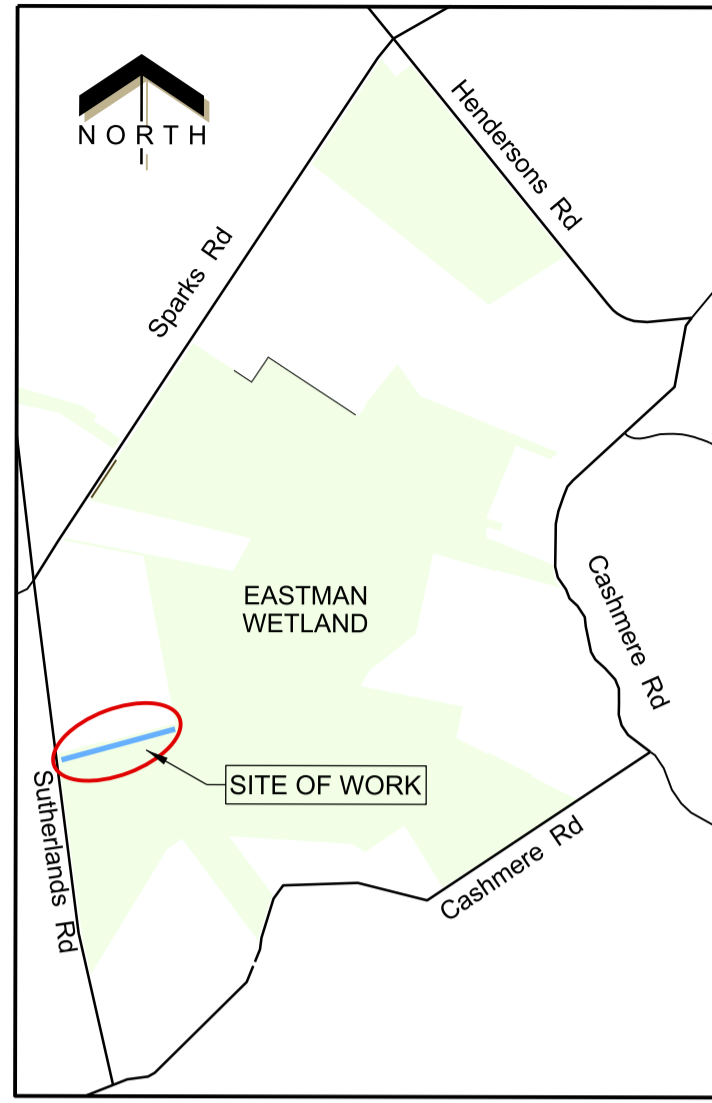


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LEGEND

- Existing legal boundary
- Existing trees to remain
- Existing trees to be removed
- Existing trees to be removed by others
- Existing fences
- Existing top of bank
- Existing contours
- Fences to be removed

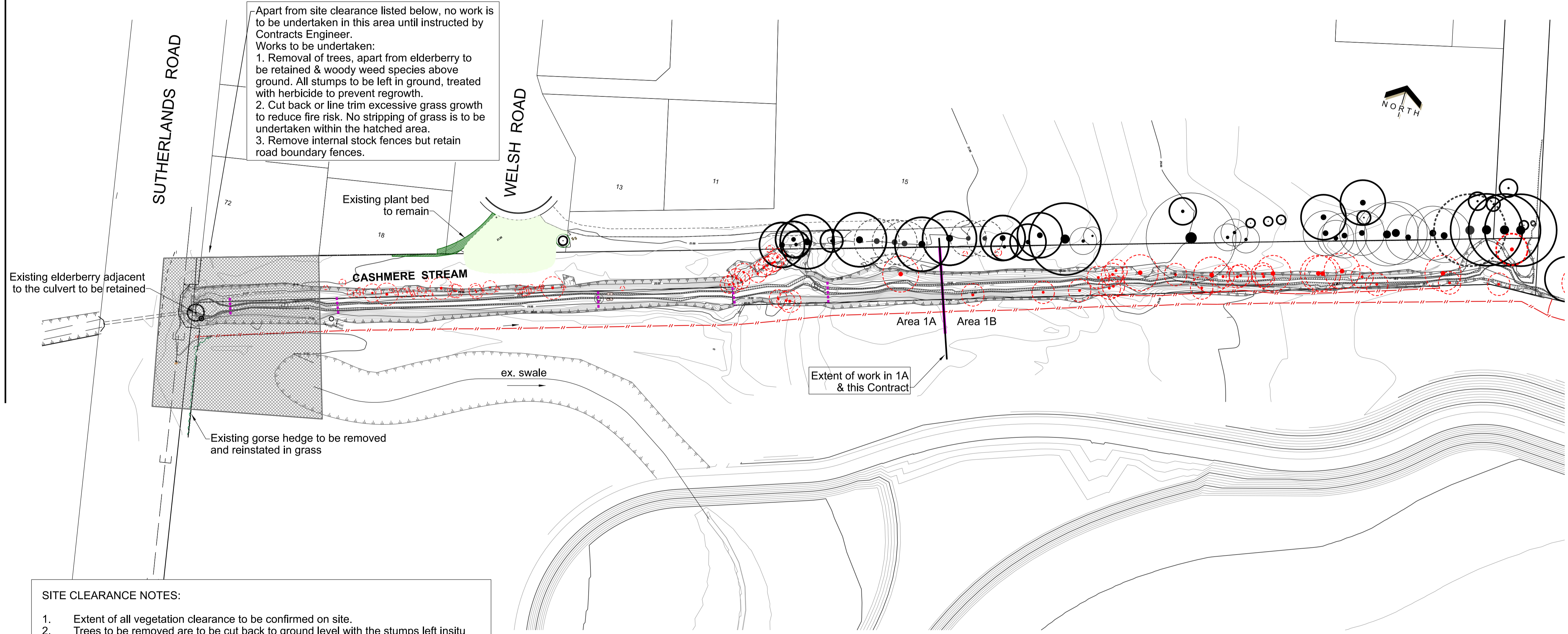
GENERAL NOTES

1. Contractor to check & confirm all services with authorities before starting work.
2. All site levels and dimensions to be confirmed prior to commencement of construction.
3. All materials and workmanship to be carried out in accordance with the CCC Construction Standard Specification (CSS - refer to CCC web site for updated version) & IDS unless specified otherwise.
4. Datums : Levels to Christchurch Drainage Board Datum Jan 2019 & horizontal datum to Mt Pleasant Circuit NZGD 2000.
5. Ground levels within tree canopy extent to be untouched if possible.
6. Existing fences to remain where shown, if they need to be removed during construction they must be reinstated at Contractors cost.
7. Contractor to contact owners for consent prior to moving. All works to be undertaken in accordance with EMP, CCC Erosion & Sediment Control Plan and any associated Resource Consent conditions.
8. NOTE - All contours shown are existing.

SHEET INDEX

- D01 SURVEY PLAN & TREE REMOVAL
- D02 PLAN & LONGSECTION 353.3 - 470.0M
- D03 PLAN & LONGSECTION 470.0 - 522.5M
- D04 CROSS SECTIONS 365 - 425
- D05 CROSS SECTIONS 436 - 468
- D06 CROSS SECTIONS 473 - 501
- D07 DETAILS A-C
- D08 DETAILS D-H

Apart from site clearance listed below, no work is to be undertaken in this area until instructed by Contracts Engineer.
 Works to be undertaken:
 1. Removal of trees, apart from elderberry to be retained & woody weed species above ground. All stumps to be left in ground, treated with herbicide to prevent regrowth.
 2. Cut back or line trim excessive grass growth to reduce fire risk. No stripping of grass is to be undertaken within the hatched area.
 3. Remove internal stock fences but retain road boundary fences.



SITE CLEARANCE NOTES:

1. Extent of all vegetation clearance to be confirmed on site.
2. Trees to be removed are to be cut back to ground level with the stumps left in situ unless they are within the bank reshaping zone.
3. Stumps prone to resprouting are to be treated with herbicide (TO BE CONFIRMED).
4. Existing grass on the lower slopes of the banks is to be retained initially to minimise ground disturbance.

