATER PIPE
- STORMWATER DIVERSION BUND
- RETAINING WALL
- FENCE - SOLID BARRIER RAIL PROTECTION
- FENCE - 1.8m RAIL PROTECTION
- FENCE - 1.2m RAIL PROTECTION
- FENCE - FALL PROTECTION / HANDRAIL
- FENCE - SHEEP FENCE
- FENCE - GATE

GENERAL:

1. SURVEY
- EXISTING SURFACE USED FOR DESIGN IS LIDAR. NO DETAILED TOPOGRAPHICAL SURVEY HAS BEEN COMPLETED.

COORDINATES ARE IN TERMS OF NZTM2000

ELEVATIONS ARE IN TERMS OF DUNEDIN VERTICAL DATUM 1958

LIDAR SOURCE IS AS BELOW
  - DUNEDIN SIDE OF CHAINHILLS TUNNEL - DCC SUPPLIED 2009 URBAN LIDAR
  - MOSGIEL SIDE OF CHAINHILLS TUNNEL - ORC TAIERI 2016 LIDAR FROM OPEN TOPOGRAPHY (ELEVATION ADJUSTMENT OF 310mm MADE TO BRING IN TERMS OF DUNEDIN VERTICAL DATUM)
  - GAP BETWEEN URBAN AND TAIERI DATA - DCC SUPPLIED DTM FROM 2013 OTHO AERIAL PHOTO ( /-0.35m) ACCURACY. SMOOTHING OF DTM COMPLETED TO REMOVE VEGETATION AS BEST AS POSSIBLE.

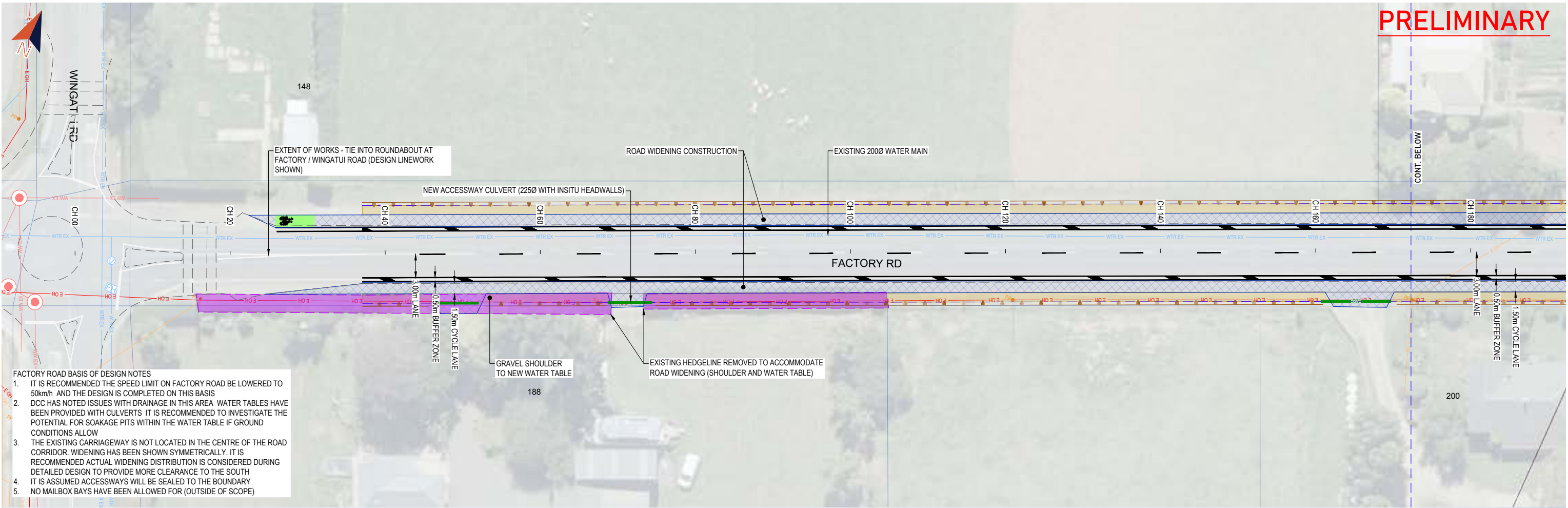
AERIAL IMAGERY HAS BEEN SOURCED FROM THE LINZ DATA SERVICE AND IS INDICATIVE ONLY.

CONTOURS SHOWN ARE EXISTING GROUND AT 1m INTERVALS.
2. EXISTING SERVICES
- EXISTING SERVICES SHOWN ARE INDICATIVE ONLY. FURTHER INVESTIGATION AND REFINEMENT IS REQUIRED IN THE NEXT STAGE OF DESIGN.

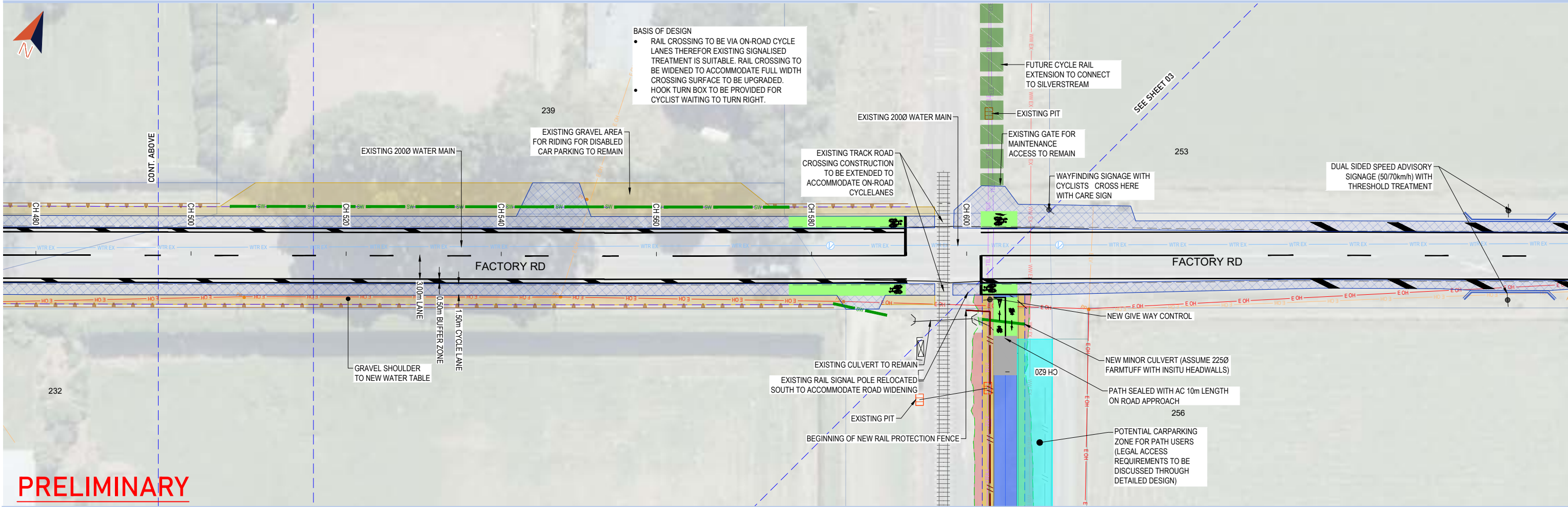
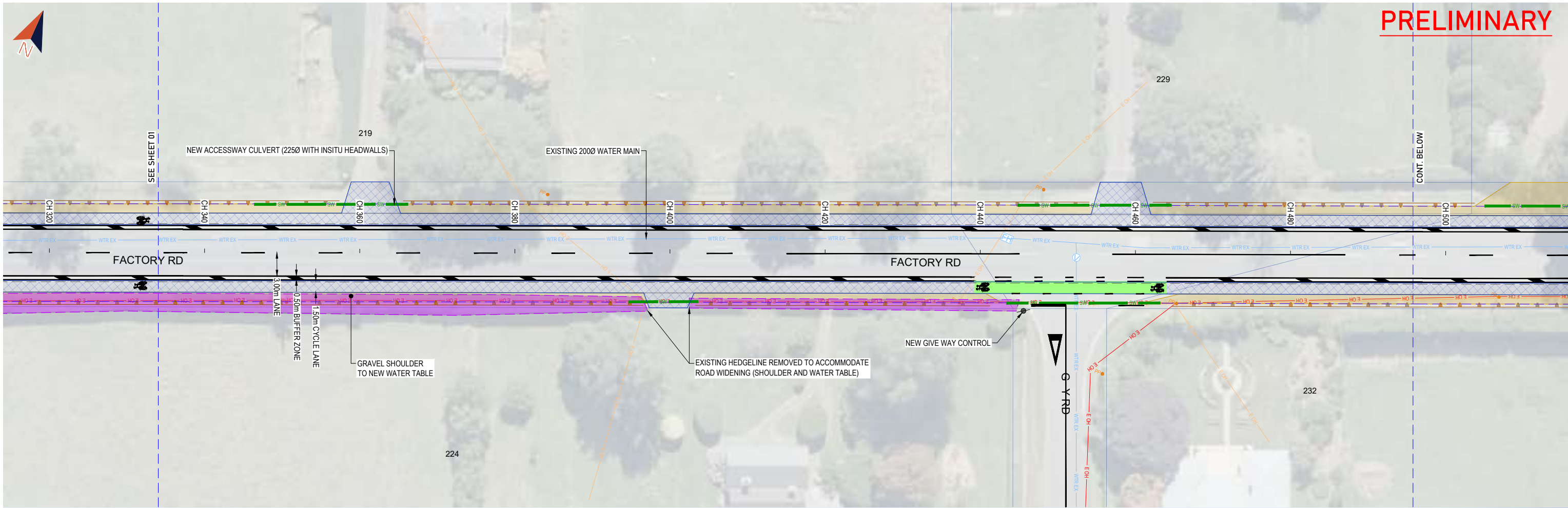
THE DEPTH OF EXISTING SERVICES IS NOT KNOWN AND HAS NOT BEEN CONSIDERED AS PART OF THE DESIGN.

EXISTING SERVICES SOURCE IS AS BELOW
  - DCC 3 WATERS - DCC SUPPLIED SHAPE FILE
  - AURORA - AURORA ELECTRICITY SUPPLIED SHAPE FILE
  - CHORUS - PLANS PROVIDED BY CHORUS. KEY AREAS HAVE BEEN TRACED FROM APPROX SCALED PDF S TO INDICATE PRESENCE OF CABLES. FULL DIGITISATION OF CHORUS CABLES HAS NOT BEEN COMPLETED
  - VODAFONE - VODAFONE SHAPE FILE PROVIDED OF CABLES WITHIN RAIL CORRIDOR
  - GENISIS - GAS PLANS PROVIDED. KEY AREAS HAVE BEEN TRACED FROM APPROX SCALED PDF S TO INDICATE PRESENCE OF GASMAINS. FULL DIGITISATION OF GAS MAINS HAS NOT BEEN COMPLETED
  - KIWIRAIL - KIWIRAIL SUPPLIED AS-BUILT DRAWING OF DUCTING AND SWITCH GEAR PROVIDED. NOTE THIS IS FROM A DOWNER AS-BUILT AND DID NOT INCLUDE ALL SERVICES WITHIN THE RAIL CORRIDOR.
  - SERVICE LOCATION AND DEPTH WITHIN THE TUNNELS IS NOT KNOWN.
3. RAIL CORRIDOR
- NO ENTRY HAS BEEN PERMITTED ON THE RAIL CORRIDOR DURING THE DEVELOPMENT OF THE BUSINESS CASE. A CONSTRUCTABILITY REVIEW OF THE RAIL CORRIDOR COMPONENTS OF THE DESIGN IS RECOMMENDED AS PART OF THE DETAILED DESIGN PHASE.

