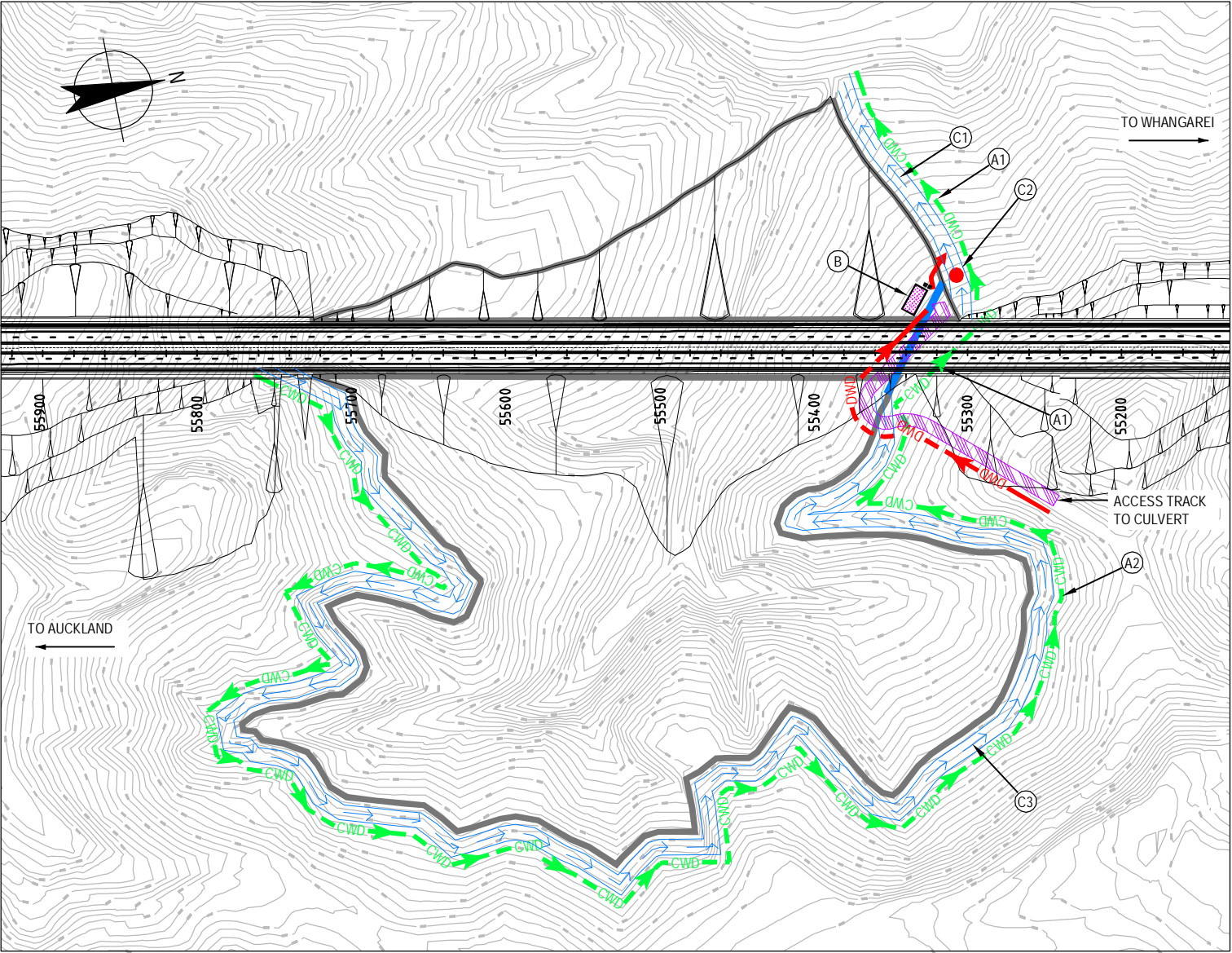


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STAGE 1
SCALE 1:4000 @ A3

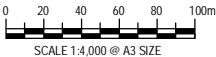
KEY	
	TEMPORARY ACCESS TRACK
	PERMANENT STREAM DIVERSION
	SPOIL SITE SL10 OUTLINE
	SAND BAG BARRIER (COFFER DAM)

NOTES

1. THE CONSTRUCTION WATER MANAGEMENT PLAN FOR SPOIL SITE SL10 HAS BEEN PROVIDED AS AN EXAMPLE. THIS METHODOLOGY IS APPLIED TO ALL OTHER SPOIL SITES.
2. THIS SET OF PLANS IDENTIFIES A STAGED PROCESS AND SHOULD BE READ SEQUENTIALLY.