PLAN
SCALE 1:500



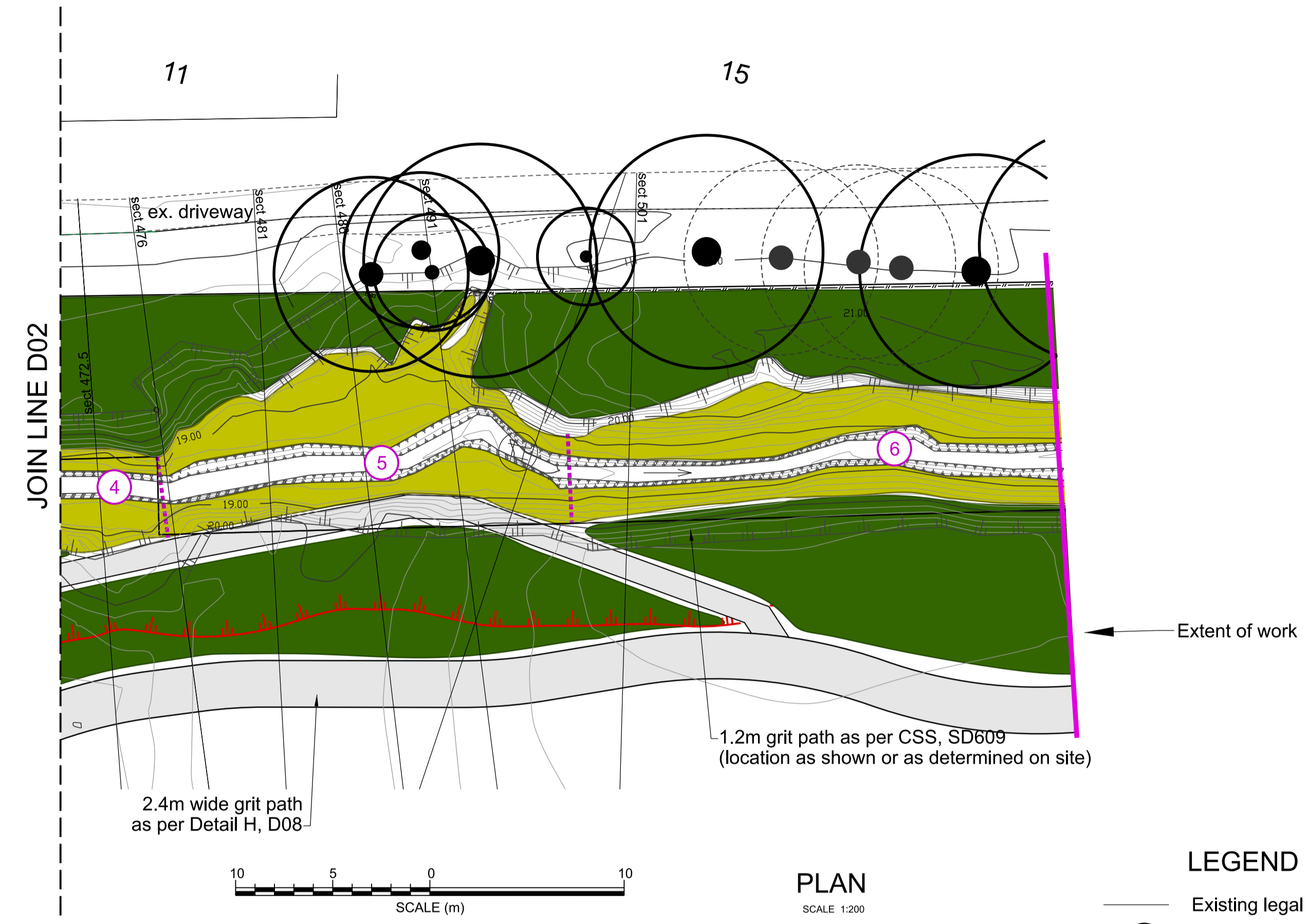
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| BENCH MK. | | DESIGNED | F GREIG | [Signature] | 12/2021 | DATE | SIGNED |
| RL | | DES. REVIEW | S BENSBERG | [Signature] | 12/2021 | DATE | SIGNED |
| SURVEY | | DRAWN | G WILLIAMS | [Signature] | 12/2021 | DATE | SIGNED |
| SURVEY LB | | DRW. CHECK | M RHIND | [Signature] | 12/2021 | DATE | SIGNED |
| FILE LOCATION | | FOR CONSTRUCTION | | | | | |
| DRAIN. REF. | | DATE | SIGNED | | | CONSULTANT PROJECT REF. | CONSULTANT FILE REF. |
| SAP WBS | 562/3873 | 03/2022 | [Signature] | | | | |

**CASHMERE STREAM ENHANCEMENT
STAGE 1A**

**SURVEY PLAN
TREE REMOVAL**

| | | | |
|-----------------------|-------------------------|-------------|---------|
| 1 | CONSTRUCTION ISSUE | [Signature] | 03/2022 |
| A | TENDER ISSUE - DRAFT | [Signature] | 12/2021 |
| ISSUE | AMENDMENTS | SIGNED | DATE |
| DOCUMENT NUMBER | ORIGINAL SHEET SIZE | SCALES | |
| CN460003981 | A1 | AS SHOWN | |
| CAD DRAWING FILE REF. | TSD PROJECT FILE NUMBER | SHEET | |
| DD130901 | CP503560 | D01 OF 8 | |

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| IN STREAM FEATURES - KEY | |
|--------------------------------------|--|
| Refer to Sheet D07 & D08 for Details | |
| REACH 4 | - Refer Sheet D02 |
| REACH 5 | - Detail A x (3) - Detail C x (3) - Detail D x (1) |
| REACH 6 | - Detail A x (3) - Detail B x (3) - Detail E x (1) - Detail F x (1) |

- NOTES**
1. Earthworks are to be minimised where possible and are typically limited to reshaping of the upper bank. There is to be no excavation below in the channel of the stream unless directed by the Engineer.
 2. The exact locations for the instream features detailed on Sheets D07-D08 are NOT shown on plans. Refer to key at left for the number of each detail required for each of the numbered reaches on plan.
 3. Instream features are to be located on site under the direction of the Engineer and Freshwater Ecologist.
 4. All contours shown on plan are existing only.

LEGEND

- Existing legal boundary
- Existing trees to retain & protect
- Existing top of bank
- Proposed top of bank - indicative
- Proposed paths**
 - 3m Service Vehicle
 - 2.4 shared grit path
 - Pedestrian grit path - width varies
- Proposed Plantings**
 - Amenity ground covers & shrubs
 - Upper & top of bank planting
 - Riparian margin & lower bank planting
- Proposed fence

| H.A.D. 15.00 m | | 18.0 | 17.0 | 16.0 |
|-----------------|-------|------|------|-------|
| EXISTING INVERT | | | | 18.2 |
| CUT TO INVERT | | | | |
| PROPOSED INVERT | | | | 18.80 |
| DISTANCE | 470.0 | | | 497.5 |