PRELIMINARY

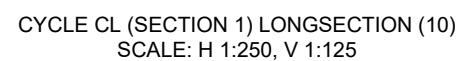


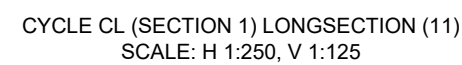
PRELIMINARY

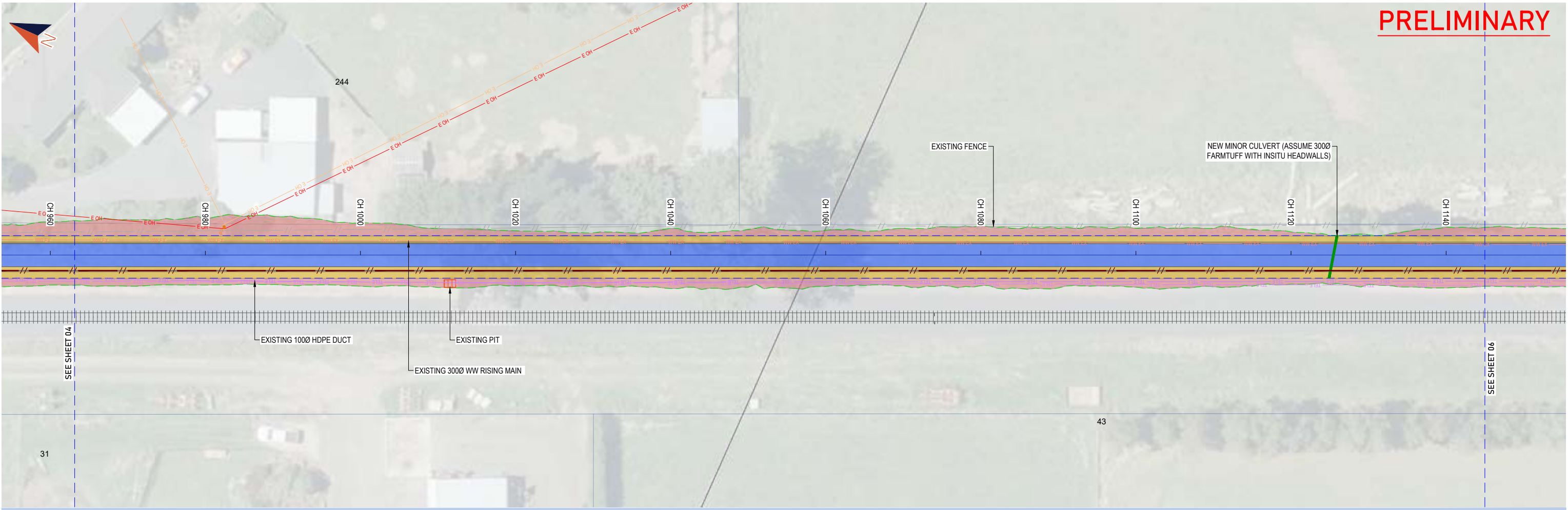


PRELIMINARY

|                                                                                                                                                     |  |                             |  |                                                                                                      |  |     |  |                                 |  |            |  |                |  |              |  |            |  |              |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------|--|------------------------------------------------------------------------------------------------------|--|-----|--|---------------------------------|--|------------|--|----------------|--|--------------|--|------------|--|--------------|--|
| CLIENT:                                                                                                                                             |  | PROJECT:                    |  | SHEET TITLE:                                                                                         |  | REV |  | REVISION DETAILS                |  | DATE       |  | SURVEYED:      |  |              |  | JOB NUMBER |  | SCALE (@ A1) |  |
|  <b>DUNEDIN</b> <small>kauphera-a-rohe Ōtago CITY COUNCIL</small> |  | DUNEDIN TUNNELS TRAIL (CYT) |  |  <b>bonisch</b> |  | A   |  | PRELIMINARY DESIGN - FOR REVIEW |  | 10/12/2021 |  | DESIGNED:      |  | SJC OCT 2021 |  | 7332       |  | 1:250        |  |
|                                                                                                                                                     |  |                             |  |                                                                                                      |  |     |  |                                 |  |            |  | DRAWN:         |  | BMS NOV 2021 |  |            |  |              |  |
|                                                                                                                                                     |  |                             |  |                                                                                                      |  |     |  |                                 |  |            |  | DRAWING CHECK: |  | PGO DEC 2021 |  | SHEET      |  | REV.         |  |
|                                                                                                                                                     |  |                             |  |                                                                                                      |  |     |  |                                 |  |            |  | DESIGN CHECK:  |  | PGO DEC 2021 |  | 02         |  | A            |  |
|                                                                                                                                                     |  |                             |  |                                                                                                      |  |     |  |                                 |  |            |  | APPROVED:      |  | PGO DEC 2021 |  |            |  |              |  |







|                   |                            |         |         |         |                   |          |          |          |                              |          |                   |          |
|-------------------|----------------------------|---------|---------|---------|-------------------|----------|----------|----------|------------------------------|----------|-------------------|----------|
| Datum 25.00       |                            |         |         |         |                   |          |          |          |                              |          |                   |          |
| EXISTING GROUND   | 28.538                     | 28.515  | 28.462  | 28.198  | 27.963            | 27.808   | 27.576   | 27.341   | 27.096                       | 27.049   | 27.001            | 26.900   |
| DESIGN LEVEL      | 28.458                     | 28.422  | 28.350  | 28.186  | 28.022            | 27.857   | 27.693   | 27.529   | 27.365                       | 27.201   | 27.166            | 26.900   |
| DEPTH             | -0.080                     | -0.093  | -0.112  | -0.012  | 0.058             | 0.050    | 0.117    | 0.188    | 0.269                        | 0.151    | 0.165             | 0.136    |
| VERTICAL GEOMETRY | R=672.4<br>K=6.7<br>L=20.0 |         |         |         | G=-1.6%<br>L=76.5 |          |          |          | R=1536.1<br>K=15.4<br>L=20.0 |          | G=-0.3%<br>L=31.2 |          |
| CHAINAGE          | 963.151                    | 965.598 | 970.000 | 980.000 | 990.000           | 1000.000 | 1010.000 | 1020.000 | 1030.000                     | 1040.000 | 1042.096          | 1050.000 |

CYCLE CL (SECTION 1) LONGSECTION (12)  
SCALE: H 1:250, V 1:125

PRELIMINARY

CLIENT:

 **DUNEDIN CITY COUNCIL** kaunihera a-rorohiri ōtepoti

PROJECT:

**DUNEDIN TUNNELS TRAIL (CYT)**

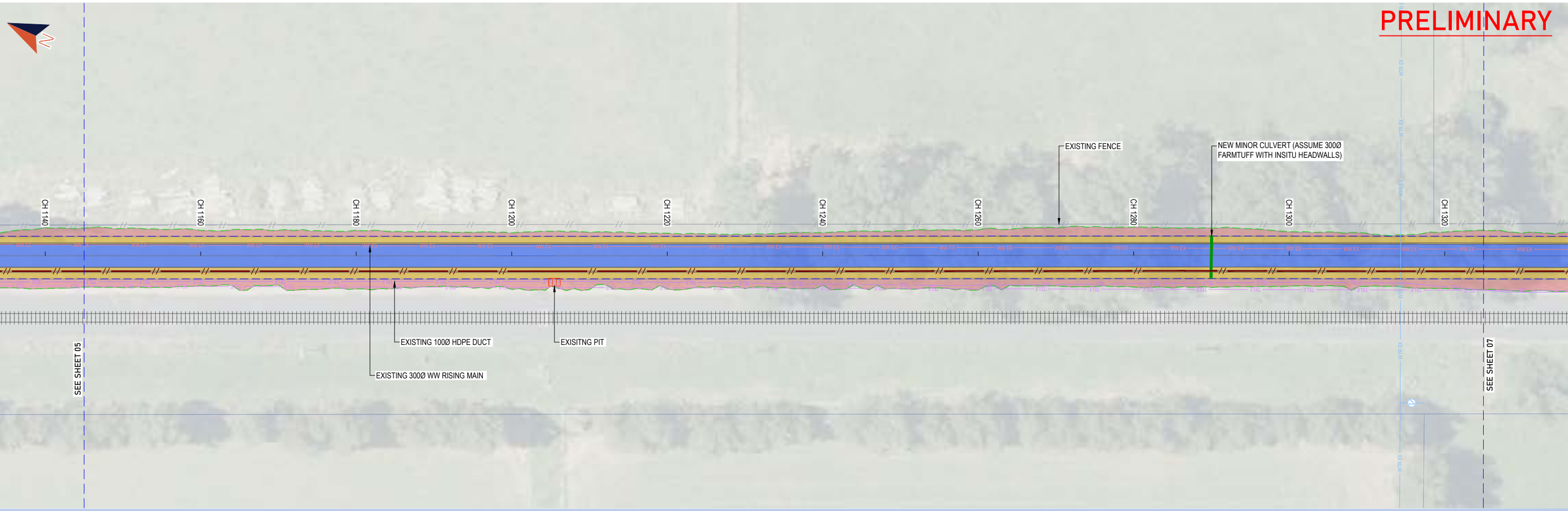


SHEET TITLE:

**MOSGIEL TO CHAIN HILLS - PLAN 05**

| REV | REVISION DETAILS                | DATE       | SURVEYED:      |     | JOB NUMBER | SCALE (@ A1) |
|-----|---------------------------------|------------|----------------|-----|------------|--------------|
| A   | PRELIMINARY DESIGN - FOR REVIEW | 10/12/2021 | DESIGNED:      | SJC | OCT 2021   | 7332         |
|     |                                 |            | DRAWN:         | BMS | NOV 2021   |              |
|     |                                 |            | DRAWING CHECK: | PGO | DEC 2021   |              |
|     |                                 |            | DESIGN CHECK:  | PGO | DEC 2021   |              |
|     |                                 |            | APPROVED:      | PGO | DEC 2021   |              |

| SHEET | REV. |
|-------|------|
| 05    | A    |



|                   |                            |          |                        |          |  |          |          |        |          |  |          |  |          |  |          |  |          |  |          |  |          |  |          |  |          |  |                              |  |          |          |                  |          |          |  |                            |          |        |          |        |          |          |          |        |          |        |  |        |  |        |  |        |
|-------------------|----------------------------|----------|------------------------|----------|--|----------|----------|--------|----------|--|----------|--|----------|--|----------|--|----------|--|----------|--|----------|--|----------|--|----------|--|------------------------------|--|----------|----------|------------------|----------|----------|--|----------------------------|----------|--------|----------|--------|----------|----------|----------|--------|----------|--------|--|--------|--|--------|--|--------|
| Datum 23.00       |                            |          |                        |          |  |          |          |        |          |  |          |  |          |  |          |  |          |  |          |  |          |  |          |  |          |  |                              |  |          |          |                  |          |          |  |                            |          |        |          |        |          |          |          |        |          |        |  |        |  |        |  |        |
| EXISTING GROUND   | 26.660                     | 26.648   | 26.625                 | 26.605   |  | 26.553   | 26.432   |        | 26.294   |  | 26.226   |  | 26.164   |  | 26.082   |  | 25.970   |  | 25.850   |  | 25.814   |  | 25.785   |  | 25.727   |  | 25.702                       |  | 25.687   |          | 25.677           |          | 25.634   |  | 25.625                     |          | 25.577 |          | 25.589 |          | 25.531   |          | 25.576 |          | 25.617 |  | 25.685 |  | 25.744 |  |        |
| DESIGN LEVEL      | 26.650                     | 26.654   | 26.648                 | 26.635   |  | 26.580   | 26.507   | 26.432 | 26.434   |  | 26.362   |  | 26.289   |  | 26.217   |  | 26.144   |  | 26.071   |  | 25.999   |  | 25.926   |  | 25.854   |  | 25.781                       |  | 25.702   |          | 25.727           |          | 25.710   |  | 25.685                     |          | 25.685 |          | 25.707 |          | 25.721   |          | 25.774 |          | 25.796 |  | 25.806 |  | 25.804 |  | 25.774 |
| DEPTH             | -0.009                     | 0.006    | 0.023                  | 0.030    |  | 0.026    | 0.075    |        | 0.140    |  | 0.136    |  | 0.125    |  | 0.134    |  | 0.174    |  | 0.222    |  | 0.185    |  | 0.141    |  | 0.127    |  | 0.079                        |  | 0.039    |          | 0.034            |          | 0.051    |  | 0.060                      |          | 0.130  |          | 0.132  |          | 0.243    |          | 0.220  |          | 0.190  |  | 0.139  |  | 0.030  |  |        |
| VERTICAL GEOMETRY | R=713.5<br>K=7.1<br>L=20.0 |          | G = -0.7%<br>L = 125.2 |          |  |          |          |        |          |  |          |  |          |  |          |  |          |  |          |  |          |  |          |  |          |  | R=1587.2<br>K=15.9<br>L=20.0 |  |          |          | G=0.5%<br>L=16.6 |          |          |  | R=740.4<br>K=7.4<br>L=20.0 |          |        |          |        |          |          |          |        |          |        |  |        |  |        |  |        |
| CHAINAGE          | 1145.000                   | 1147.189 | 1150.000               | 1152.369 |  | 1160.000 | 1170.000 |        | 1180.000 |  | 1190.000 |  | 1200.000 |  | 1210.000 |  | 1220.000 |  | 1230.000 |  | 1240.000 |  | 1250.000 |  | 1260.000 |  | 1270.000                     |  | 1277.526 | 1280.000 |                  | 1285.048 | 1290.000 |  | 1297.526                   | 1300.000 |        | 1310.000 |        | 1314.082 | 1318.037 | 1320.000 |        | 1325.000 |        |  |        |  |        |  |        |

CYCLE CL (SECTION 1) LONGSECTION (13)  
SCALE: H 1:250, V 1:125

CLIENT:

 **DUNEDIN CITY COUNCIL**  
kaunhera a-rohe o Ōtago

PROJECT:

**DUNEDIN TUNNELS TRAIL (CYT)**

**bonisch**

SHEET TITLE:

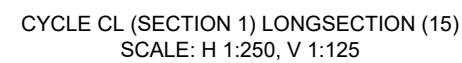
**MOSGIEL TO CHAIN HILLS - PLAN 06**

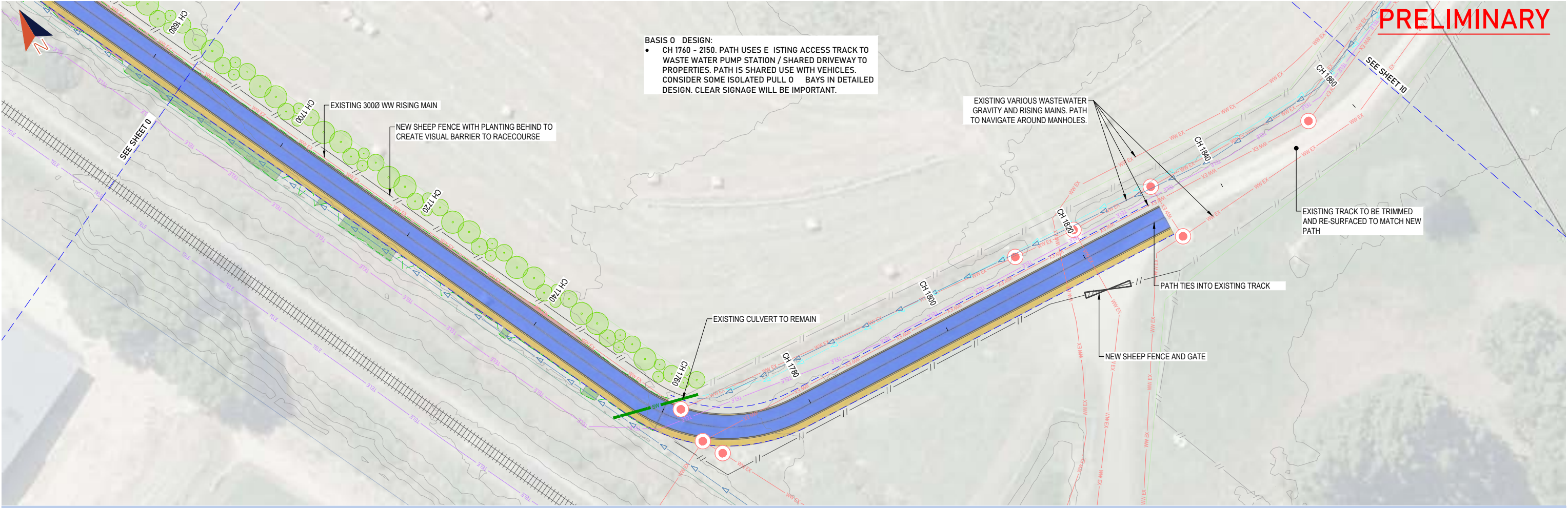
| REV | REVISION DETAILS                | DATE       | SURVEYED: | DESIGNED: | DRAWN:   | DRAWING CHECK: | DESIGN CHECK: | APPROVED: | JOB NUMBER  | SCALE (@ A1) |
|-----|---------------------------------|------------|-----------|-----------|----------|----------------|---------------|-----------|-------------|--------------|
| A   | PRELIMINARY DESIGN - FOR REVIEW | 10/12/2021 |           | SJC       | NOV 2021 | BMS            | PGO           | PGO       | <b>7332</b> | <b>1:250</b> |
|     |                                 |            |           |           | DEC 2021 | PGO            | PGO           | PGO       | <b>06</b>   | <b>A</b>     |

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CYCLE CL (SECTION 1) LONGSECTION (14)  
SCALE: H 1:250, V 1:125

|                                                                                                                                                                  |                                 |  |                                                          |  |  |                                                                                                        |                |     |                                                               |             |                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--|----------------------------------------------------------|--|--|--------------------------------------------------------------------------------------------------------|----------------|-----|---------------------------------------------------------------|-------------|------------------|
| CLIENT:                                                                                                                                                          |                                 |  | PROJECT:                                                 |  |  |                                                                                                        |                |     | SHEET TITLE:                                                  |             |                  |
|  <b>DUNEDIN CITY COUNCIL</b><br><small>kauwhera<br/>a-rohe o<br/>Ōtago</small> |                                 |  | <p align="center"><b>DUNEDIN TUNNELS TRAIL (CYT)</b></p> |  |  | <br><b>bonisch</b> |                |     | <p align="center"><b>MOSGIEL TO CHAIN HILLS - PLAN 07</b></p> |             |                  |
| REV                                                                                                                                                              | REVISION DETAILS                |  |                                                          |  |  | DATE                                                                                                   | SURVEYED:      |     |                                                               | JOB NUMBER  | SCALE (@ A1)     |
| A                                                                                                                                                                | PRELIMINARY DESIGN - FOR REVIEW |  |                                                          |  |  | 10/12/2021                                                                                             | DESIGNED:      | SJC | OCT 2021                                                      | <b>7332</b> | <b>1:250</b>     |
|                                                                                                                                                                  |                                 |  |                                                          |  |  |                                                                                                        | DRAWN:         | BMS | NOV 2021                                                      |             |                  |
|                                                                                                                                                                  |                                 |  |                                                          |  |  |                                                                                                        | DRAWING CHECK: | PGO | DEC 2021                                                      | <b>07</b>   | REV.<br><b>A</b> |
|                                                                                                                                                                  |                                 |  |                                                          |  |  |                                                                                                        | DESIGN CHECK:  | PGO | DEC 2021                                                      |             |                  |
|                                                                                                                                                                  |                                 |  |                                                          |  |  |                                                                                                        | APPROVED:      | PGO | DEC 2021                                                      |             |                  |





Datum 25.00

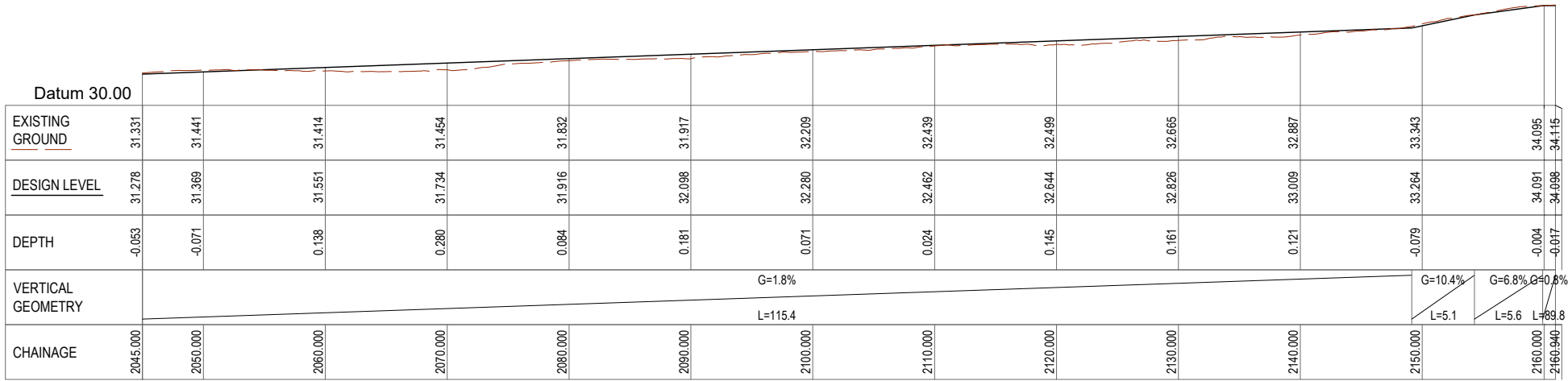
|                   |  |                  |          |                              |          |          |          |                  |          |          |          |                              |          |          |          |                  |          |          |          |                            |          |          |          |                  |          |          |          |                              |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |
|-------------------|--|------------------|----------|------------------------------|----------|----------|----------|------------------|----------|----------|----------|------------------------------|----------|----------|----------|------------------|----------|----------|----------|----------------------------|----------|----------|----------|------------------|----------|----------|----------|------------------------------|--------|--|--------|--|--------|--|--------|--|--------|--|--------|--|--------|--|--------|--|--------|--|--------|--|--------|--|--------|
| EXISTING GROUND   |  | 26.827           | 26.827   |                              | 26.940   |          | 27.155   |                  | 27.229   |          | 27.302   |                              | 27.385   |          | 27.566   |                  | 27.645   | 27.645   |          | 27.748                     |          | 28.133   | 28.133   |                  | 28.620   |          | 29.099   |                              | 29.293 |  | 29.154 |  | 29.125 |  | 29.385 |  | 29.436 |  | 29.475 |  | 29.521 |  | 29.544 |  | 29.489 |  | 29.513 |  | 29.480 |  | 29.534 |
| DESIGN LEVEL      |  | 26.891           | 26.903   |                              | 26.994   |          | 27.165   |                  | 27.239   |          | 27.292   |                              | 27.411   |          | 27.531   |                  | 27.650   | 27.651   |          | 27.816                     |          | 28.074   | 28.074   |                  | 28.378   |          | 28.682   |                              | 28.986 |  | 29.112 |  | 29.265 |  | 29.415 |  | 29.436 |  | 29.447 |  | 29.467 |  | 29.486 |  | 29.506 |  | 29.522 |  | 29.525 |  | 29.531 |
| DEPTH             |  | 0.063            | 0.075    |                              | 0.055    |          | 0.010    |                  | 0.010    |          | -0.011   |                              | 0.027    |          | -0.035   |                  | 0.005    | 0.005    |          | 0.068                      |          | -0.059   | -0.059   |                  | -0.243   |          | -0.418   |                              | -0.307 |  | -0.042 |  | 0.141  |  | 0.030  |  | -0.001 |  | -0.028 |  | -0.054 |  | -0.057 |  | 0.017  |  | 0.009  |  | 0.046  |  | -0.003 |
| VERTICAL GEOMETRY |  | G=2.2%<br>L=94.4 |          | R=2064.8<br>K=20.6<br>L=20.0 |          |          |          | G=1.2%<br>L=34.5 |          |          |          | R=1084.2<br>K=10.8<br>L=20.0 |          |          |          | G=3.0%<br>L=34.1 |          |          |          | R=703.5<br>K=7.0<br>L=20.0 |          |          |          | G=0.2%<br>L=43.8 |          |          |          | R=4838.0<br>K=48.4<br>L=20.0 |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |
| CHAINAGE          |  | 1685.000         | 1685.540 | 1690.000                     | 1700.000 | 1705.540 | 1710.000 | 1720.000         | 1730.000 | 1740.000 | 1740.013 | 1750.000                     | 1760.000 | 1760.013 | 1770.000 | 1780.000         | 1790.000 | 1794.147 | 1800.000 | 1810.000                   | 1814.147 | 1820.000 | 1830.000 | 1840.000         | 1850.000 | 1857.944 | 1860.000 | 1865.000                     |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |  |        |

CYCLE CL (SECTION 1) LONGSECTION (16)  
SCALE: H 1:250, V 1:125

**PRELIMINARY**

|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  |            |  |                    |  |              |  |       |  |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------|--|-----------------------------------------------------------------------------------------------------------------|--|----------------------------------|--|------------------|--|---------------------------------|--|------------|--|--------------------|--|--------------|--|-------|--|-------|--|
| CLIENT:                                                                                                                                                                           |  | PROJECT:                    |  | SHEET TITLE:                                                                                                    |  | REV                              |  | REVISION DETAILS |  | DATE                            |  | SURVEYED:  |  | JOB NUMBER         |  | SCALE (@ A1) |  |       |  |       |  |
| <div> <b>DUNEDIN</b> <small>kaunihera</small><br/>CITY COUNCIL <small>ō te pōtiki</small></div> |  | DUNEDIN TUNNELS TRAIL (CYT) |  | <div> <b>bonisch</b></div> |  | MOSGIEL TO CHAIN HILLS - PLAN 09 |  | A                |  | PRELIMINARY DESIGN - FOR REVIEW |  | 10/12/2021 |  | DESIGNED: SJC      |  | OCT 2021     |  | 7332  |  | 1:250 |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  |            |  | DRAWN: BMS         |  | NOV 2021     |  |       |  |       |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  |            |  | DRAWING CHECK: PGO |  | DEC 2021     |  | SHEET |  | REV.  |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  |            |  | DESIGN CHECK: PGO  |  | DEC 2021     |  | 09    |  | A     |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  |            |  | APPROVED: PGO      |  | DEC 2021     |  |       |  |       |  |

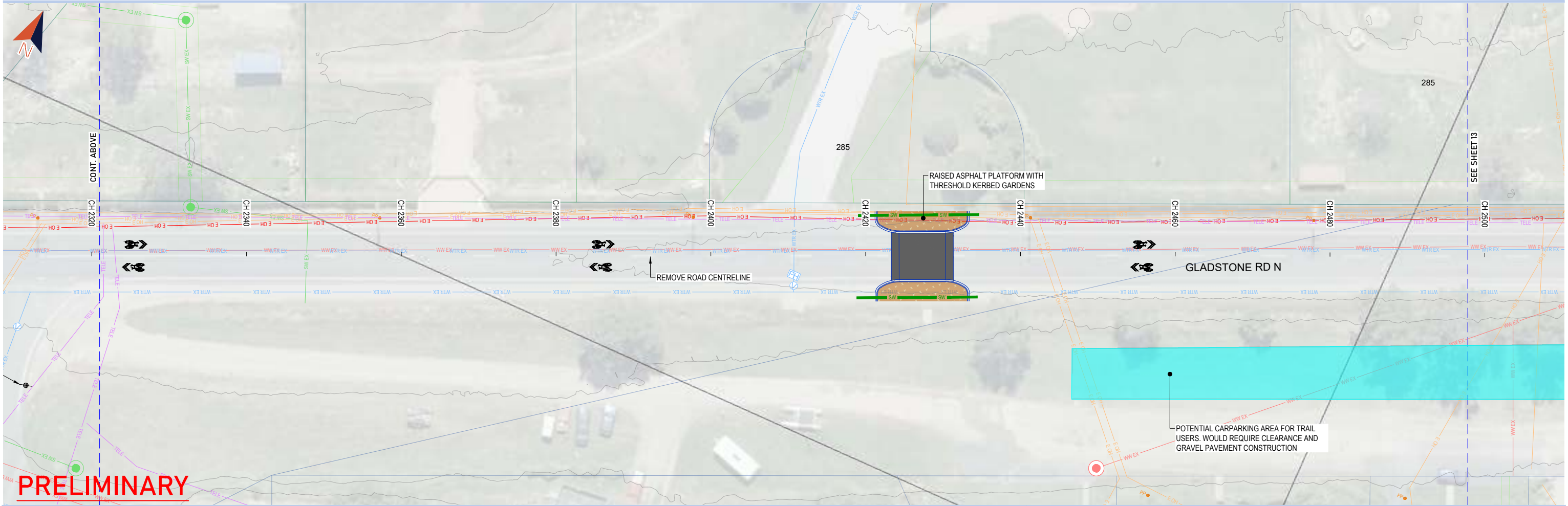
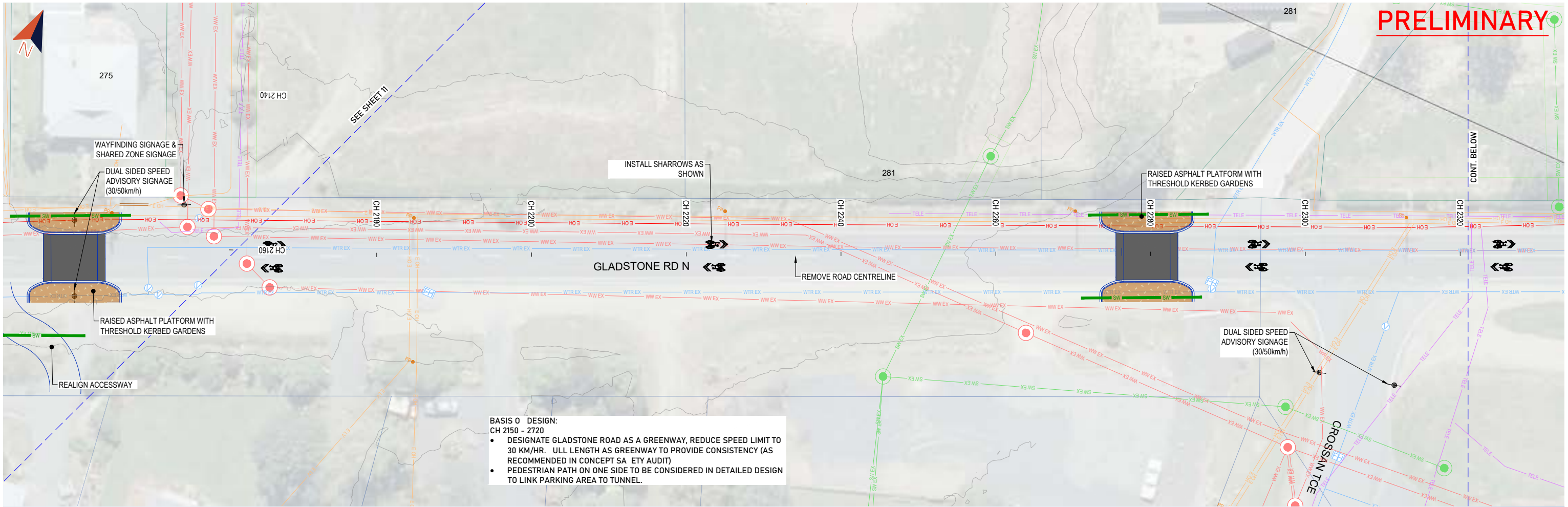