STAGE 1 - CULVERT AND STREAM
DIVERSION CONSTRUCTION

- STEP 1. ESTABLISH AN ACCESS ROAD TO THE LOCATION OF CULVERT 55300.
- STEP 2. CLEAN VEGETATION FROM THE CULVERT LOCATION AND PERMANENT STREAM DIVERSION CHANNEL ONLY.
- STEP 3. CONSTRUCT CWD (A1) ABOVE THE CULVERT LOCATION TO PREVENT RUN-OFF WATER FROM THE UPHILL CATCHMENT FROM ENTERING THE WORK AREA.
- STEP 4. ESTABLISH DWD AND DEB (B) TO RECEIVE PUMPED FLOWS FROM CULVERT EXCAVATION WORKS.
- STEP 5. CONSTRUCT THE PERMANENT STREAM DIVERSION (C1) DOWNSTREAM OF THE CULVERT LOCATION
- CONSTRUCT ANY PERMANENT EROSION PROTECTION MEASURES AND STABILISE THE CHANNEL.
 - PLACE A SAND BAG BARRIER (C2) IN THE PERMANENT STREAM DIVERSION.
- STEP 6. CONSTRUCT CULVERT 55300
- PUMP ANY GROUND WATER AND SURFACE WATER FLOWS FROM WITHIN THE WORKS TO THE DEB (B)
- STEP 7. CONSTRUCT CWD (A2) AND ONCE ESTABLISHED THEN CONSTRUCT THE PERMANENT STREAM DIVERSION (C3) UPSTREAM OF THE CULVERT LOCATION AROUND THE PERIMETER OF THE SPOIL SITE LOCATION
- CONSTRUCT ANY PERMANENT EROSION PROTECTION MEASURES AND STABILISE THE STREAM DIVERSION CHANNEL.
 - ONCE THE CHANNEL HAS BEEN STABILISED SAND BAG BARRIER (C2) THE CWD (A1) AND (A2) CAN BE DECOMMISSIONED.



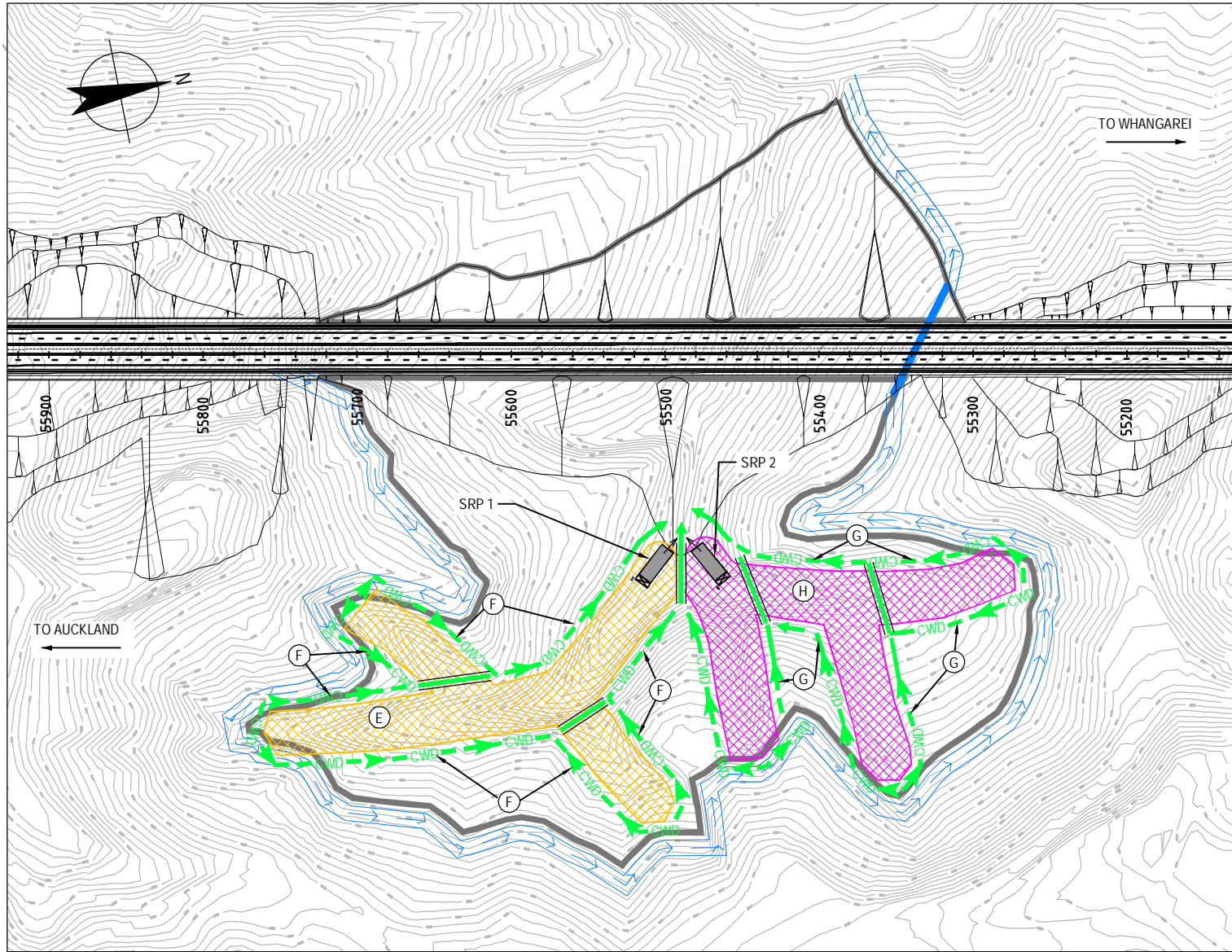
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AMD	DATE	DESIGN REVIEW	REVD D. MGR	APPD A. MGR	PURPOSE OF ISSUE / AMENDMENT