LONG SECTION
SCALE 1:200

| | | | | | |
|-------------|----------|---------------|--|--------|---------|
| DATUM | C.D.D. | DESIGNED | F GREIG | SIGNED | 12/2021 |
| BENCH MK. | | DES. REVIEW | S BENSBERG | SIGNED | 12/2021 |
| RL | | DRAWN | G WILLIAMS | SIGNED | 12/2021 |
| SURVEY | | DRW. CHECK | M RHIND | SIGNED | 03/2022 |
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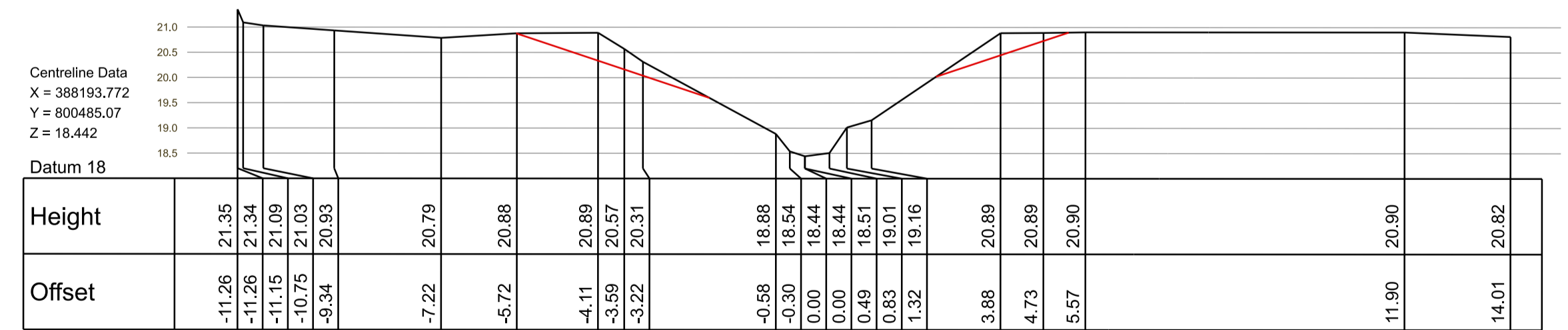
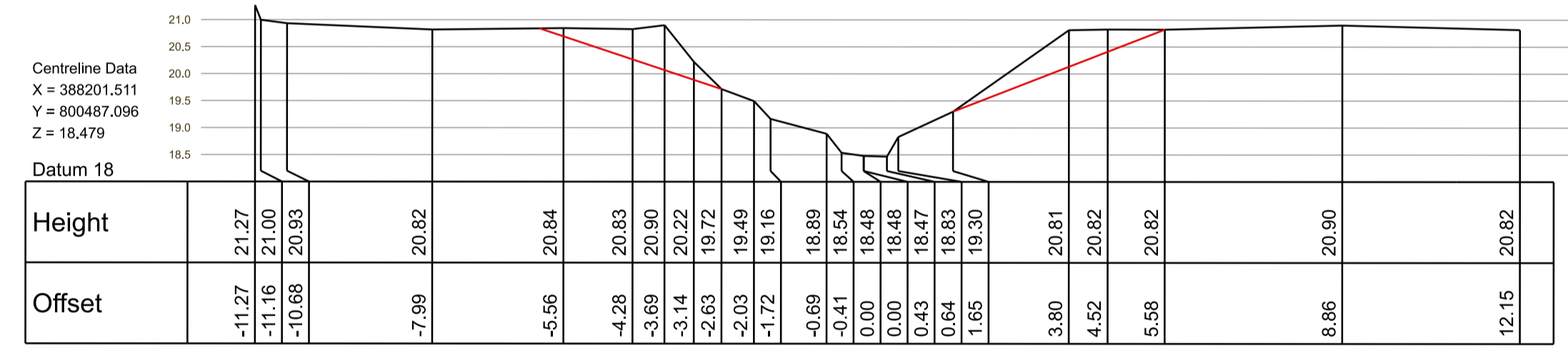
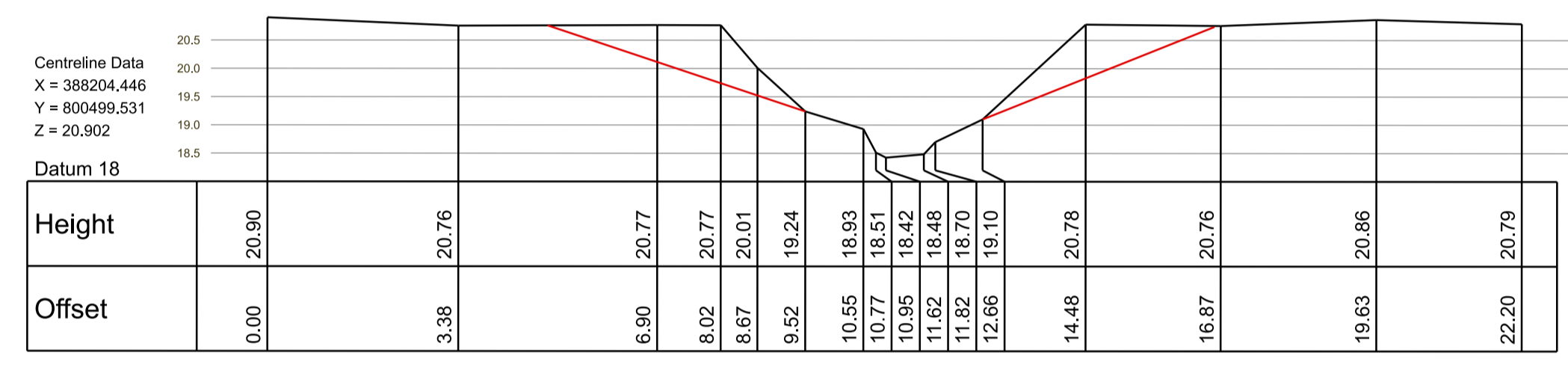
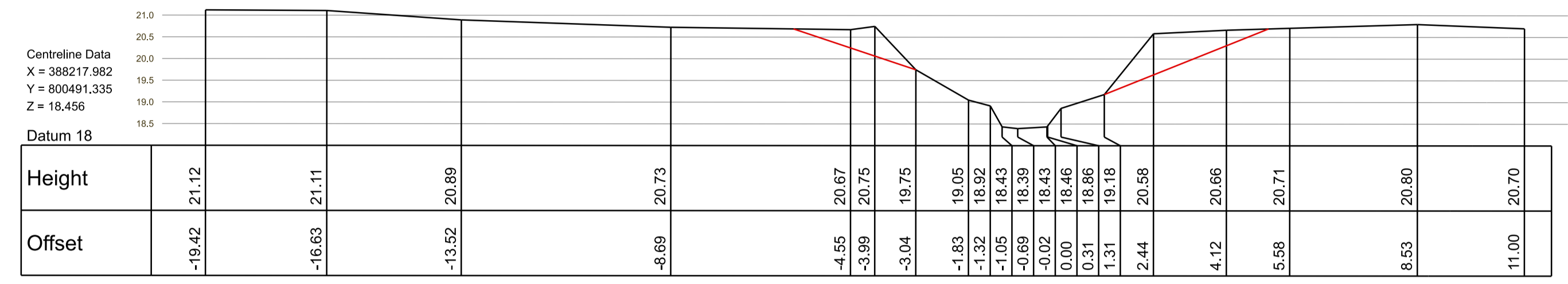
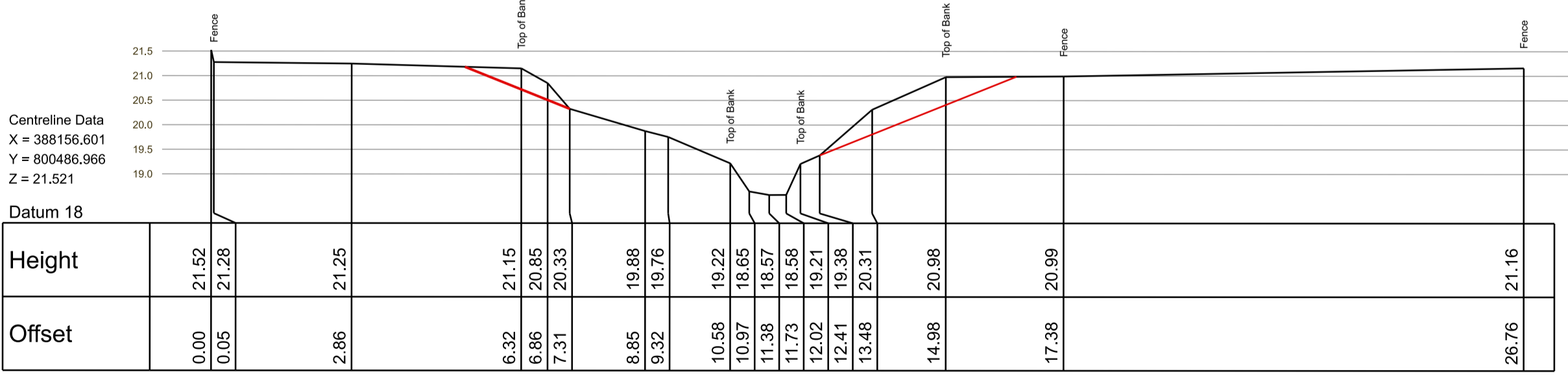
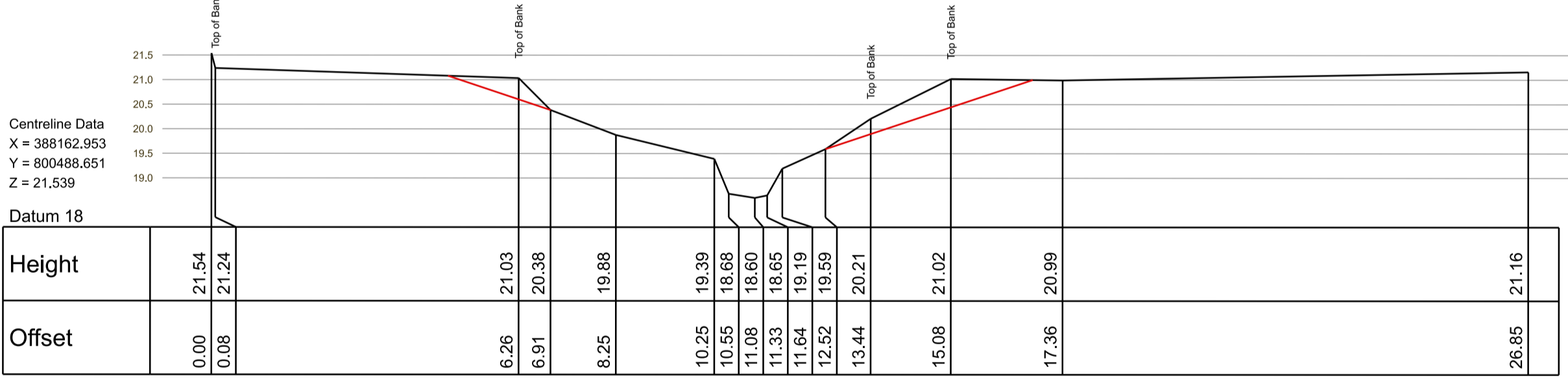
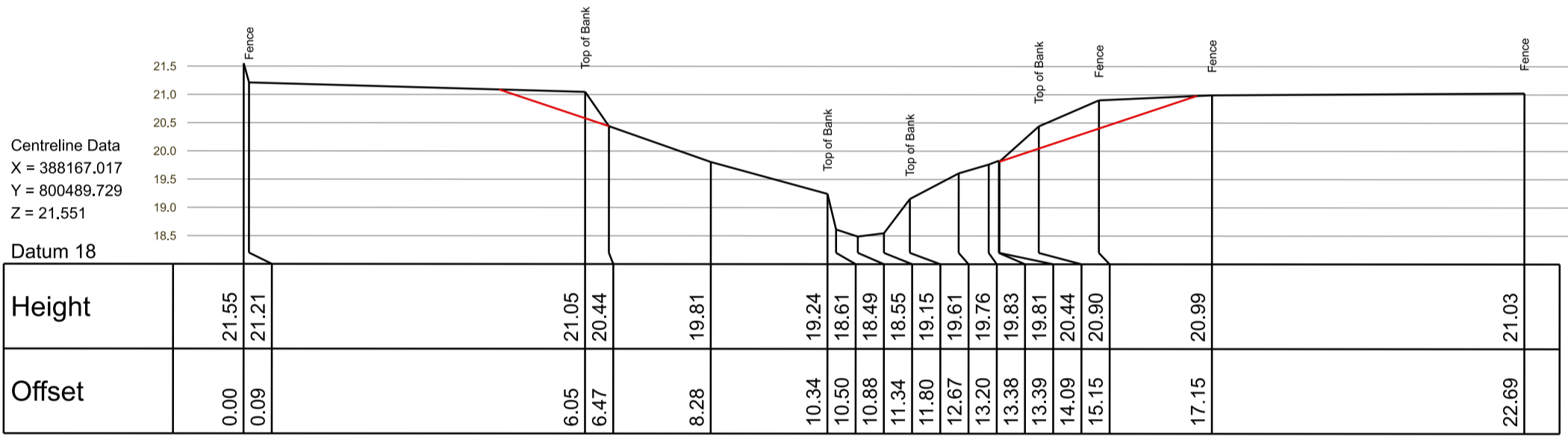
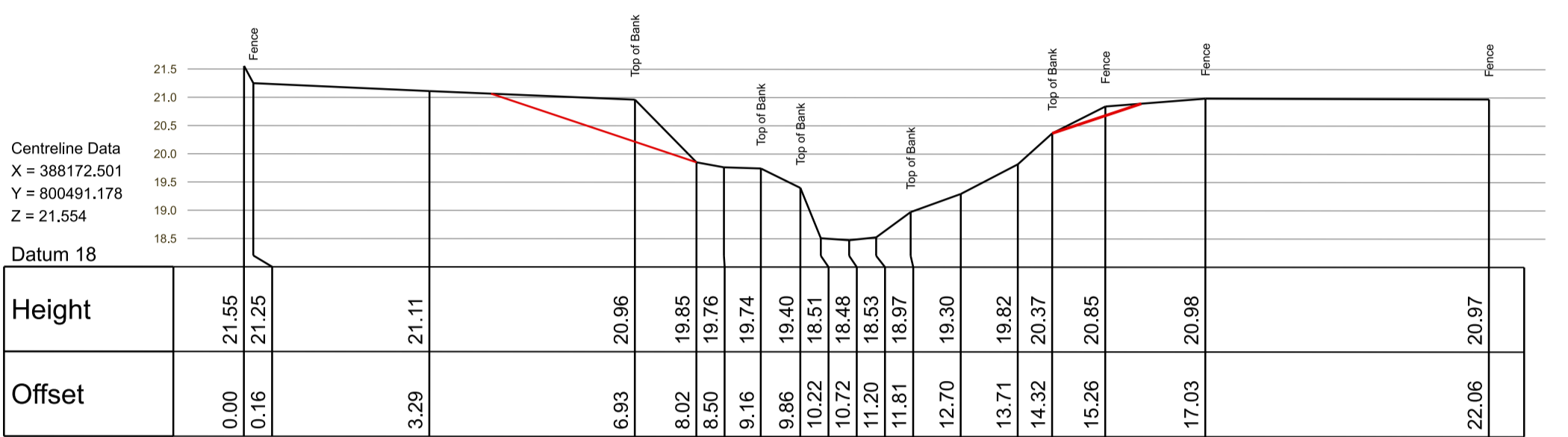
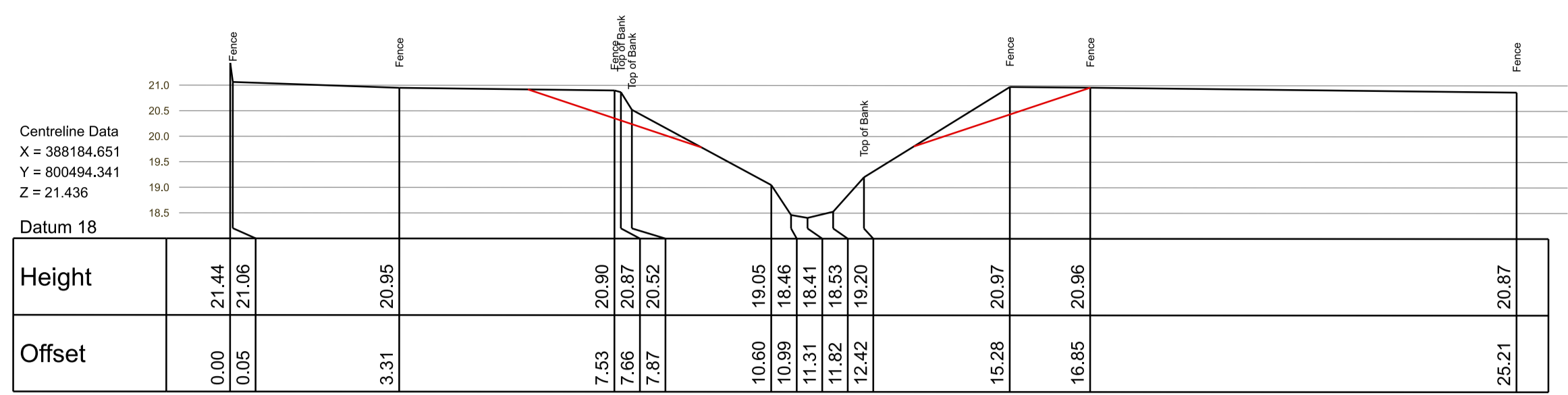
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| 12/2021 | <i>HP</i> | 03/2022 | <i>HP</i> |
| CONSULTANT PROJECT REF. | | CONSULTANT FILE REF. | |