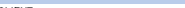


CYCLE CL (SECTION 1) LONGSECTION (18)  
SCALE: H 1:250, V 1:125

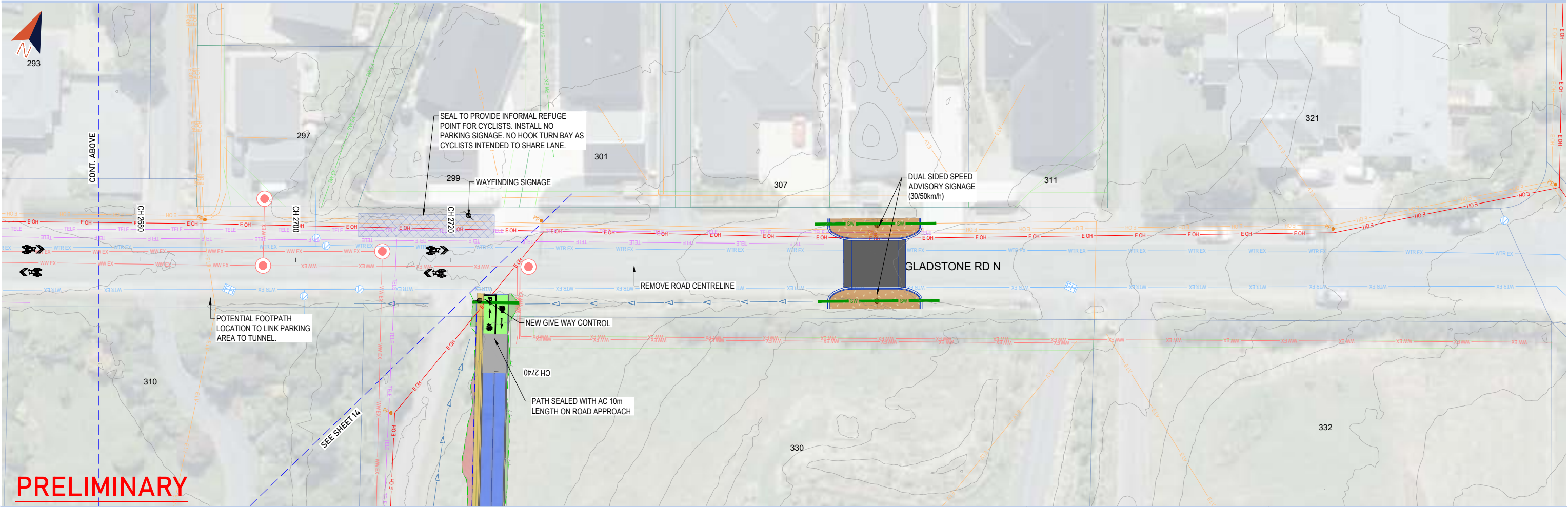
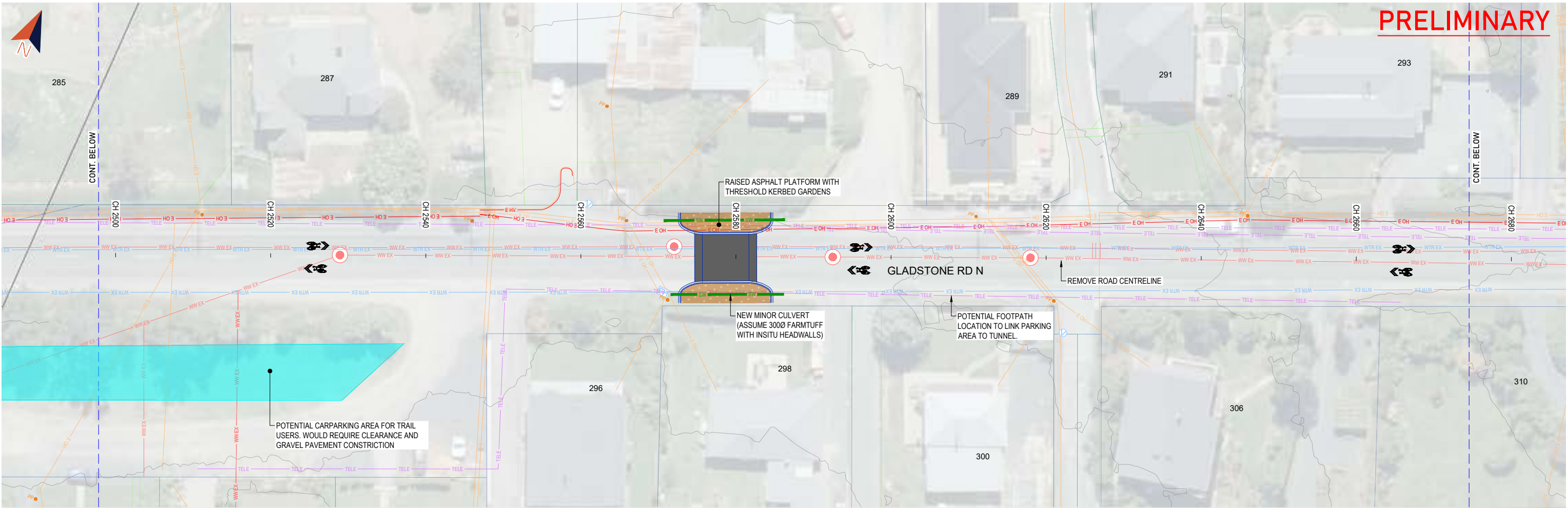
PRELIMINARY

|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  |                    |  |               |  |              |  |      |  |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------|--|-----------------------------------------------------------------------------------------------------------------|--|----------------------------------|--|------------------|--|---------------------------------|--|--------------------|--|---------------|--|--------------|--|------|--|-------|--|
| CLIENT:                                                                                                                                                                           |  | PROJECT:                    |  | SHEET TITLE:                                                                                                    |  | REV                              |  | REVISION DETAILS |  | DATE                            |  | SURVEYED:          |  | JOB NUMBER    |  | SCALE (@ A1) |  |      |  |       |  |
| <div> <b>DUNEDIN</b> <small>kaunihera</small><br/>CITY COUNCIL <small>o te pōtiki</small></div> |  | DUNEDIN TUNNELS TRAIL (CYT) |  | <div> <b>bonisch</b></div> |  | MOSGIEL TO CHAIN HILLS - PLAN 11 |  | A                |  | PRELIMINARY DESIGN - FOR REVIEW |  | 10/12/2021         |  | DESIGNED: SJC |  | OCT 2021     |  | 7332 |  | 1:250 |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  | DRAWN: BMS         |  | NOV 2021      |  |              |  |      |  |       |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  | DRAWING CHECK: PGO |  | DEC 2021      |  | SHEET        |  | REV. |  |       |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  | DESIGN CHECK: PGO  |  | DEC 2021      |  | 11           |  | A    |  |       |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                                 |  |                                  |  |                  |  |                                 |  | APPROVED: PGO      |  | DEC 2021      |  |              |  |      |  |       |  |



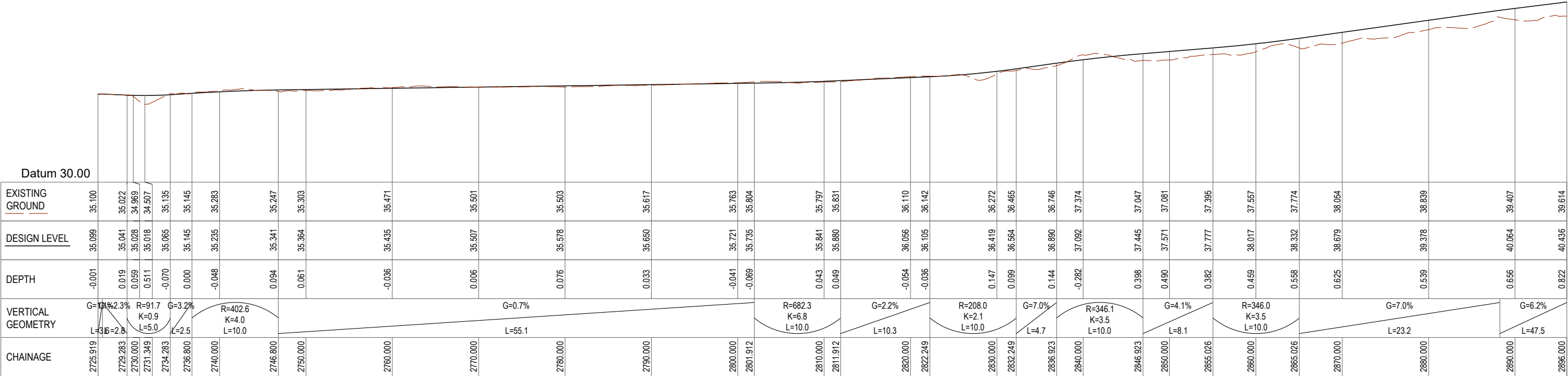
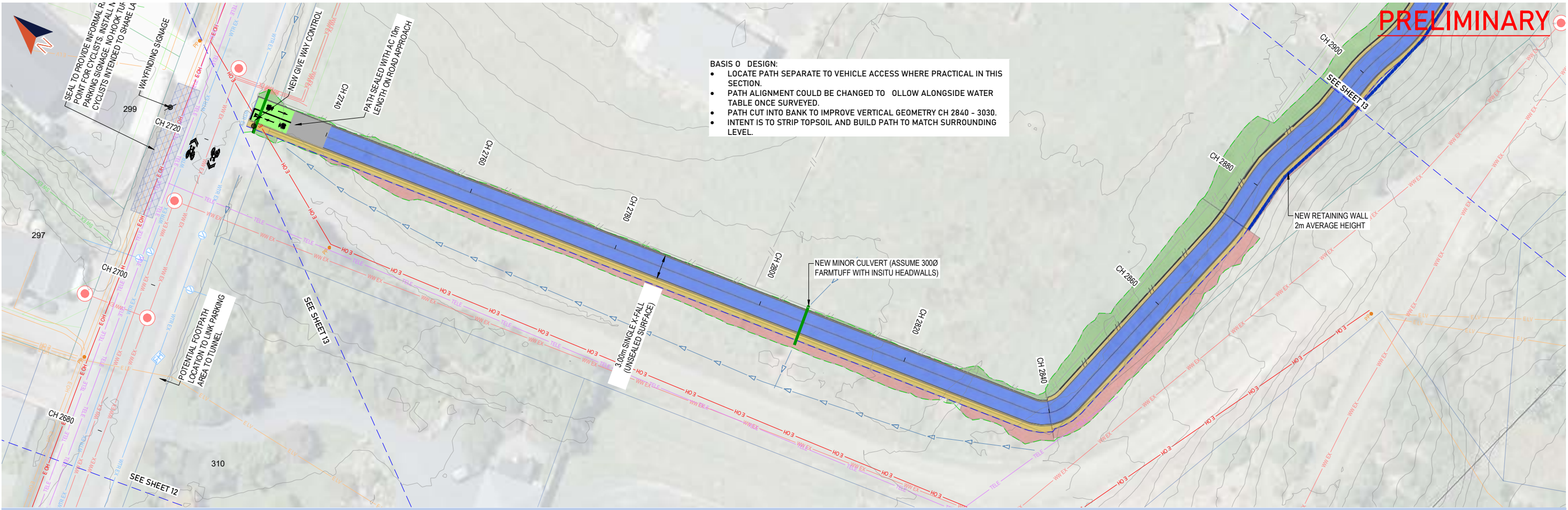
|                                                                                                                |  |                             |  |                                                                                       |  |     |  |                                 |  |            |  |                |  |            |  |              |  |
|----------------------------------------------------------------------------------------------------------------|--|-----------------------------|--|---------------------------------------------------------------------------------------|--|-----|--|---------------------------------|--|------------|--|----------------|--|------------|--|--------------|--|
| CLIENT:                                                                                                        |  | PROJECT:                    |  | SHEET TITLE:                                                                          |  | REV |  | REVISION DETAILS                |  | DATE       |  | SURVEYED:      |  | JOB NUMBER |  | SCALE (@ A1) |  |
|  <b>DUNEDIN</b> CITY COUNCIL |  | DUNEDIN TUNNELS TRAIL (CYT) |  |  |  | A   |  | PRELIMINARY DESIGN - FOR REVIEW |  | 10/12/2021 |  | DESIGNED:      |  | 7332       |  | 1:250        |  |
|                                                                                                                |  |                             |  |                                                                                       |  |     |  |                                 |  |            |  | SJC            |  | OCT 2021   |  |              |  |
|                                                                                                                |  |                             |  |                                                                                       |  |     |  |                                 |  |            |  | DRAWN:         |  | NOV 2021   |  |              |  |
|                                                                                                                |  |                             |  |                                                                                       |  |     |  |                                 |  |            |  | DRAWING CHECK: |  | PGO        |  | REV.         |  |
|                                                                                                                |  |                             |  |                                                                                       |  |     |  |                                 |  |            |  | DESIGN CHECK:  |  | PGO        |  | A            |  |
|                                                                                                                |  |                             |  |                                                                                       |  |     |  |                                 |  |            |  | APPROVED:      |  | PGO        |  |              |  |
|                                                                                                                |  |                             |  |                                                                                       |  |     |  |                                 |  |            |  |                |  | DEC 2021   |  |              |  |