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ARA TŪHONO - PŪHOI TO WELLSFORD PŪHOI TO WARKWORTH - FOR RMA APPROVALS			
DRAWN SP / AN	DRAFTING CHECK TC	REVIEWED DISCIPLINE MANAGER MW	APPROVED ALLIANCE MANAGER TI
DESIGNED TC	DESIGN REVIEW GR		

CONSTRUCTION WATER MANAGEMENT CONCEPT PLAN - SPOIL SITE SL10 STAGING PLAN - SHEET 1 OF 5			
SCALE AS SHOWN	CONTRACT No PA3748	DRAWING No ES-091	AMD 0



STAGE 2
SCALE 1:4000 @ A3

- | | |
|---|---|
|  | CLEAR WATER DIVERSION PIPE THROUGH WORK AREA |
|  | PERMANENT STREAM DIVERSION TYPE 2 |
|  | SPOIL SITE SL10 OUTLINE |
|  | SEDIMENT RETENTION POND (SRP) WITH FLOCCULATION SHEDS |
|  | AREA E - VEGETATION TO BE CLEARED |
|  | AREA H - VEGETATION TO BE CLEARED |

NOTES

1. THE CONSTRUCTION WATER MANAGEMENT PLAN FOR SPOIL SITE SL10 HAS BEEN PROVIDED AS AN EXAMPLE. THIS METHODOLOGY IS APPLIED TO ALL OTHER SPOIL SITES.
2. GULLY DRAIN TO BE SET OUT ON SITE TO FOLLOW LOW POINT OF GULLY.
3. THIS SET OF PLANS IDENTIFIES A STAGED PROCESS AND SHOULD BE READ SEQUENTIALLY.

STAGE 2 - GULLY AND UNDER DRAIN CONSTRUCTION (UPPER CATCHMENT)