CASHMERE STREAM ENHANCEMENT STAGE 1A

PLAN & LONGSECTION 470.0-522.5M

| | | | | | |
|-----------------------|-------------|-------------------------|----------|--------|----------|
| DOCUMENT NUMBER | CN460003981 | ORIGINAL SHEET SIZE | A1 | SCALES | AS SHOWN |
| CAD DRAWING FILE REF. | DD130901 | TSD PROJECT FILE NUMBER | CP503560 | SHEET | D03 OF 8 |

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| 1 | CONSTRUCTION ISSUE | HLB | 03/2022 |
| A | TENDER ISSUE - DRAFT | HLB | 12/2021 |
| ISSUE | AMENDMENTS | SIGNED | DATE |



| DATUM | C.D.D. | NAME | SIGNED | DATE |
|---------------|--|--------------------------------------|-------------|---------|
| BENCH MK. | | F GREIG | [Signature] | 12/2021 |
| RL | | S BENSBERG | [Signature] | 12/2021 |
| SURVEY | | G WILLIAMS | [Signature] | 12/2021 |
| SURVEY LB | | M RHIND | [Signature] | 12/2021 |
| FILE LOCATION | \\CC\CityR\B\F\Server\TSD\01\Drawings\13004613 | | | |
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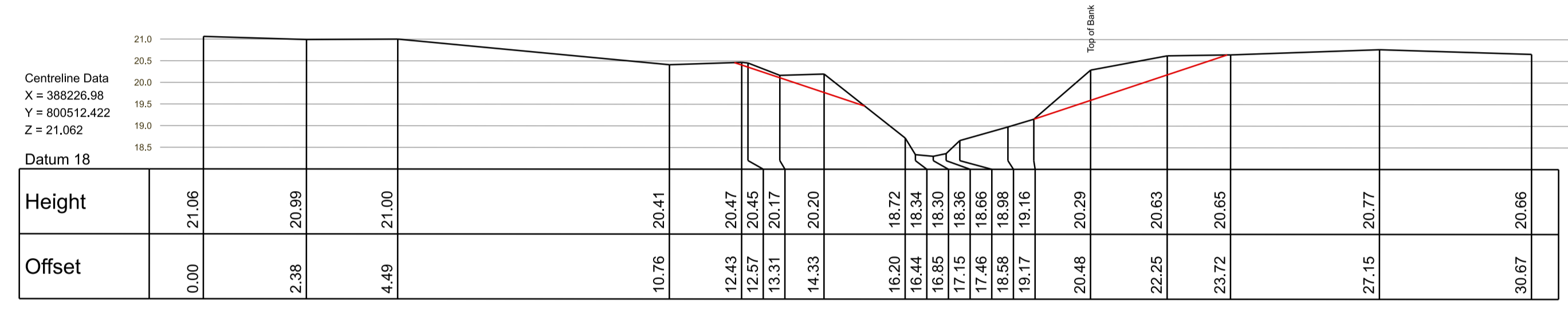
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| | | CONSULTANT FILE REF. |

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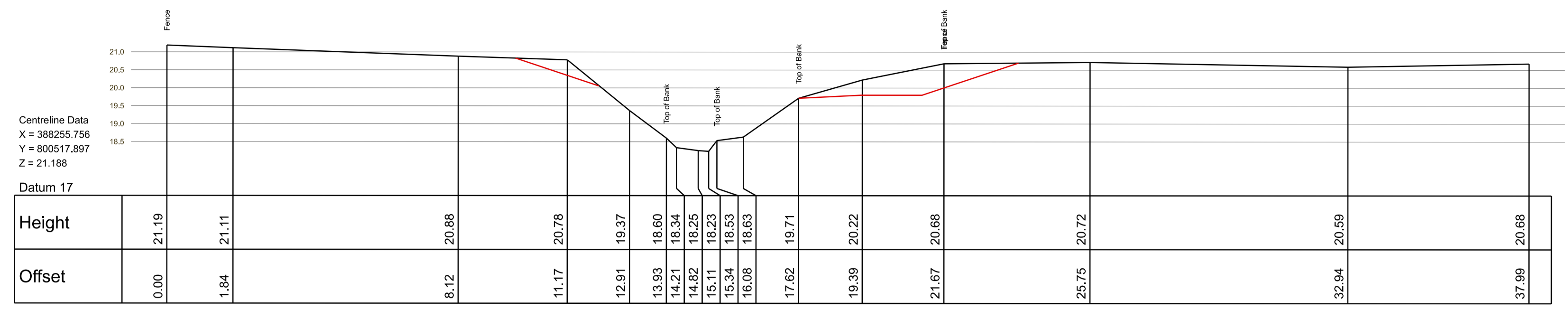
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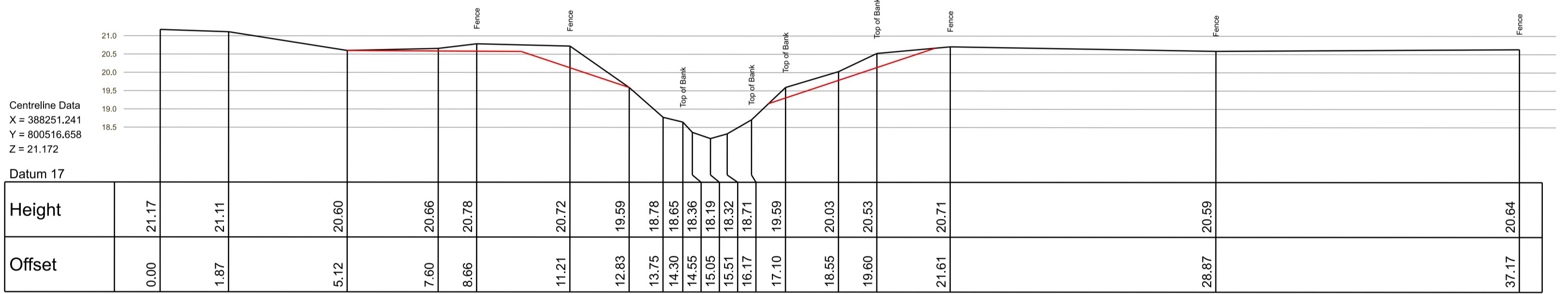
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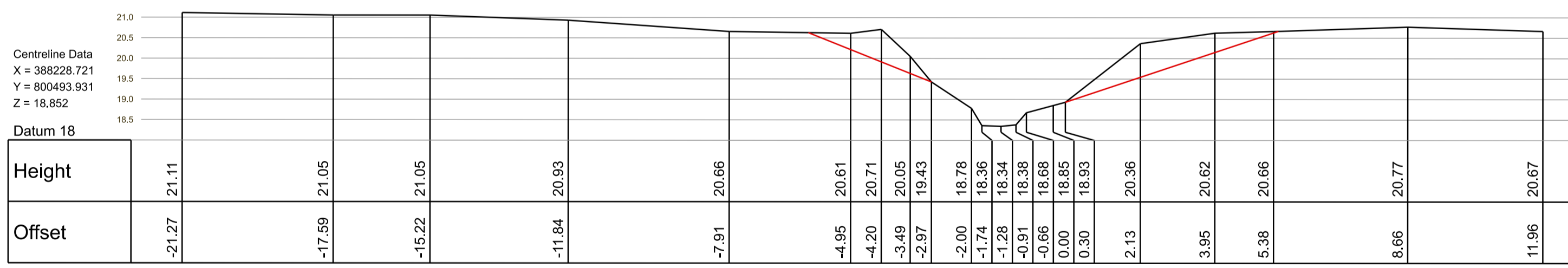
Section 440