PRELIMINARY



PRELIMINARY

|                                                                                                                                                                                   |  |                             |  |                                                                                                              |  |     |  |                                 |  |            |  |                |  |     |  |            |  |              |  |       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------|--|--------------------------------------------------------------------------------------------------------------|--|-----|--|---------------------------------|--|------------|--|----------------|--|-----|--|------------|--|--------------|--|-------|--|
| CLIENT:                                                                                                                                                                           |  | PROJECT:                    |  | SHEET TITLE:                                                                                                 |  | REV |  | REVISION DETAILS                |  | DATE       |  | SURVEYED:      |  |     |  | JOB NUMBER |  | SCALE (@ A1) |  |       |  |
| <div> <b>DUNEDIN</b> <small>kaunihera</small><br/>CITY COUNCIL <small>o te pōtiki</small></div> |  | DUNEDIN TUNNELS TRAIL (CYT) |  | <div><br/>bonisch</div> |  | A   |  | PRELIMINARY DESIGN - FOR REVIEW |  | 10/12/2021 |  | DESIGNED:      |  | SJC |  | OCT 2021   |  | 7332         |  | 1:250 |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                              |  |     |  |                                 |  |            |  | DRAWN:         |  | BMS |  | NOV 2021   |  |              |  |       |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                              |  |     |  |                                 |  |            |  | DRAWING CHECK: |  | PGO |  | DEC 2021   |  | SHEET        |  | REV.  |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                              |  |     |  |                                 |  |            |  | DESIGN CHECK:  |  | PGO |  | DEC 2021   |  | 13           |  | A     |  |
|                                                                                                                                                                                   |  |                             |  |                                                                                                              |  |     |  |                                 |  |            |  | APPROVED:      |  | PGO |  | DEC 2021   |  |              |  |       |  |



CYCLE CL (SECTION 1) LONGSECTION  
SCALE: H 1:250, V 1:125

**PRELIMINARY**

CLIENT:

**DUNEDIN CITY COUNCIL** kaunhera a-rorua Ōtepoti

PROJECT:

**DUNEDIN TUNNELS TRAIL (CYT)**

**bonisch**

SHEET TITLE:

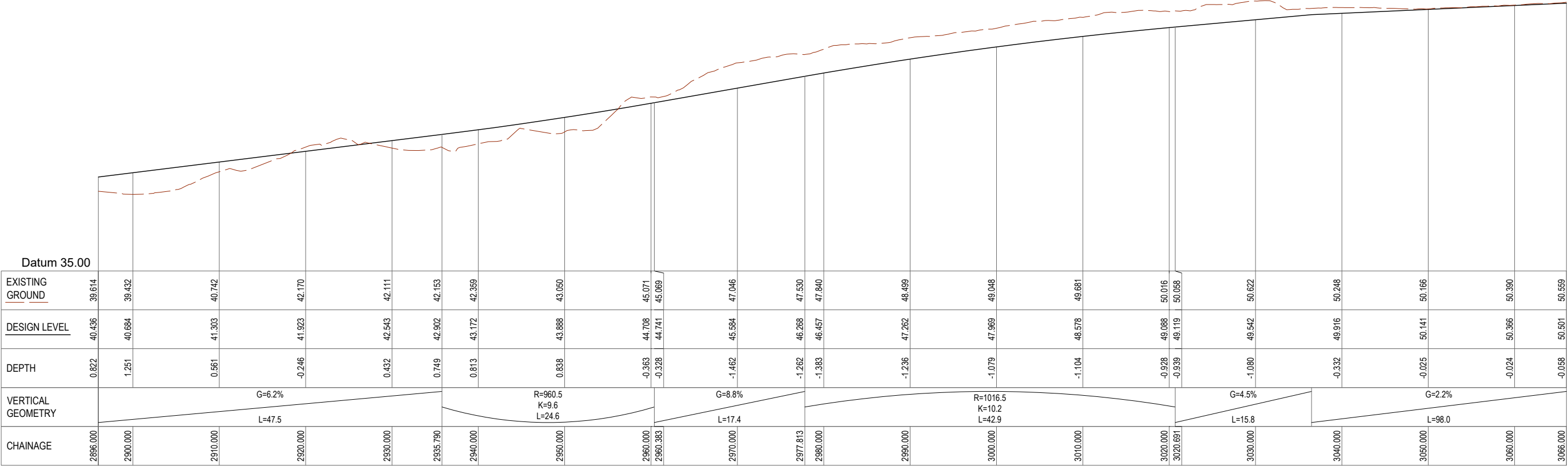
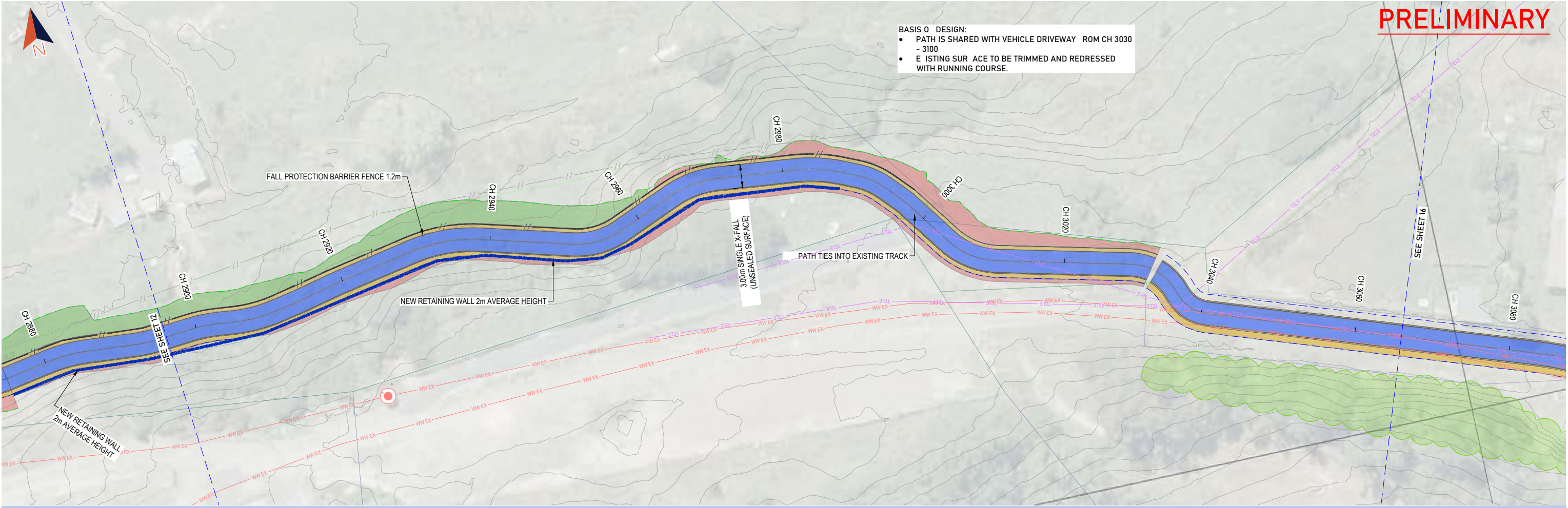
**MOSGIEL TO CHAIN HILLS - PLAN 14**

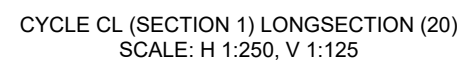
| REV | REVISION DETAILS                | DATE       | SURVEYED: | DESIGNED: | DRAWN: | DRAWING CHECK: | DESIGN CHECK: | APPROVED: | JOB NUMBER  | SCALE (@ A1) |
|-----|---------------------------------|------------|-----------|-----------|--------|----------------|---------------|-----------|-------------|--------------|
| A   | PRELIMINARY DESIGN - FOR REVIEW | 10/12/2021 |           | SJC       | BMS    | PGO            | PGO           | PGO       | <b>7332</b> | <b>1:250</b> |
|     |                                 |            |           |           |        |                |               |           | SHEET       | REV.         |
|     |                                 |            |           |           |        |                |               |           | <b>14</b>   | <b>A</b>     |

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Last Edited by: Sheree on 14/12/2021 11:29:52 am

C:\BONISCH\Bonisch Consultants\Bonisch Consultants Team Site - JOB\7332 - 7332\7332 DCC CYT, Tunnels, Dunedin\04 AutoCAD\2. Printing\7332 - PLAN - LONGSECT.dwg (SHEET 14)





**BASIS O DESIGN:**

- WHERE PATH IS ON E ISTING GRAVEL TRACK SUR ACE IS TO BE TRIMMED AND THEN REDRESSED WITH AP40 AND SUR ACE COURSE TO PROVIDE NEAT SUR ACE.
- WHERE E ISTING CONSTRUCTION ENDS INTENT IS TO STRIP E ISTING TOPSOIL AND VEGETATION AND OR M PATH WITH WATER TABLE.
- NO LIDAR IN ORMATION IS AVAILABLE OR USE CH 140 - 1370. VERTICAL DESIGN THROUGH THIS SECTION IS BASED ON REUSING E ISTING TRACK SUR ACE.

INDICATIVE TUNNEL LOCATION  
(NOTE SERVICES ARE WITHIN  
TUNNEL NOT BESIDE)

EXISTING TRACK TO BE TRIMMED  
AND RE-SURFACED TO MATCH NEW  
PATH

SEE SHEET 17

- EXISTING TRACK TO BE TRIMMED  
AND RE-SURFACED TO MATCH NEW  
PATH

FENCING AS REQUIRED TO  
SEPARATE PATH FROM ADJACENT  
FARMLAND

EXISTING WASTEWATER  
STRUCTURES INCORPORATED INTO  
PATH OR PATH NAVIGATES  
AROUND

—EXISTING 225Ø WASTEWATER RISING MAIN

## EXISTING TELECOM DUCTS

EXISTING 300Ø WASTEWATER RISING MAIN

3.00m CROWNED SHARED PATH  
(UNSEALED SURFACE)

SEE

# PRELIMINARY

CLIENT:

 **DUNEDIN** | kaunihera  
CITY COUNCIL | a-rohe o  
| ōtepoti

## DUNEDIN TUNNELS TRAIL (CYT)



**SHEET TITLE:**

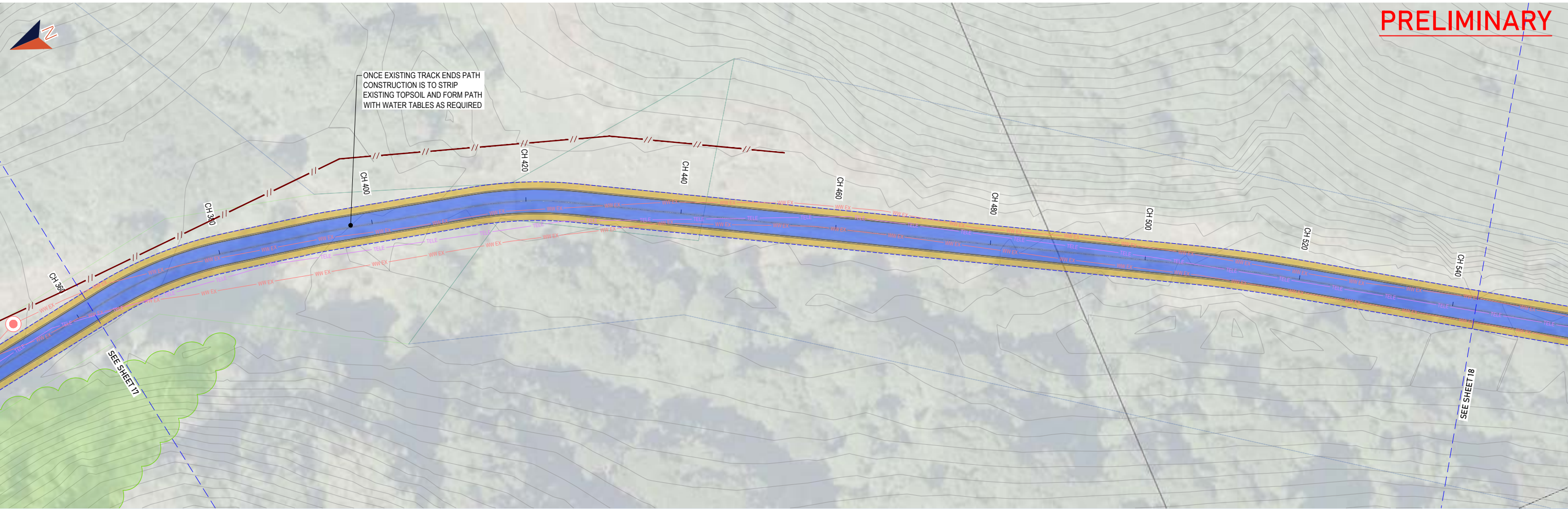
CHAIN HILLS TO HARAWAY UNDERPASS - PLAN 01

| REV | REVISION DETAILS                | DATE       | SURVEYED:      |     |          | JOB NUMBER  | SCALE (@ A1) |
|-----|---------------------------------|------------|----------------|-----|----------|-------------|--------------|
| A   | PRELIMINARY DESIGN - FOR REVIEW | 10/12/2021 | DESIGNED:      | SJC | OCT 2021 | 7332        | 1:250        |
|     |                                 |            | DRAWN:         | BMS | NOV 2021 |             |              |
|     |                                 |            | DRAWING CHECK: | PGO | DEC 2021 | SHEET<br>17 | REV.<br>A    |
|     |                                 |            | DESIGN CHECK:  | PGO | DEC 2021 |             |              |
|     |                                 |            | APPROVED:      | PGO | DEC 2021 |             |              |