- STEP 1. CLEAR THE VEGETATION FROM AREA (E) ONLY.
- STEP 2. CONSTRUCT THE CWDs (F) TO REDIRECT STORMWATER RUNOFF FROM THE UPSTREAM CATCHMENT AROUND THE WORKS AREA.
 - STEP 3. CONSTRUCT SRP 1.
 - STEP 4. CONSTRUCT DWD WITHIN THE WORK AREA AND DISCHARGE TO SRP 1, PUMPING OF GROUNDWATER AND SURFACE WATER FLOWS WILL BE REQUIRED DURING THE CONSTRUCTION OF THE GULLY DRAINS, PUMPED FLOWS WILL BE DISCHARGED TO SRP 1.
 - CONSTRUCT GULLY DRAINS AND UNDERFILL DRAINS IN AREA (E). REFER TO DRAWINGS R-217 AND R-218 FOR DETAILS. EXCAVATED MATERIAL TO BE PLACED AND SPREAD WITHIN THE SPOIL SITE UPHILL OF THE WORK AREA STABILISED WITH MULCH AT THE END OF EACH WORKING DAY.
- STEP 5. CLEAR VEGETATION FROM AREA (H).
- STEP 6. CONSTRUCT THE CWDs (G) TO REDIRECT STORMWATER RUNOFF FROM THE UPSTREAM CATCHMENT AROUND THE WORK AREA.
 - STEP 7. CONSTRUCT SRP 2.
 - STEP 8. CONSTRUCT DWD WITHIN THE WORK AREA AND DISCHARGE TO SRP 2, PUMPING OF GROUNDWATER AND SURFACE WATER FLOWS WILL BE REQUIRED DURING THE CONSTRUCTION OF THE GULLY DRAINS, PUMPED FLOWS WILL BE DISCHARGED TO SRP 2.
 - STEP 9. CONSTRUCT GULLY DRAINS AND UNDERFILL DRAINS WITHIN AREA (H). REFER TO DRAWINGS R-217 AND R-218 FOR DETAILS.
 - EXCAVATED MATERIAL TO BE PLACED AND SPREAD WITHIN THE SPOIL SITE UPHILL OF THE WORK AREA STABILISED WITH MULCH AT THE END OF EACH WORKING DAY.
- STEP 10. COMPLETED SECTIONS OF GULLY DRAINS WITHIN BOTH WORK AREAS TO BE STABILISED AT THE END OF EACH WORKING DAY.



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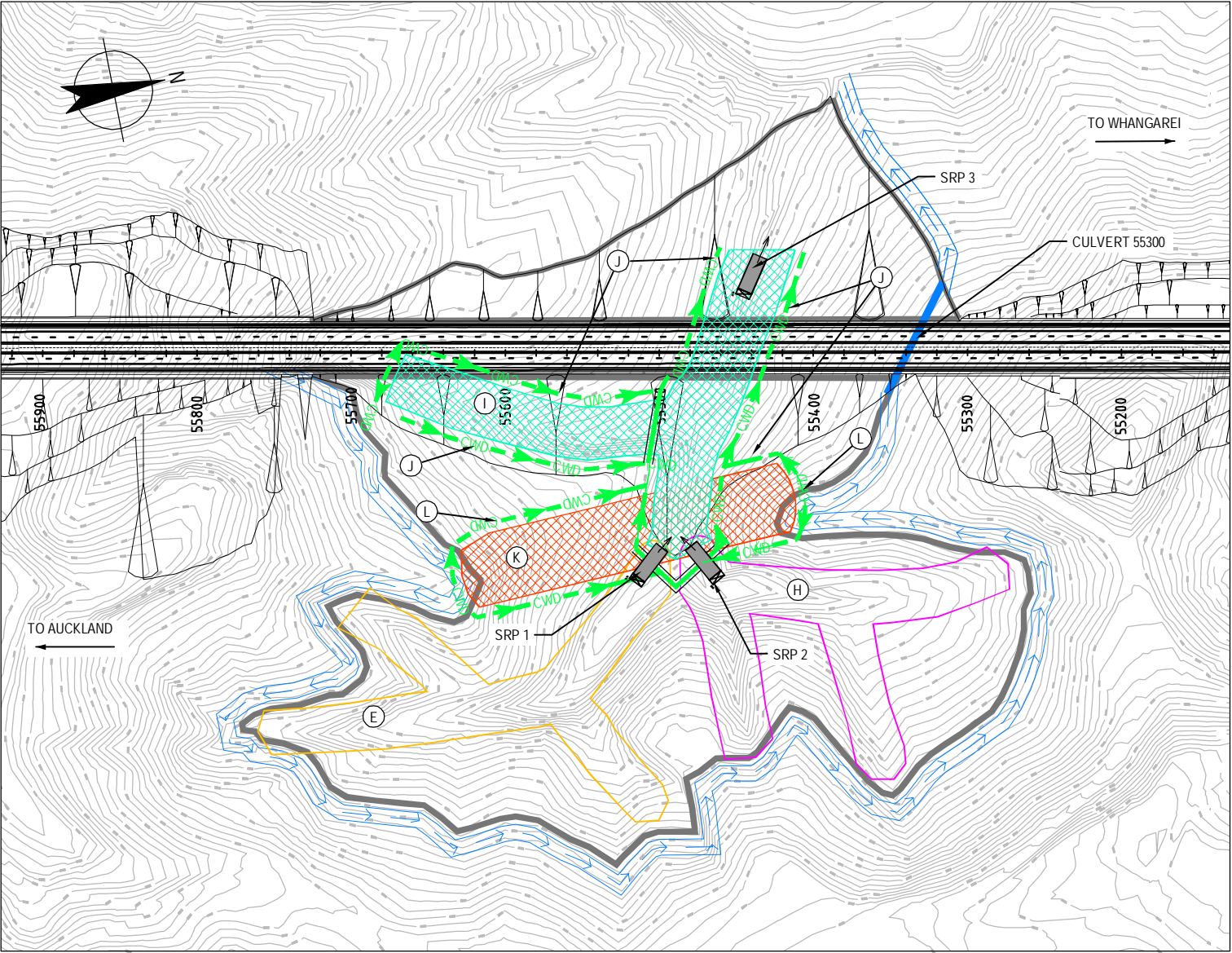
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ARA TŪHONO - PŪHOI TO WELLSFORD			
PŪHOI TO WARKWORTH - FOR RMA APPROVALS			
DRAWN SP / AN	DRAFTING CHECK TC	REVIEWED DISCIPLINE MANAGER MW	APPROVED ALLIANCE MANAGER TI
DESIGNED TC	DESIGN REVIEW GR		