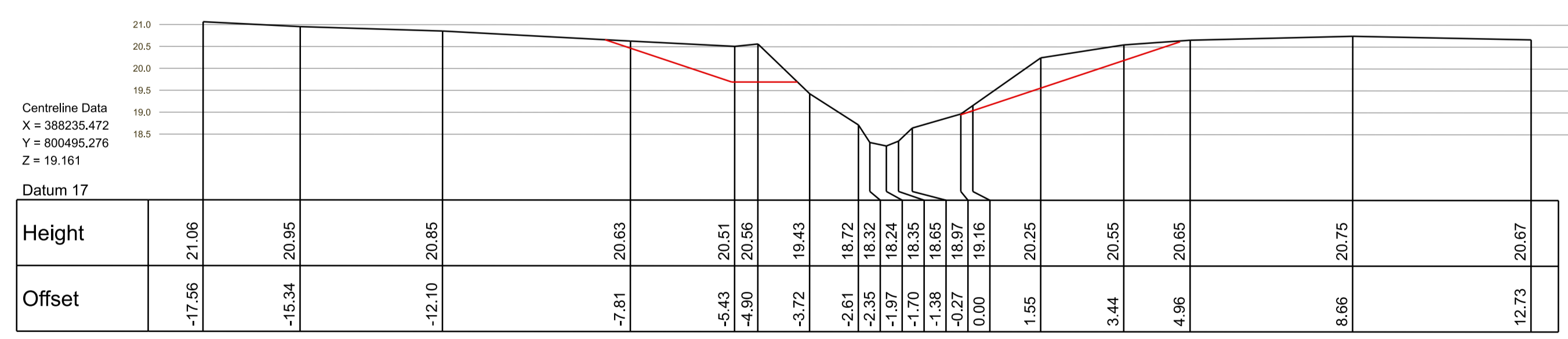
Section 468



Section 464



Section 436



Section 443

| | | | |
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| | AMENDMENTS | SIGNED | DATE |



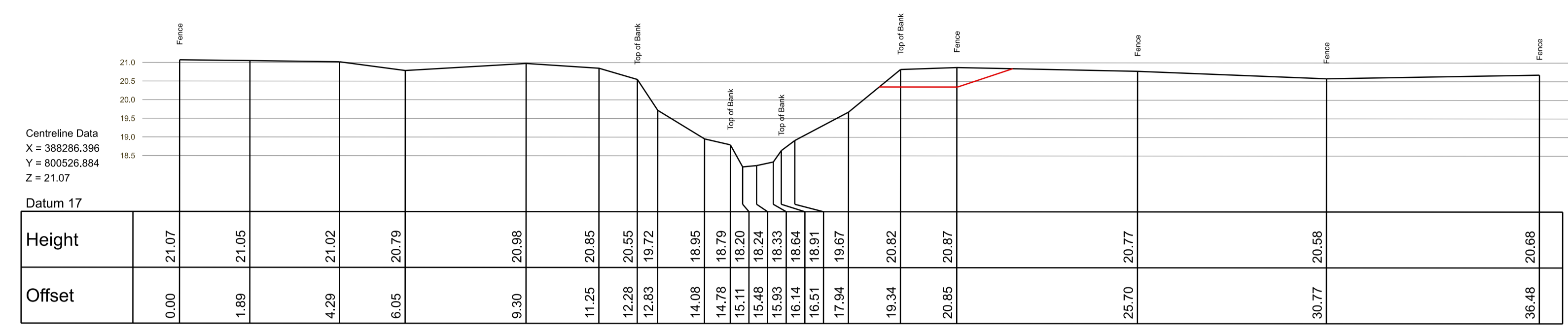
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| RL | | DES. REVIEW | S BENSBERG | [Signature] | 12/2021 | DATE | SIGNED | |
| SURVEY | | DRAWN | G WILLIAMS | [Signature] | 12/2021 | DATE | SIGNED | |
| SURVEY LB | | DRW. CHECK | M RHIND | [Signature] | 12/2021 | DATE | SIGNED | |
| | | FILE LOCATION | | | | | FOR CONSTRUCTION | |
| DRAIN. REF. | | | | | | | DATE | SIGNED |
| SAP WBS | 562/3873 | PRINTED ON: | 1/04/2022 BY: WilliamsGJ | | | | 03/2022 | [Signature] |

PROJECT TITLE
**CASHMERE STREAM ENHANCEMENT
STAGE 1A**

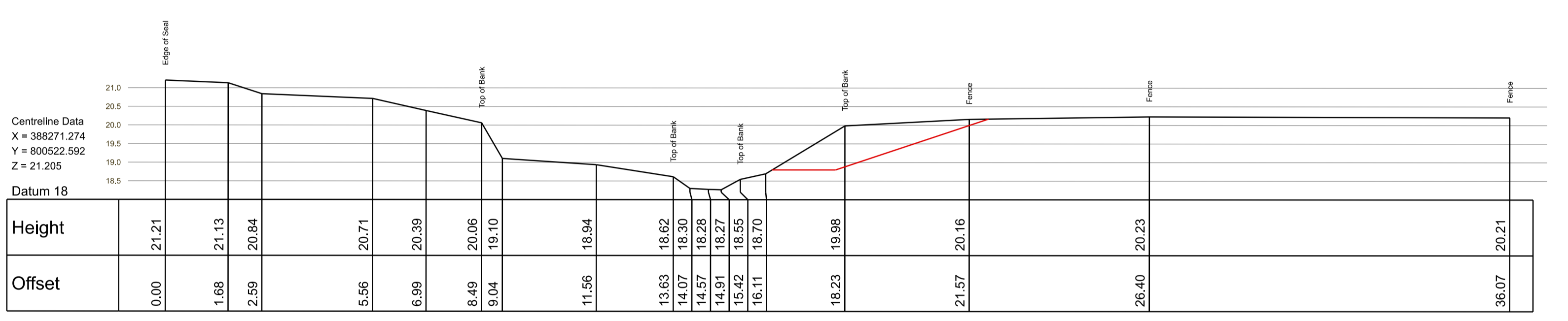
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436-468M**

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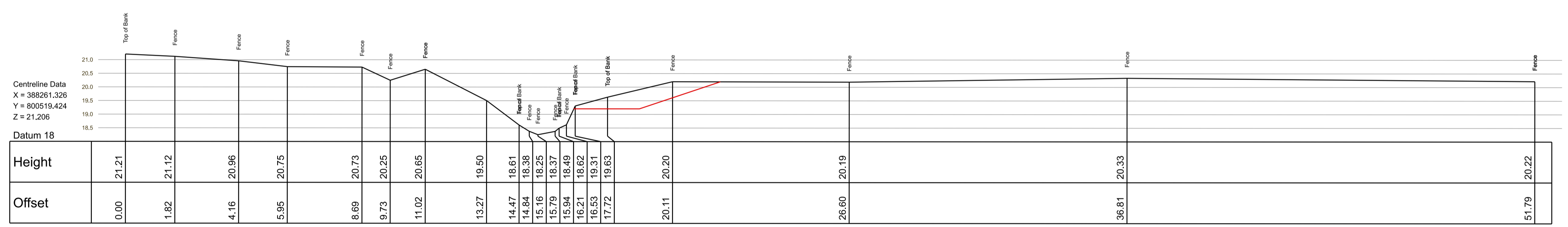
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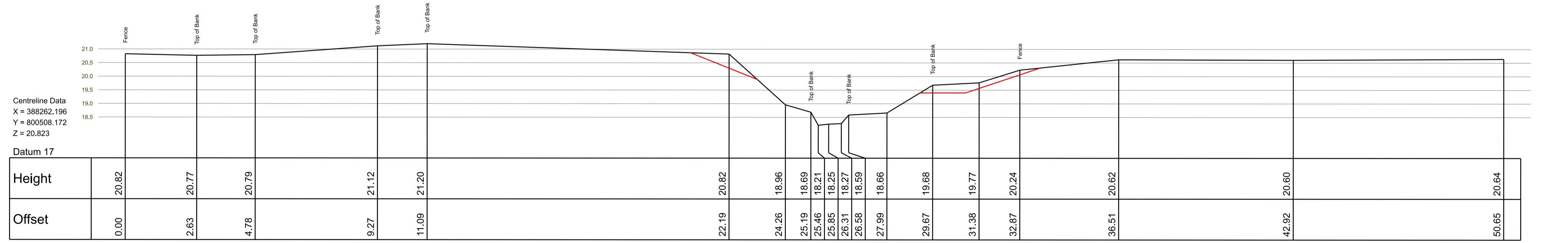
Section 501