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Last Edited by: Shree on 14/12/2021 11:37:17 am C:\BONISCH\Bonisch Consultants\Bonisch Consultants Team Site - JOB\7300 - 7399\7332 DCC CYT, Tunnels, Dunedin\04 AutoCAD\2. Printing\7332 - PLAN - LONG SECT - SECT 2-3.dwg (SHEET 17)

PRELIMINARY



PRELIMINARY

|                                                                                                                                                                                                                                                                 |  |  |                             |  |  |                                                                                                 |  |  |                                            |  |  |                  |  |  |                                 |  |  |            |  |  |                    |  |  |              |  |  |       |  |  |       |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------|--|--|-------------------------------------------------------------------------------------------------|--|--|--------------------------------------------|--|--|------------------|--|--|---------------------------------|--|--|------------|--|--|--------------------|--|--|--------------|--|--|-------|--|--|-------|--|--|
| CLIENT:                                                                                                                                                                                                                                                         |  |  | PROJECT:                    |  |  | SHEET TITLE:                                                                                    |  |  | REV                                        |  |  | REVISION DETAILS |  |  | DATE                            |  |  | SURVEYED:  |  |  | JOB NUMBER         |  |  | SCALE (@ A1) |  |  |       |  |  |       |  |  |
| <div><div>DUNEDIN CITY COUNCIL</div><div>kaunihera<br/>te-āroaro o<br/>Ōtepoti</div></div> |  |  | DUNEDIN TUNNELS TRAIL (CYT) |  |  | <br>bonisch |  |  | CHAIN HILLS TO HARAWAY UNDERPASS - PLAN 02 |  |  | A                |  |  | PRELIMINARY DESIGN - FOR REVIEW |  |  | 10/12/2021 |  |  | DESIGNED: SJC      |  |  | OCT 2021     |  |  | 7332  |  |  | 1:250 |  |  |
|                                                                                                                                                                                                                                                                 |  |  |                             |  |  |                                                                                                 |  |  |                                            |  |  |                  |  |  |                                 |  |  |            |  |  | DRAWN: BMS         |  |  | NOV 2021     |  |  |       |  |  |       |  |  |
|                                                                                                                                                                                                                                                                 |  |  |                             |  |  |                                                                                                 |  |  |                                            |  |  |                  |  |  |                                 |  |  |            |  |  | DRAWING CHECK: PGO |  |  | DEC 2021     |  |  | SHEET |  |  | REV.  |  |  |
|                                                                                                                                                                                                                                                                 |  |  |                             |  |  |                                                                                                 |  |  |                                            |  |  |                  |  |  |                                 |  |  |            |  |  | DESIGN CHECK: PGO  |  |  | DEC 2021     |  |  | 18    |  |  | A     |  |  |
|                                                                                                                                                                                                                                                                 |  |  |                             |  |  |                                                                                                 |  |  |                                            |  |  |                  |  |  |                                 |  |  |            |  |  | APPROVED: PGO      |  |  | DEC 2021     |  |  |       |  |  |       |  |  |

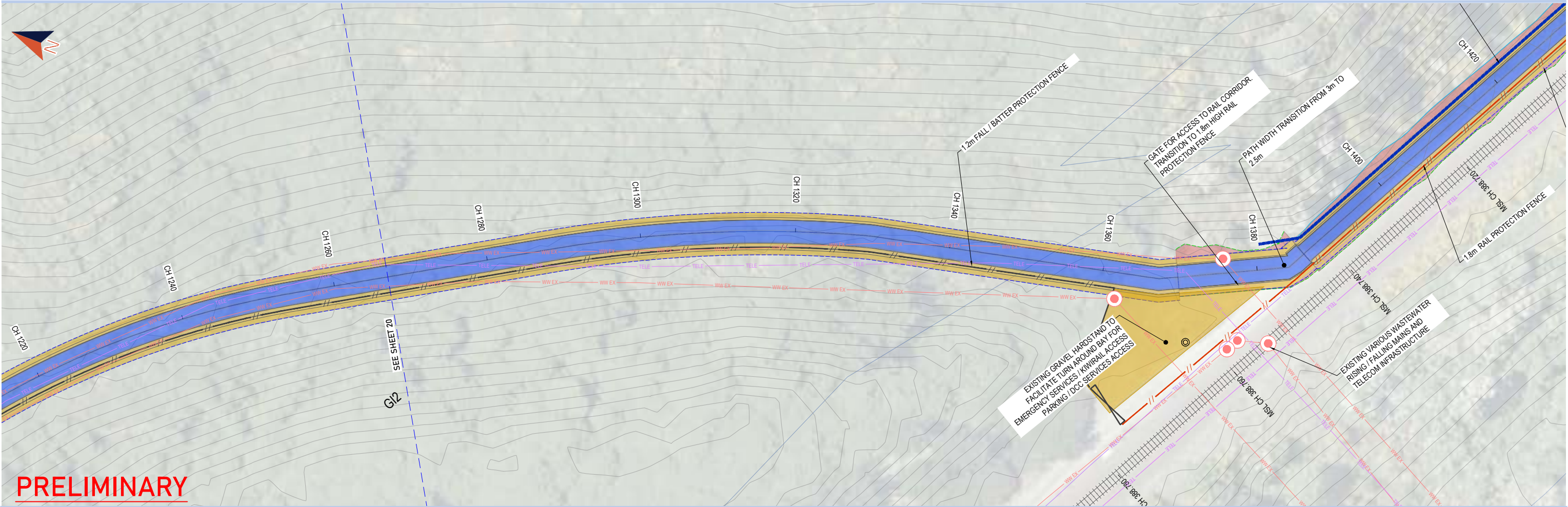
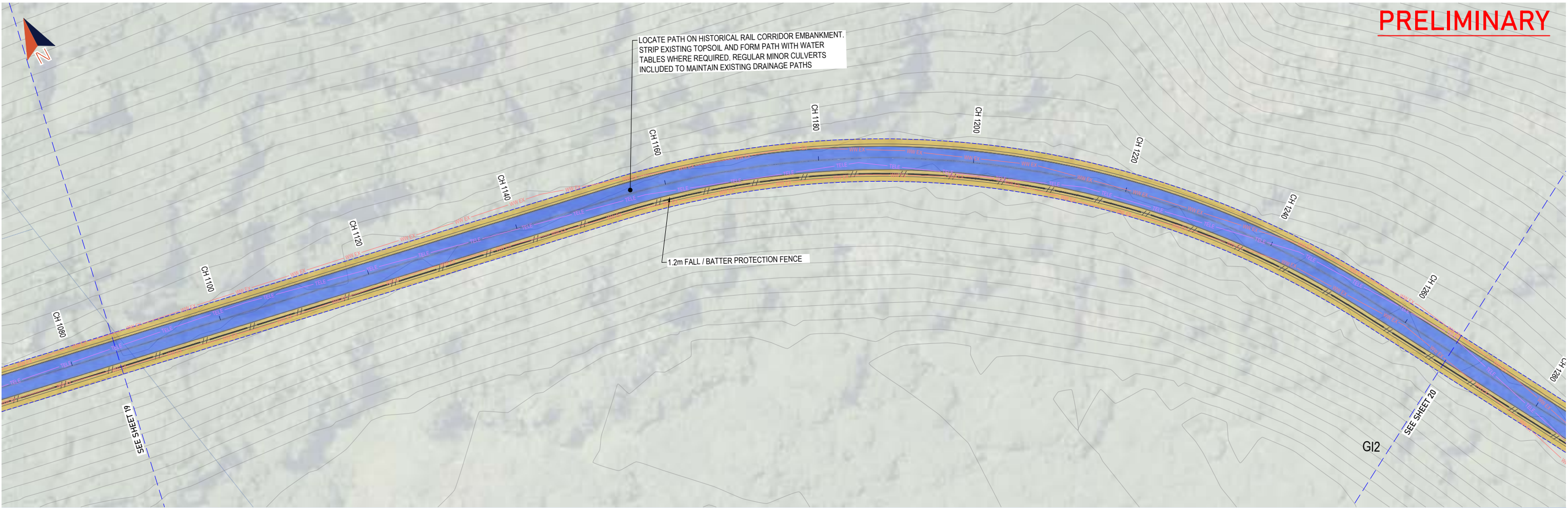
LOCATE PATH ON HISTORICAL RAIL CORRIDOR EMBANKMENT. STRIP EXISTING TOPSOIL AND FORM PATH WITH WATER TABLES WHERE REQUIRED. REGULAR MINOR CULVERTS INCLUDED TO MAINTAIN EXISTING DRAINAGE PATHS

12m FALL / BATTER PROTECTION FENCE

PRELIMINARY

|                                                                                                                                    |                                             |                                                                                                  |                                                                |     |                                 |            |                |     |          |            |              |      |       |
|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-----|---------------------------------|------------|----------------|-----|----------|------------|--------------|------|-------|
| CLIENT:<br><br> kaunshera<br>a-rohe o<br>Ōtepoti | PROJECT:<br><br>DUNEDIN TUNNELS TRAIL (CYT) | <br>bonisch | SHEET TITLE:<br><br>CHAIN HILLS TO HARAWAY UNDERPASS - PLAN 03 | REV | REVISION DETAILS                | DATE       | SURVEYED:      |     |          | JOB NUMBER | SCALE (@ A1) |      |       |
|                                                                                                                                    |                                             |                                                                                                  |                                                                | A   | PRELIMINARY DESIGN - FOR REVIEW | 10/12/2021 | DESIGNED:      | SJC | OCT 2021 |            |              | 7332 | 1:250 |
|                                                                                                                                    |                                             |                                                                                                  |                                                                |     |                                 |            | DRAWN:         | BMS | NOV 2021 |            |              |      |       |
|                                                                                                                                    |                                             |                                                                                                  |                                                                |     |                                 |            | DRAWING CHECK: | PGO | DEC 2021 | SHEET      | REV.         |      |       |
|                                                                                                                                    |                                             |                                                                                                  |                                                                |     |                                 |            | DESIGN CHECK:  | PGO | DEC 2021 |            |              |      |       |
|                                                                                                                                    |                                             |                                                                                                  | APPROVED:                                                      | PGO | DEC 2021                        | 19         | A              |     |          |            |              |      |       |

PRELIMINARY



PRELIMINARY

CLIENT:

 **DUNEDIN CITY COUNCIL** | kaunhera a-rohe o Ōtēpoti

PROJECT:

DUNEDIN TUNNELS TRAIL (CYT)