CONSTRUCTION WATER MANAGEMENT
CONCEPT PLAN - SPOIL SITE SL10
STAGING PLAN - SHEET 2 OF 5

SCALE AS SHOWN	CONTRACT No PA3748	DRAWING No ES-092	AMDT 0
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STAGE 3 AND STAGE 4
SCALE 1:4000 @ A3

KEY	
	CLEAR WATER DIVERSION PIPE THROUGH WORK AREA
	PERMANENT STREAM DIVERSION TYPE 2
	SPOIL SITE SL10 OUTLINE
	SEDIMENT RETENTION POND (SRP) WITH FLOCCULATION SHEDS
	AREA I - VEGETATION TO BE CLEARED
	AREA K - VEGETATION TO BE CLEARED
	OUTLINE OF AREA H (WORK IN THIS ZONE COMPLETED IN STAGE 2)
	OUTLINE OF AREA E (WORK IN THIS ZONE COMPLETED IN STAGE 2)

NOTES

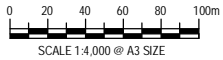
1. THE CONSTRUCTION WATER MANAGEMENT PLAN FOR SPOIL SITE SL10 HAS BEEN PROVIDED AS AN EXAMPLE. THIS METHODOLOGY IS APPLIED TO ALL OTHER SPOIL SITES.
2. GULLY DRAIN TO BE SET OUT ON SITE TO FOLLOW LOW POINT OF GULLY.
3. THIS SET OF PLANS IDENTIFIES A STAGED PROCESS AND SHOULD BE READ SEQUENTIALLY.

STAGE 3 - GULLY AND UNDERDRAIN CONSTRUCTION (LOWER CATCHMENT)

- STEP 1. CLEAR THE VEGETATION FROM AREA ① ONLY.
- STEP 2. CONSTRUCT THE CWDs ① TO REDIRECT STORMWATER RUNOFF FROM THE UPSTREAM CATCHMENT AROUND THE WORKS AREA.
- STEP 3. CONSTRUCT SRP 3.
- STEP 4. CONSTRUCT DWD WITHIN THE WORK AREAS AND DISCHARGE TO SRP 3, PUMPING OF GROUNDWATER AND SURFACE WATER FLOWS WILL BE REQUIRED DURING THE CONSTRUCTION OF THE GULLY DRAINS, PUMPED FLOWS WILL BE DISCHARGED TO SRP 1.
- STEP 5. CONSTRUCT GULLY DRAINS AND UNDERFILL DRAINS IN AREA ①. REFER TO DRAWINGS R-217 AND R-218 FOR DETAILS.
- EXCAVATED MATERIAL TO BE PLACED AND SPREAD WITHIN THE SPOIL SITE UPHILL OF THE WORK AREA STABILISED WITH MULCH AT THE END OF EACH WORKING DAY.
- STEP 6. COMPLETED SECTIONS OF GULLY DRAINS WITHIN THE WORK AREA TO BE STABILISED AT THE END OF EACH WORKING DAY.