Section 486



Section 476



Section 473

| | | | |
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| A | TENDER ISSUE - DRAFT | | 12/2021 |
| | AMENDMENTS | SIGNED | DATE |



| DATUM | C.D.D. | DESIGNED | NAME | SIGNED | DATE |
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| BENCH MK. | | | F GREIG | | 12/2021 |
| RL | | DES. REVIEW | S BENSBERG | | 12/2021 |
| SURVEY | | DRAWN | G WILLIAMS | | 12/2021 |
| SURVEY LB | | DRW. CHECK | M RHIND | | 12/2021 |
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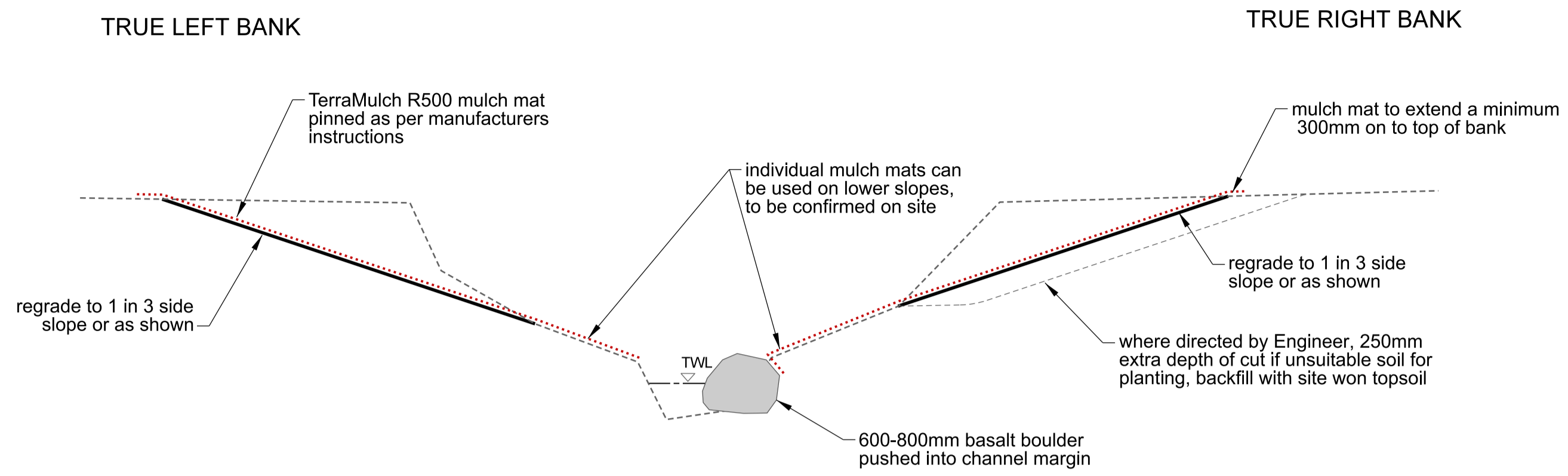
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| SIGNED | | |
| FOR CONSTRUCTION | DATE | |
| SIGNED | | |
| CONSULTANT PROJECT REF. | | CONSULTANT FILE REF. |

PROJECT TITLE
**CASHMERE STREAM ENHANCEMENT
STAGE 1A**

DRAWING TITLE
**CROSS SECTIONS
473-501M**

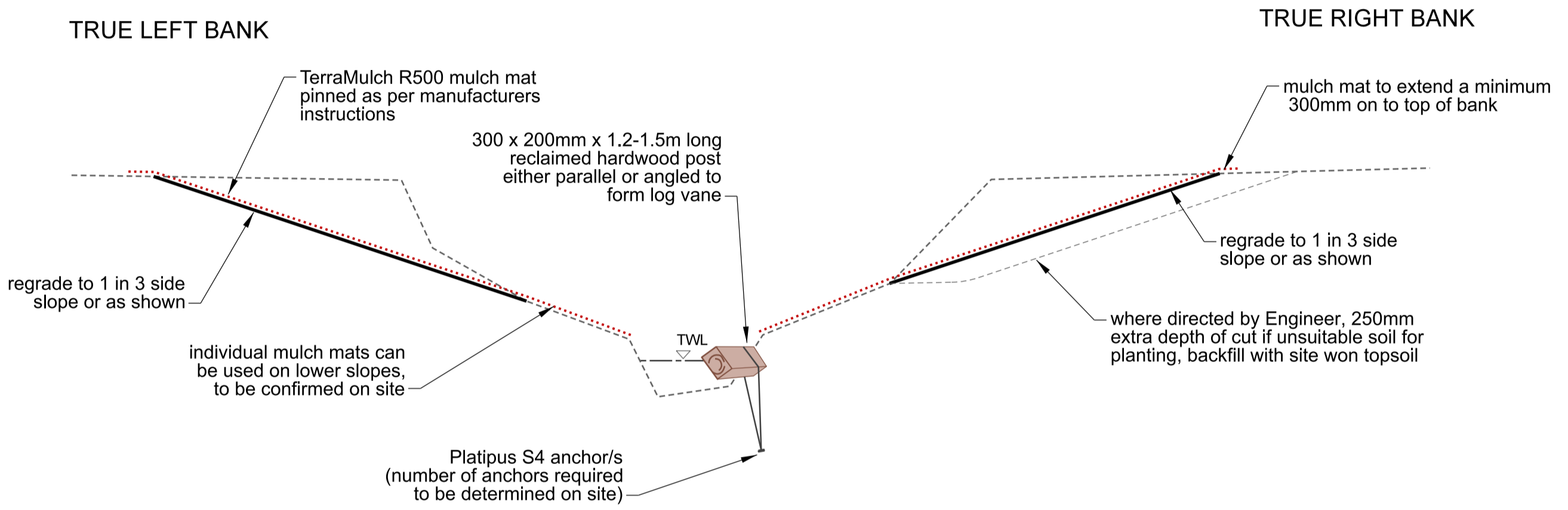
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| CAD DRAWING FILE REF. DD130901 | TSD PROJECT FILE NUMBER CP503560 | SHEET D06 OF 8 |

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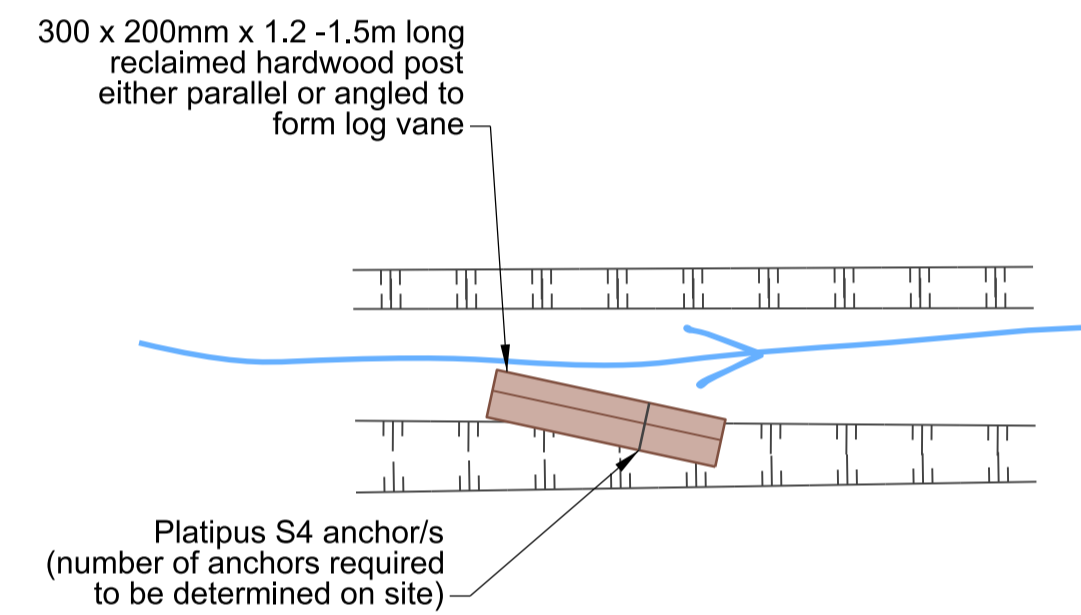


A
L02
TYPICAL BANK DETAIL - ROCK EDGE
SCALE 1:50

NOTES: 1. Mirror this detail for boulder in the true left bank.