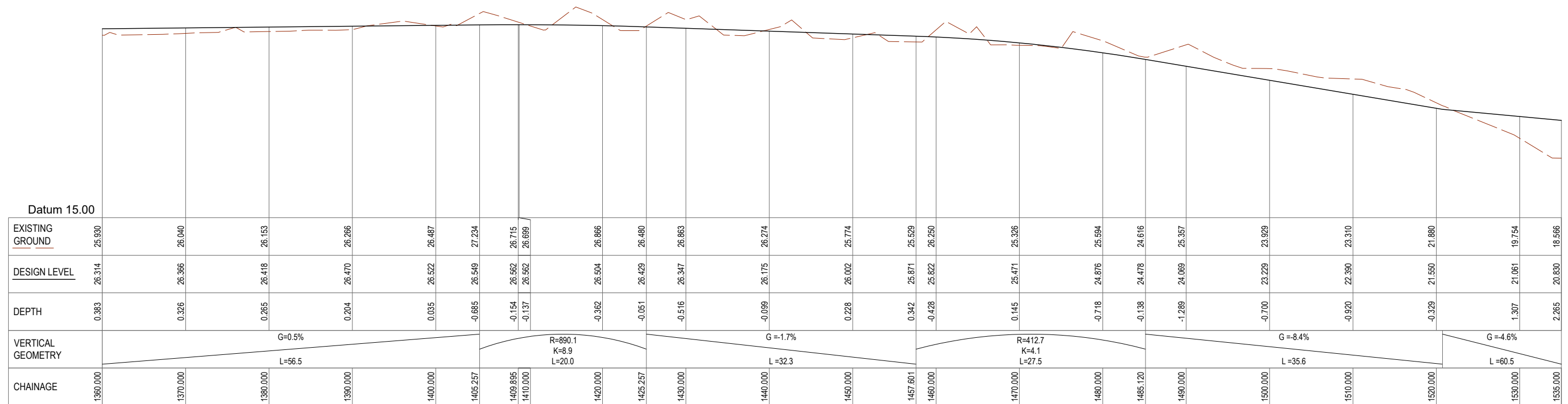
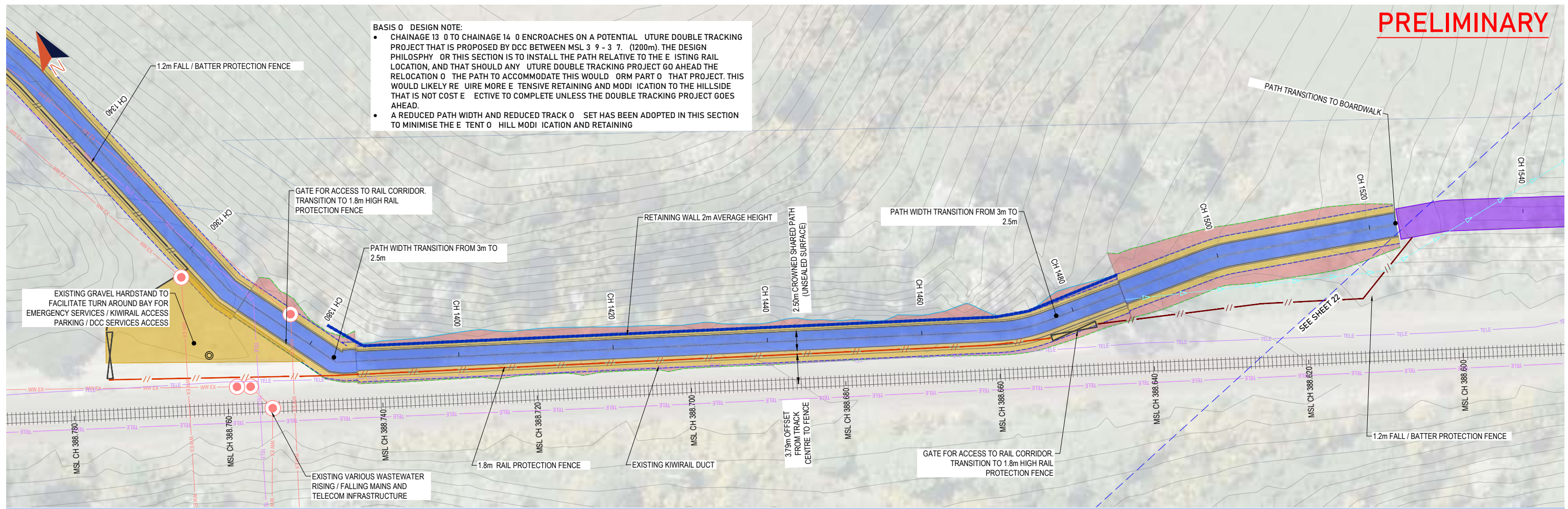
  
bonisch

SHEET TITLE:

CHAIN HILLS TO HARAWAY UNDERPASS - PLAN 04

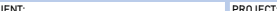
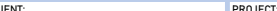
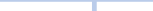
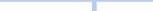
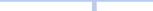
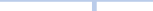
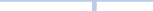
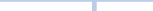
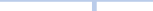
| REV | REVISION DETAILS                | DATE       | SURVEYED:      |     |          | JOB NUMBER | SCALE (@ A1) |
|-----|---------------------------------|------------|----------------|-----|----------|------------|--------------|
| A   | PRELIMINARY DESIGN - FOR REVIEW | 10/12/2021 | DESIGNED:      | SJC | OCT 2021 | 7332       | 1:250        |
|     |                                 |            | DRAWN:         | BMS | NOV 2021 |            |              |
|     |                                 |            | DRAWING CHECK: | PGO | DEC 2021 | SHEET      | REV.         |
|     |                                 |            | DESIGN CHECK:  | PGO | DEC 2021 | 20         | A            |
|     |                                 |            | APPROVED:      | PGO | DEC 2021 |            |              |

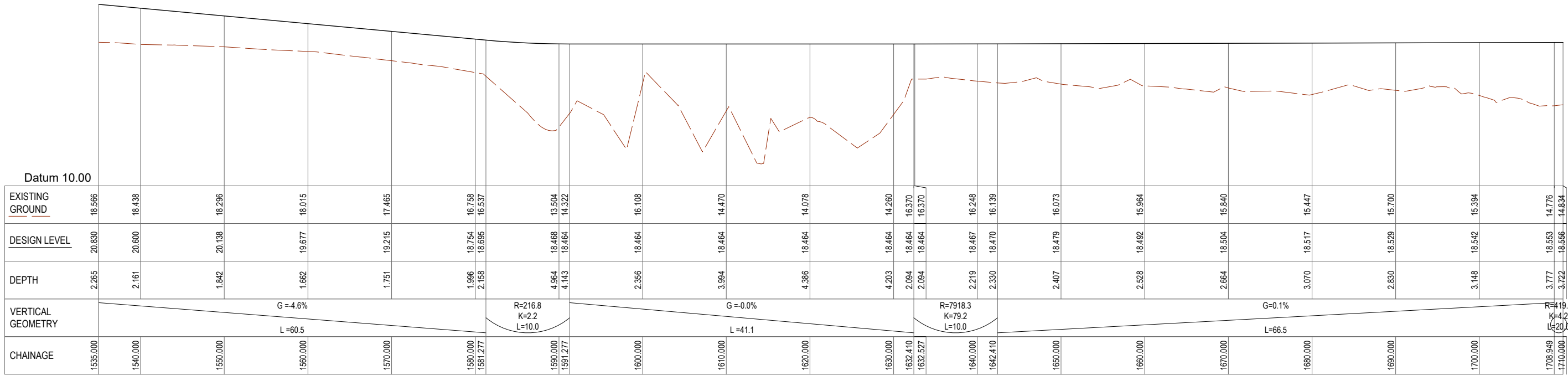
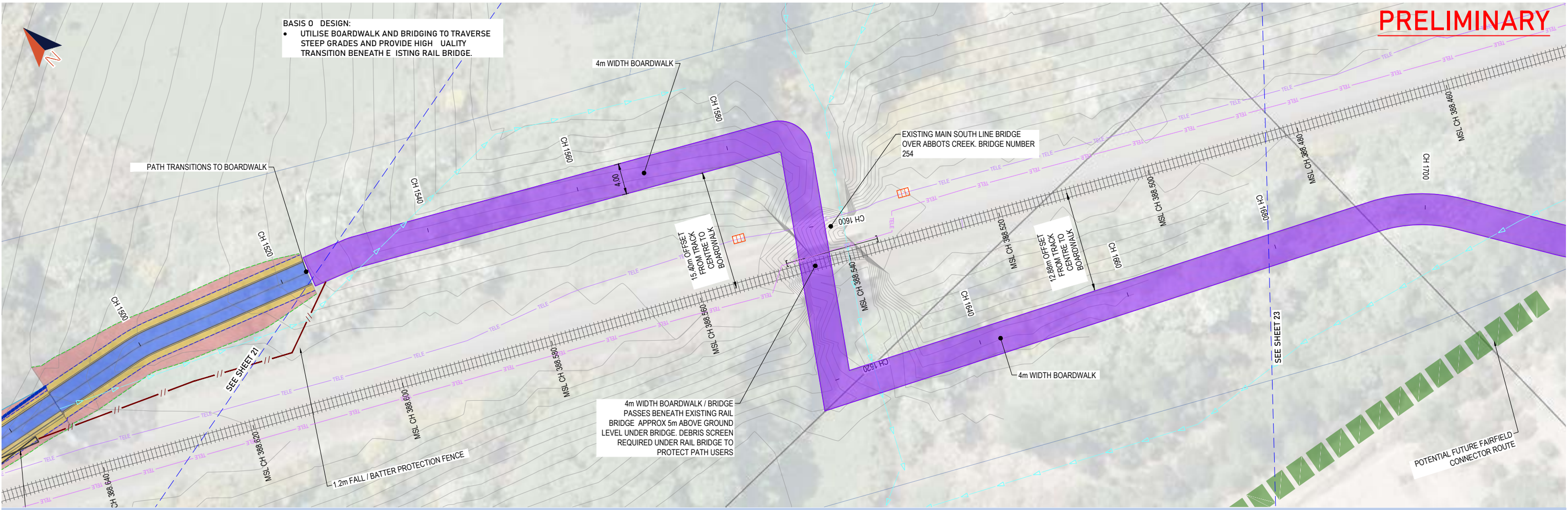
# PRELIMINARY

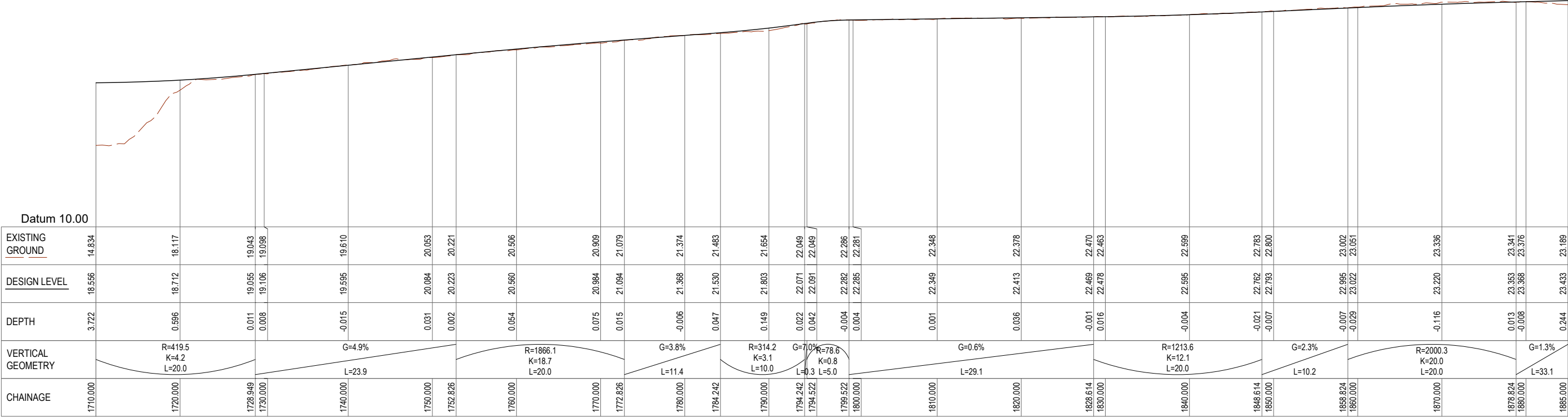
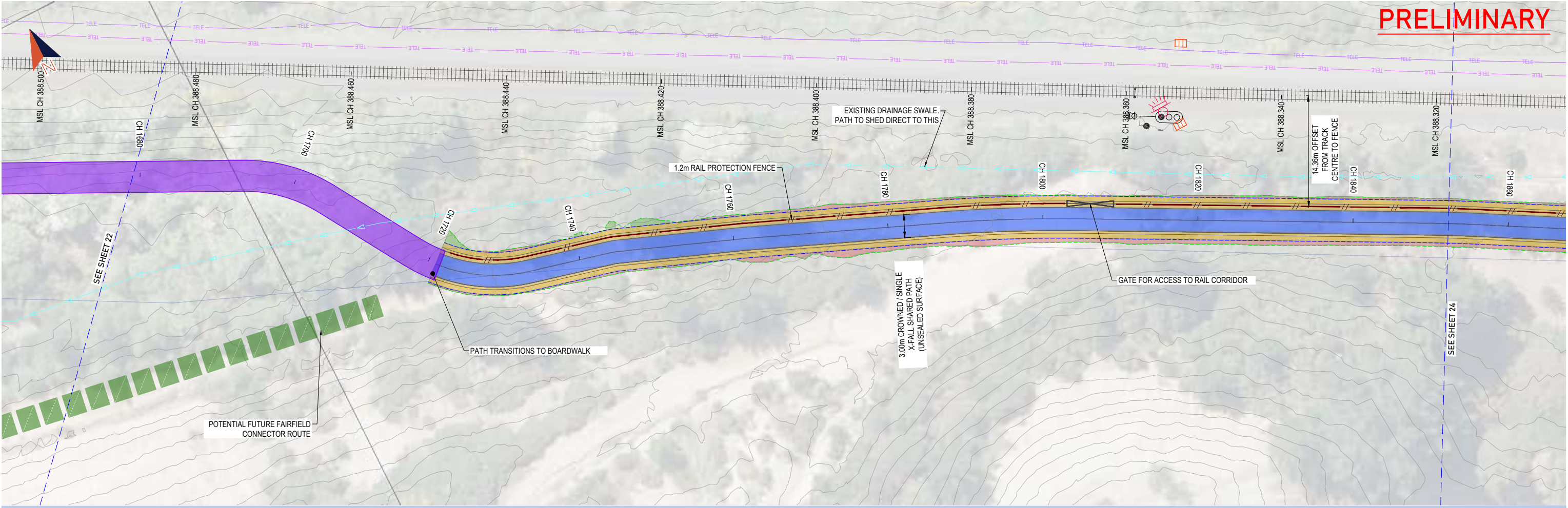