STAGE 4 - CONSTRUCT SHEAR KEY BENEATH SPOIL BUND

- STEP 1. CLEAR THE VEGETATION FROM AREA ② ONLY.
- STEP 2. CONSTRUCT THE CWDs ② TO REDIRECT STORMWATER RUNOFF FROM THE UPSTREAM CATCHMENT AROUND THE WORKS AREA.
- STEP 3. CONSTRUCT DWD WITHIN THE WORK AREAS AND DISCHARGE TO SRP 3, PUMPING OF GROUNDWATER AND SURFACE WATER FLOWS WILL BE REQUIRED DURING THE CONSTRUCTION OF THE GULLY DRAINS, PUMPED FLOWS WILL BE DISCHARGED TO SRP 3.
- STEP 4. CONSTRUCT SHEAR KEY, REFER TO DRAWINGS R-217 FOR DETAILS.
- EXCAVATED UNSUITABLE MATERIAL FROM THE SHEAR KEY IS TO BE PLACED AND SPREAD IN AREAS ③ AND/OR ④. THE DWD IN AREAS ③ AND ④ ARE TO BE MAINTAINED AND THE FLOWS DIRECTED TO SRPS 1 AND 2 RESPECTIVELY DURING THE CONSTRUCTION OF THE SHEAR KEY WORKS.
 - STABILISE DEPOSITED MATERIAL WITH MULCH AT THE END OF EACH WORKING DAY, OR WHEN RAIN IS FORECAST.



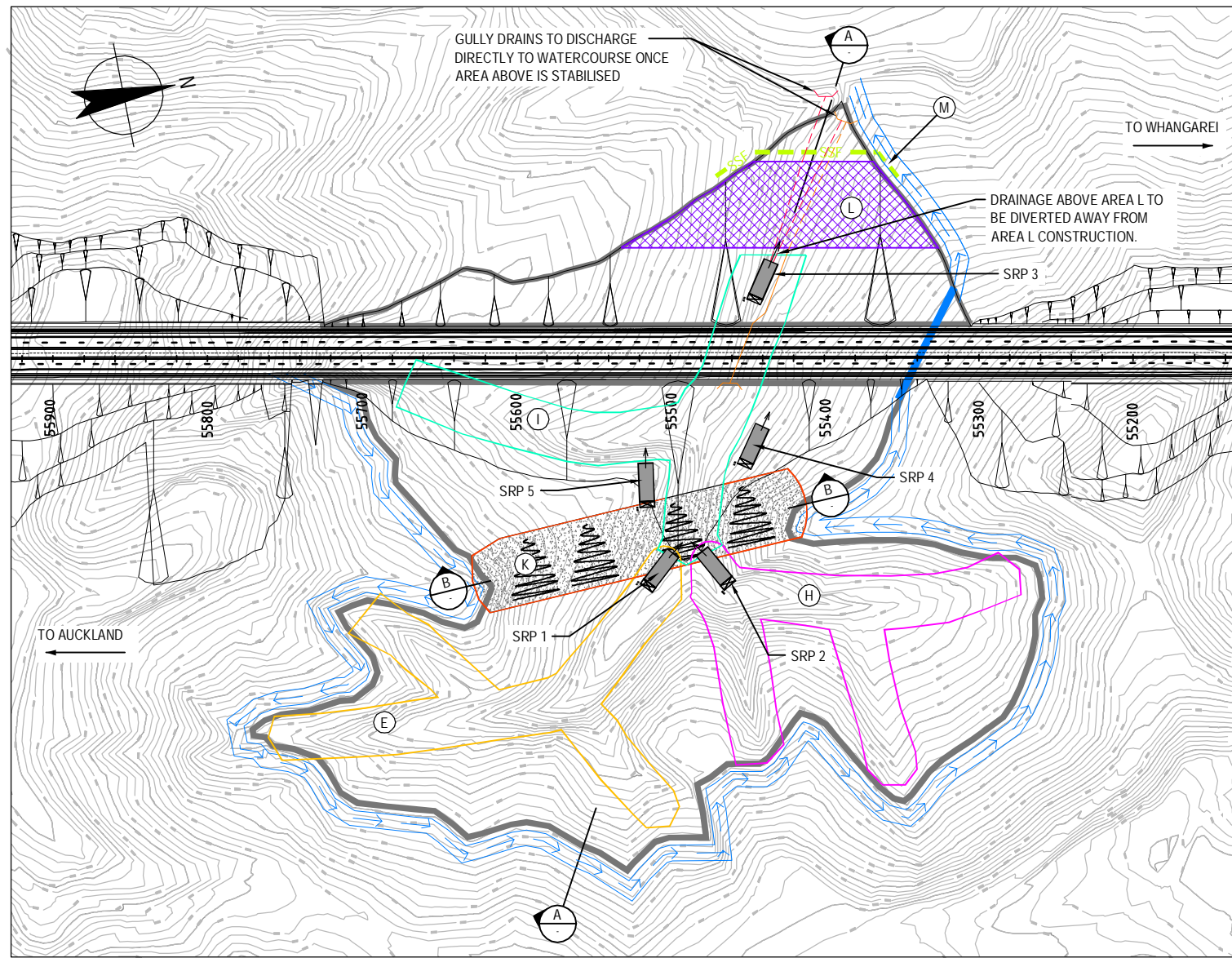
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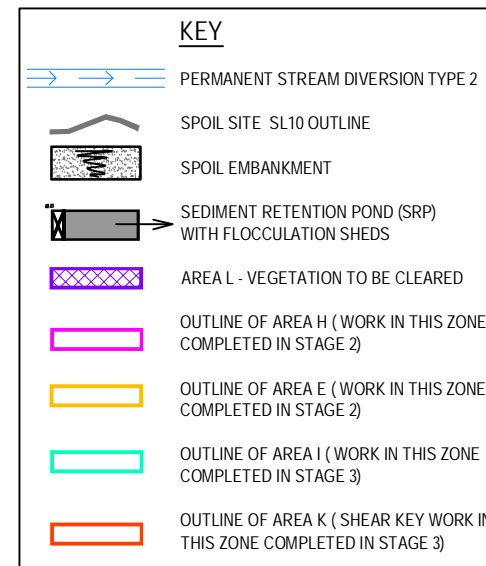
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ARA TŪHONO - PŪHOI TO WELLSFORD			
PŪHOI TO WARKWORTH - FOR RMA APPROVALS			
DRAWN SP / AN	DRAFTING CHECK TC	REVIEWED DISCIPLINE MANAGER MW	APPROVED ALLIANCE MANAGER TI
DESIGNED TC	DESIGN REVIEW GR		