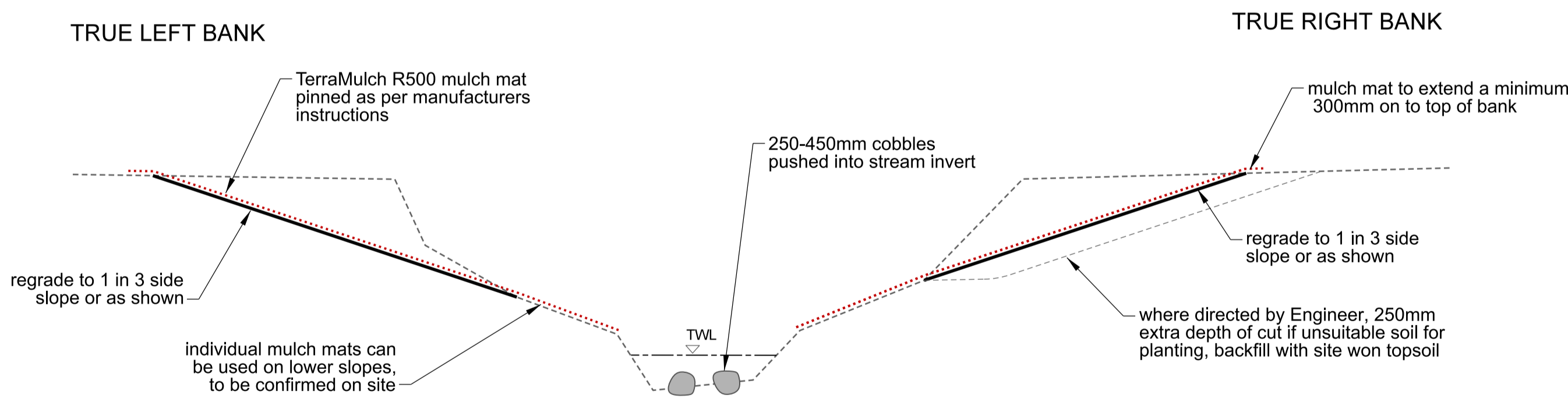


B
L02
TYPICAL BANK DETAIL - HARDWOOD POST EDGE
SCALE 1:50



NOTES: 1. Use hardwood posts reclaimed from on site (size varies), all metal fixings (e.g. rusted wire or gudgeons) are to be removed prior to use.
2. The post is to be placed rotated so there isn't a flat surface that could be stepped on.
3. Place the post either parallel to the bank secured with two Platipus anchors or angled to form a log vane with one end pushed into the bank of the channel (number of anchors to be determined on site).
4. Placement and angle of hardwood posts is to be under the direction of a Freshwater Ecologist.

B
L02
TYPICAL BANK DETAIL - HARDWOOD POST EDGE - PLAN VIEW
SCALE 1:50



C
L02
TYPICAL BANK DETAIL - COBBLE CLUSTER
SCALE 1:50

NOTES: 1. The cobble clusters consist of 2-3 cobbles pushed into the existing soft substrate of the channel invert.
2. Placement of the cobbles is to be under the direction of a Freshwater Ecologist.
3. This detail is generally only used where the width of the channel invert is 1.0m or greater.

NOTES

- All work is to be carried out as per the CCC Construction Standard Specifications (CSS); 2017, Parts 1 - 7.
- Any deviation from the CSS is not to be carried out until written instruction is received from the CCC Contract Engineer.
- The upper bank is typically being regraded to a 1 in 3 grade except where shown, with all bank slopes subject to final approval on-site by the CCC Contracts Engineer.
- The exact extent and location of these details is subject to on-site approval by the Engineer and Freshwater Ecologist, including treatment type, placement of weathered hardwood, basalt boulders and cobbles.
- The Contractor is to ensure that in the construction of all details with in-bank features all exposed soil surfaces are to be covered by mulch matting.
- No excavation below the waterline is to occur unless required to place instream features and directed by the Engineer
- Planting plans and planting details will be issued with construction issue drawings.

| | | | |
|-------|----------------------|--------|---------|
| 1 | CONSTRUCTION ISSUE | | 03/2022 |
| A | TENDER ISSUE - DRAFT | | 12/2021 |
| ISSUE | AMENDMENTS | SIGNED | DATE |

Christchurch City Council

TECHNICAL SERVICES & DESIGN

| DATUM | C.D.D. | DESIGNED | NAME | SIGNED | DATE |
|---------------|----------|---|------------|-------------|---------|
| BENCH MK. | | | F GREIG | [Signature] | 12/2021 |
| RL | | DES. REVIEW | S BENSBERG | [Signature] | 12/2021 |
| SURVEY | | DRAWN | G WILLIAMS | [Signature] | 12/2021 |
| SURVEY LB | | DRW. CHECK | M RHIND | [Signature] | 12/2021 |
| FILE LOCATION | | | | | |
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| SAP WBS | 562/3873 | PRINTED ON: 1/04/2022 BY: WilliamGJ | | | |

| | | | |
|----------------------------|--|---------|-------------|
| APPROVED FOR TENDER | | DATE | SIGNED |
| | | 12/2021 | [Signature] |
| FOR CONSTRUCTION | | DATE | SIGNED |
| | | 03/2022 | [Signature] |

PROJECT TITLE

CASHMERE STREAM ENHANCEMENT STAGE 1A

DRAWING TITLE

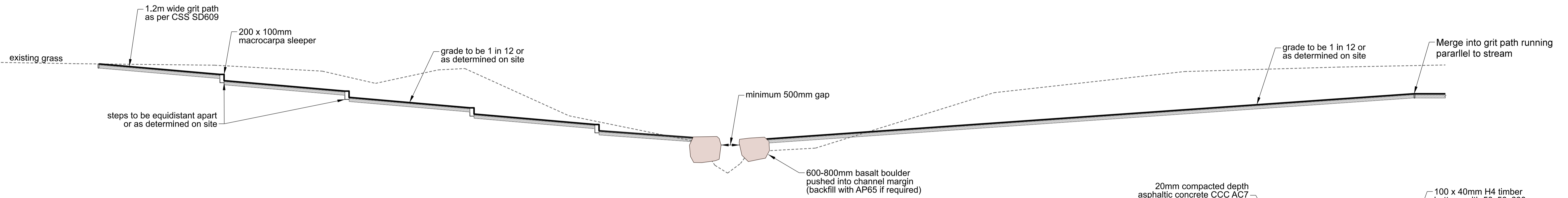
DETAILS A-C

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| DOCUMENT NUMBER | CN460003981 | ORIGINAL SHEET SIZE | A1 | SCALES | 1:50 A1 1:100 A3 |
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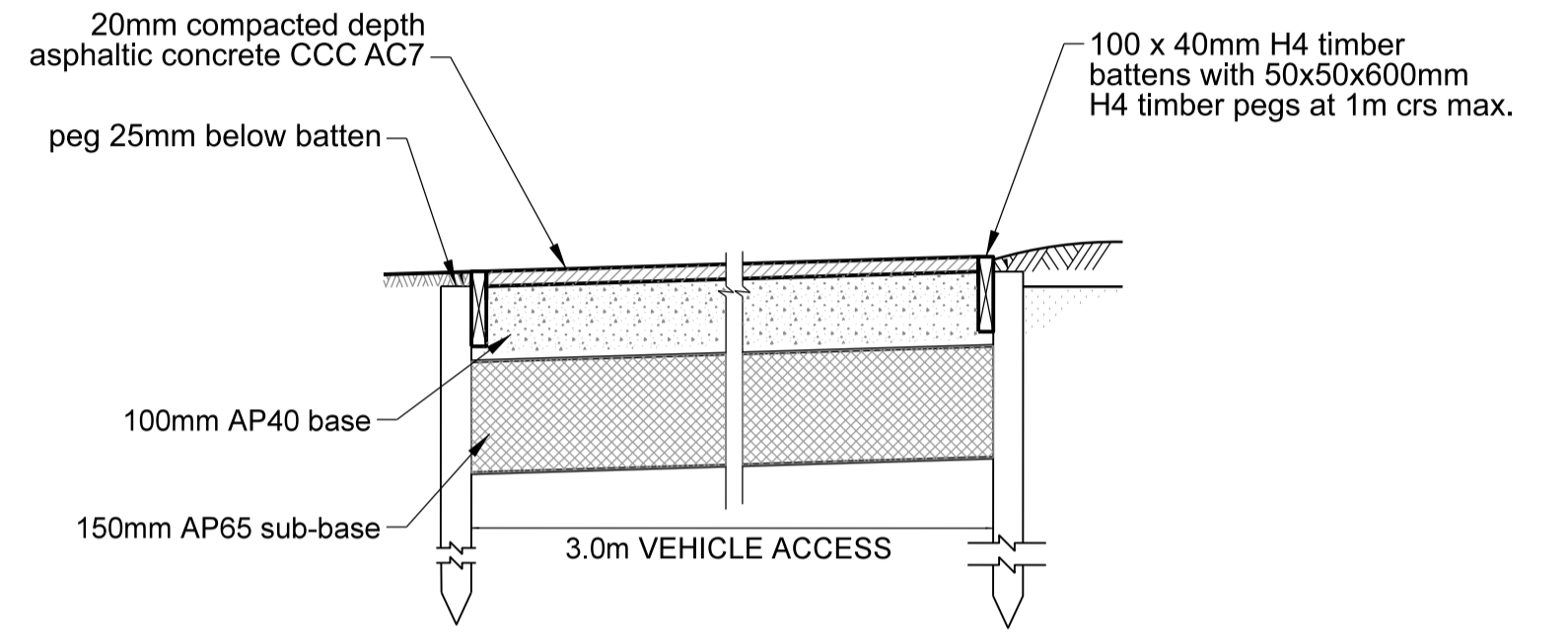
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TRUE LEFT BANK