# PRELIMINARY

CYCLE CL (SECTION 2 & 3) LONGSECTION  
SCALE: H 1:250, V 1:125

|                                                                                                                |  |                                                                                                                |  |                                                                                                     |  |                                                                                                     |  |                                                                                                     |  |                                                                                                     |  |                                                                                                     |  |                                                                                                     |  |                                                                                                     |  |
|----------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------|--|
| CLIENT:                                                                                                        |  | PROJECT:                                                                                                       |  | SHEET TITLE:                                                                                        |  | REV                                                                                                 |  | REVISION DETAILS                                                                                    |  | DATE                                                                                                |  | SURVEYED:                                                                                           |  | JOB NUMBER                                                                                          |  | SCALE (@ A1)                                                                                        |  |
|  <b>DUNEDIN CITY COUNCIL</b> |  |  <b>DUNEDIN CITY COUNCIL</b> |  |  <b>bonisch</b> |  |  <b>bonisch</b> |  |  <b>bonisch</b> |  |  <b>bonisch</b> |  |  <b>bonisch</b> |  |  <b>bonisch</b> |  |  <b>bonisch</b> |  |
| DUNEDIN CITY COUNCIL                                                                                           |  | DUNEDIN TUNNELS TRAIL (CYT)                                                                                    |  | CHAIN HILLS TO HARAWAY UNDERPASS - PLAN 05                                                          |  | A                                                                                                   |  | PRELIMINARY DESIGN - FOR REVIEW                                                                     |  | 10/12/2021                                                                                          |  | DESIGNED: SJC OCT 2021                                                                              |  | 7332                                                                                                |  | 1:250                                                                                               |  |
|                                                                                                                |  |                                                                                                                |  |                                                                                                     |  |                                                                                                     |  | DRAWN: BMS NOV 2021                                                                                 |  |                                                                                                     |  | DRAWING CHECK: PGO DEC 2021                                                                         |  | SHEET                                                                                               |  | REV.                                                                                                |  |
|                                                                                                                |  |                                                                                                                |  |                                                                                                     |  |                                                                                                     |  | DESIGN CHECK: PGO DEC 2021                                                                          |  |                                                                                                     |  | APPROVED: PGO DEC 2021                                                                              |  | 21                                                                                                  |  | A                                                                                                   |  |





CYCLE CL (SECTION 2 & 3) LONGSECTION (22)  
SCALE: H 1:250, V 1:125

CLIENT:

**DUNEDIN CITY COUNCIL** kaunihera o Ōtago

PROJECT:

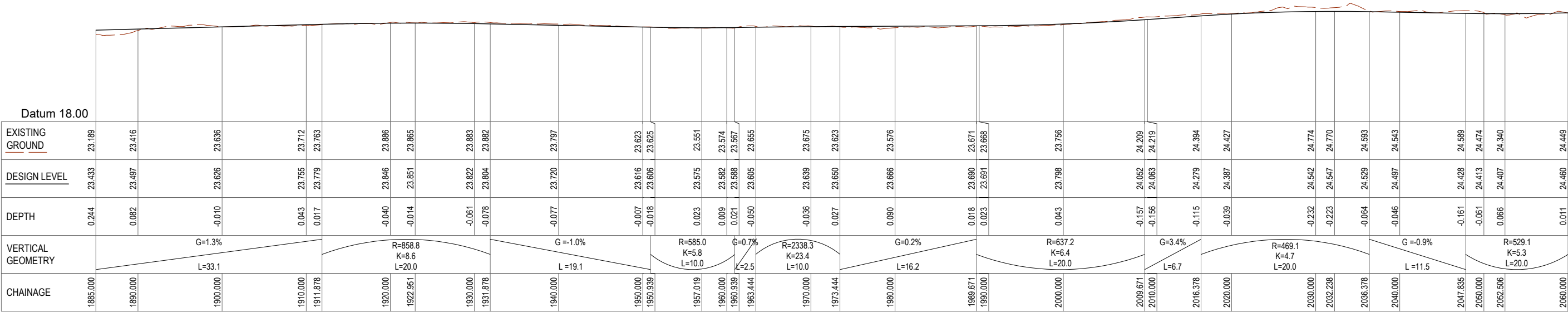
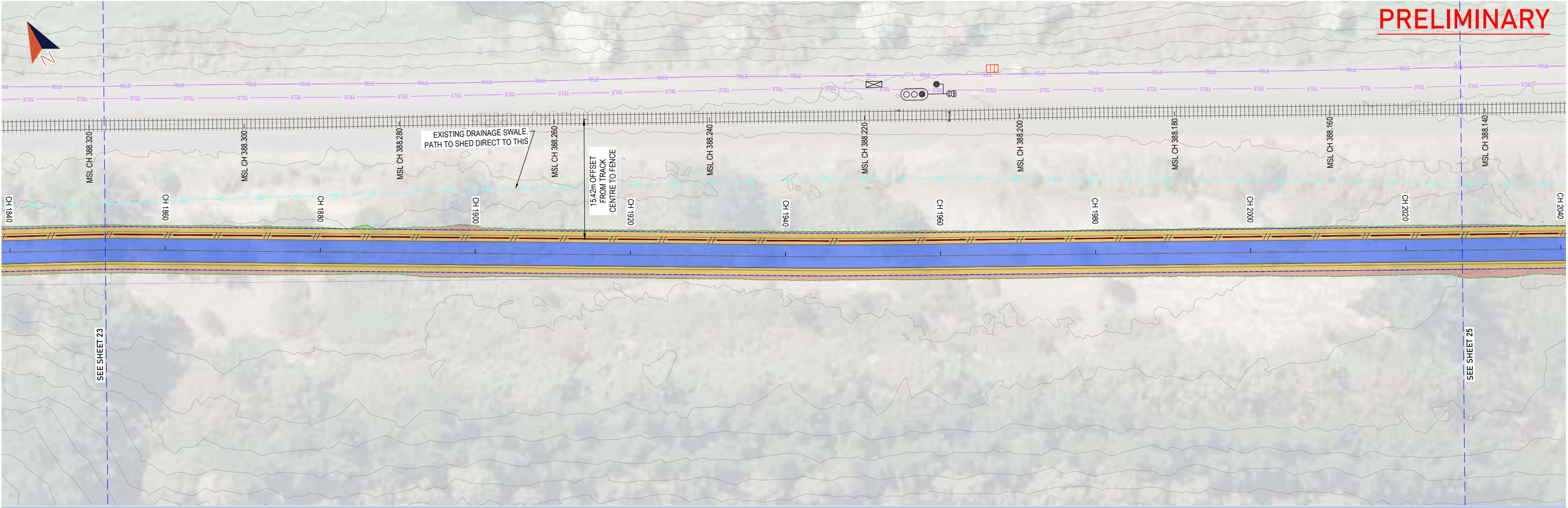
**DUNEDIN TUNNELS TRAIL (CYT)**

**bonisch**

SHEET TITLE:

**CHAIN HILLS TO HARAWAY UNDERPASS - PLAN 07**

| REV | REVISION DETAILS                | DATE       | SURVEYED: | DESIGNED: | DRAWN:   | DRAWING CHECK: | DESIGN CHECK: | APPROVED: | JOB NUMBER  | SCALE (@ A1) |
|-----|---------------------------------|------------|-----------|-----------|----------|----------------|---------------|-----------|-------------|--------------|
| A   | PRELIMINARY DESIGN - FOR REVIEW | 10/12/2021 |           | SJC       | OCT 2021 | BMS            | NOV 2021      |           | <b>7332</b> | <b>1:250</b> |
|     |                                 |            |           |           | PGO      | DEC 2021       |               |           | SHEET       | REV.         |
|     |                                 |            |           |           | PGO      | DEC 2021       |               |           | <b>23</b>   | <b>A</b>     |



PRELIMINARY

CYCLE CL (SECTION 2 & 3) LONGSECTION (23)  
SCALE: H 1:250, V 1:125

CLIENT:

 **DUNEDIN CITY COUNCIL** kaunihera o ōtēpoti

PROJECT:

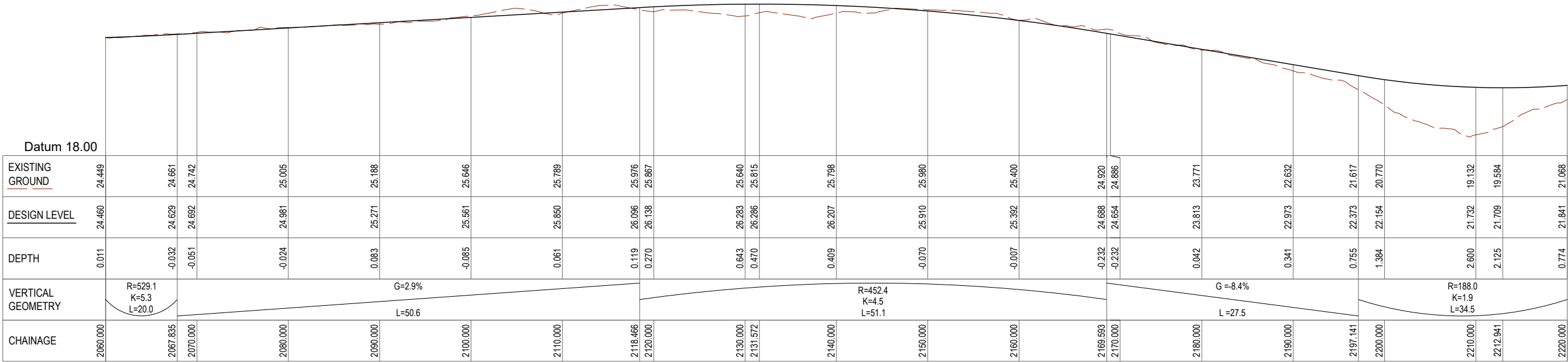
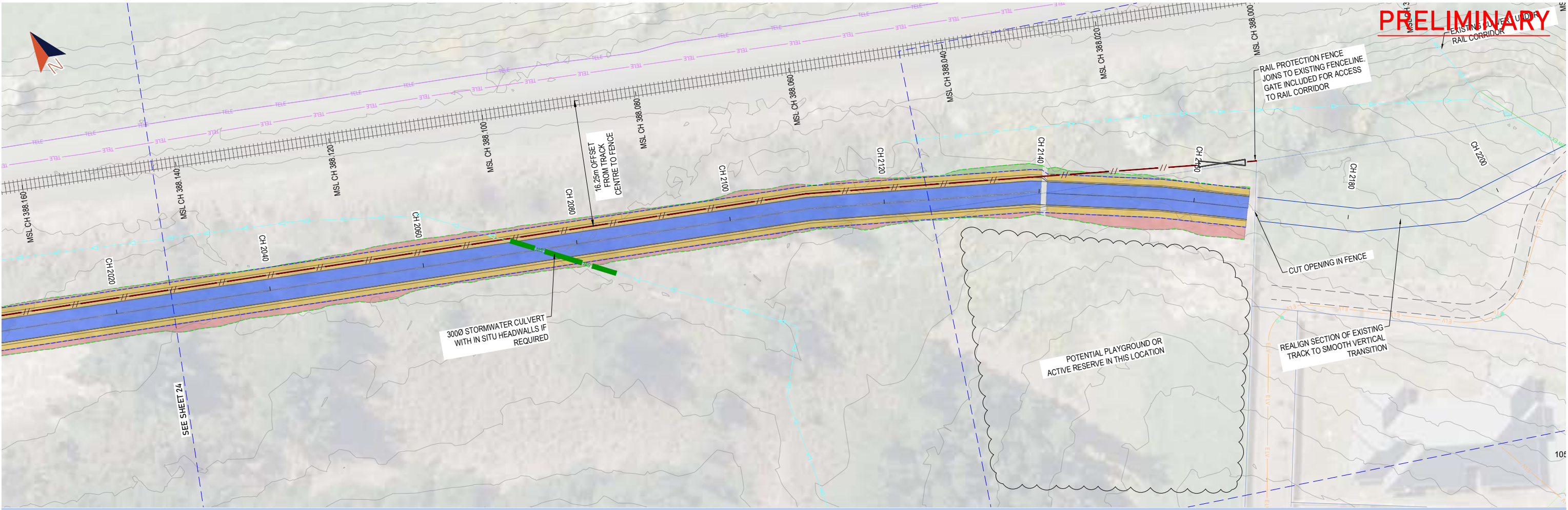
**DUNEDIN TUNNELS TRAIL (CYT)**

**bonisch**

SHEET TITLE:

**CHAIN HILLS TO HARAWAY UNDERPASS - PLAN 0**

| REV | REVISION DETAILS                | DATE       | SURVEYED: | DESIGNED: | DRAWN: | DRAWING CHECK: | DESIGN CHECK: | APPROVED: | JOB NUMBER  | SCALE (@ A1) |
|-----|---------------------------------|------------|-----------|-----------|--------|----------------|---------------|-----------|-------------|--------------|
| A   | PRELIMINARY DESIGN - FOR REVIEW | 10/12/2021 |           | SJC       | BMS    | PGO            | PGO           | PGO       | <b>7332</b> | <b>1:250</b> |
|     |                                 |            |           |           |        |                |               |           | <b>24</b>   | <b>A</b>     |



CYCLE CL (SECTION 2 & 3) LONGSECTION (24)  
SCALE: H 1:250, V 1:125

CLIENT:

 **DUNEDIN CITY COUNCIL** kaunhera a-rohe o Ōtēpoti

PROJECT:

**DUNEDIN TUNNELS TRAIL (CYT)**

 **bonisch**

SHEET TITLE:

**CHAIN HILLS TO HARAWAY UNDERPASS - PLAN 09**

| REV | REVISION DETAILS                | DATE       | SURVEYED: | DESIGNED: | DRAWN:   | DRAWING CHECK: | DESIGN CHECK: | APPROVED: |
|-----|---------------------------------|------------|-----------|-----------|----------|----------------|---------------|-----------|
| A   | PRELIMINARY DESIGN - FOR REVIEW | 10/12/2021 |           | SJC       | BMS      | PGO            | PGO           | PGO       |
|     |                                 |            |           | OCT 2021  | NOV 2021 | DEC 2021       | DEC 2021      | DEC 2021  |

JOB NUMBER

**7332**

SCALE (@ A1)

**1:250**

SHEET

**25**

REV.

**A**