TRUE RIGHT BANK



(D) TYPICAL BANK DETAIL - GRIT PATH WITH STEPS AND STEPPING STONES
SCALE 1:50



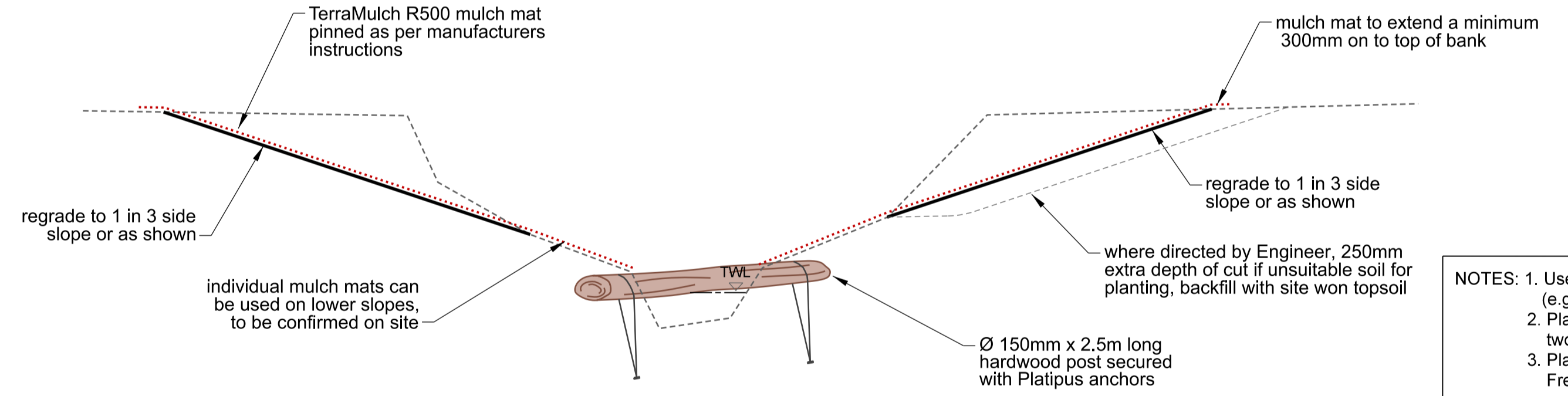
(G) ASPHALT PATH (3.0m)
SCALE 1:10

PATH NOTES:

- Crossfall to be nominally 2.0% (min 1.25%, max 3.0%) or as shown on the plans.
- Subgrade and metal course to be treated with soil sterilant.

TRUE LEFT BANK

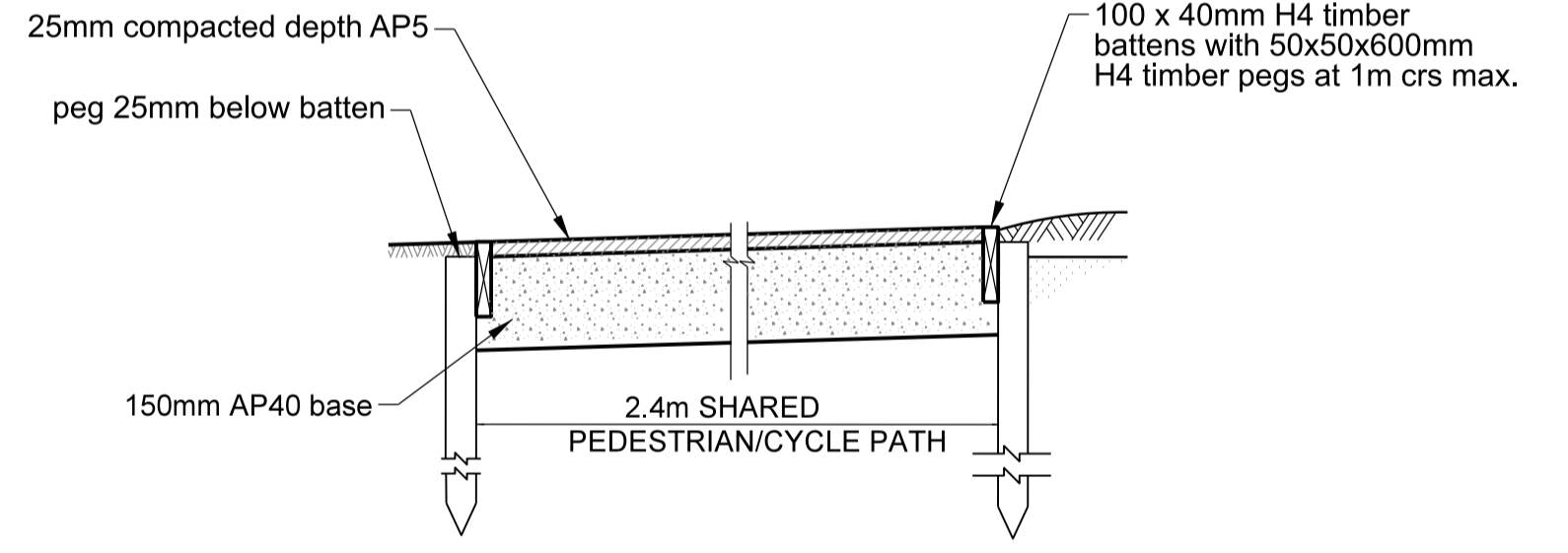
TRUE RIGHT BANK



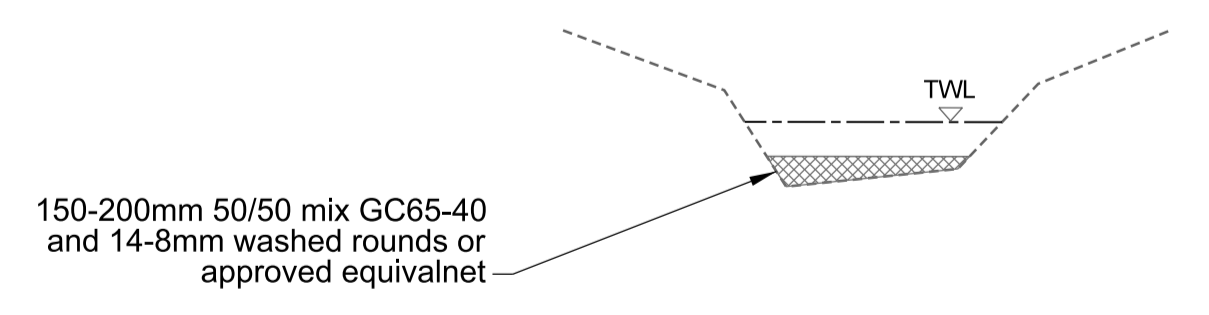
NOTES:

- Use hardwood posts reclaimed from on site (size varies), all metal fixings (e.g. rusted wire or gudgeons) are to be removed prior to use.
- Place the post either perpendicular or diagonal to the bank secured with two Platipus anchors.
- Placement and angle of hardwood posts is to be under the direction of a Freshwater Ecologist.

(E) TYPICAL BANK DETAIL - HARDWOOD POST WEIR (OPTIONAL)
SCALE 1:50



(H) GRIT PATH (2.4m SHARED)
SCALE 1:10



NOTES: 1. Riffle to be typically 3m in length and location and placement is to be under the direction of a Freshwater Ecologist.

(F) TYPICAL BANK DETAIL - RIFFLE
SCALE 1:50

NOTES

- All work is to be carried out as per the CCC Construction Standard Specifications (CSS); 2017, Parts 1 - 7.
- Any deviation from the CSS is not to be carried out until written instruction is received from the CCC Contract Engineer.
- The upper bank is typically being regraded to a 1 in 3 grade except where shown, with all bank slopes subject to final approval on-site by the CCC Contracts Engineer.
- The exact extent and location of these details is subject to on-site approval by the Engineer and Freshwater Ecologist, including treatment type, placement of weathered hardwood, basalt boulders and cobbles.
- The Contractor is to ensure that in the construction of all details with in-bank features all exposed soil surfaces are to be covered by mulch matting.
- No excavation below the waterline is to occur unless required to place instream features and directed by the Engineer.
- Planting plans and planting details will be issued with construction issue drawings.

| | | | |
|-------|----------------------|--------|---------|
| 1 | CONSTRUCTION ISSUE | HB | 03/2022 |
| A | TENDER ISSUE - DRAFT | HB | 12/2021 |
| ISSUE | AMENDMENTS | SIGNED | DATE |

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TECHNICAL SERVICES & DESIGN

| DATUM | C.D.D. | DESIGNED | NAME | SIGNED | DATE |
|-------------|---|---------------|------------|-------------|------------|
| BENCH MK. | | DES. REVIEW | F GREIG | [Signature] | 12/2021 |
| RL | | DRAWN | S BENSBERG | [Signature] | 12/2021 |
| SURVEY | | DRW. CHECK | G WILLIAMS | [Signature] | 12/2021 |
| SURVEY LB | | FILE LOCATION | M RHIND | [Signature] | 12/2021 |
| DRAIN. REF. | 1\CCy\Bz\Filserver\TSD01\Data\Drain\B\Drain\gld13004913 | DATE | | SIGNED | |
| SAP WBS | 562/3873 | PRINTED ON: | 1/04/2022 | BY | WilliamsGJ |

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|----------------------------|--|---------|--------|
| APPROVED FOR TENDER | | DATE | SIGNED |
| Tender Date | | 12/2021 | HB |
| FOR CONSTRUCTION | | DATE | SIGNED |
| Tender Date | | 03/2022 | HB |

CASHMERE STREAM ENHANCEMENT STAGE 1A

DETAILS D-E

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|-----------------------|-------------------------|----------|
| DOCUMENT NUMBER | ORIGINAL SHEET SIZE | SCALES |
| CN460003981 | A1 | AS SHOWN |
| CAD DRAWING FILE REF. | TSD PROJECT FILE NUMBER | SHEET |
| DD130901 | CP503560 | D08 OF 8 |