CONSTRUCTION WATER MANAGEMENT CONCEPT PLAN - SPOIL SITE SL10 STAGING PLAN - SHEET 3 OF 5			
SCALE AS SHOWN	CONTRACT No PA3748	DRAWING No ES-093	AMD 0



STAGE 5
SCALE 1:4000 @ A3

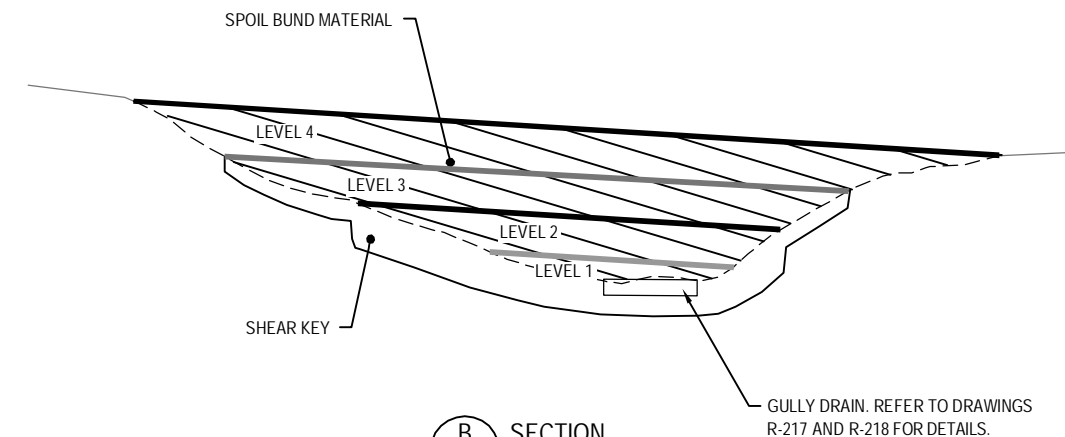


NOTES

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2. GULLY DRAIN TO BE SET OUT ON SITE TO FOLLOW LOW POINT OF GULLY.
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STAGE 5 - CONSTRUCT SHEAR KEY BENEATH ENGINEERED / BUTTRESS FILL

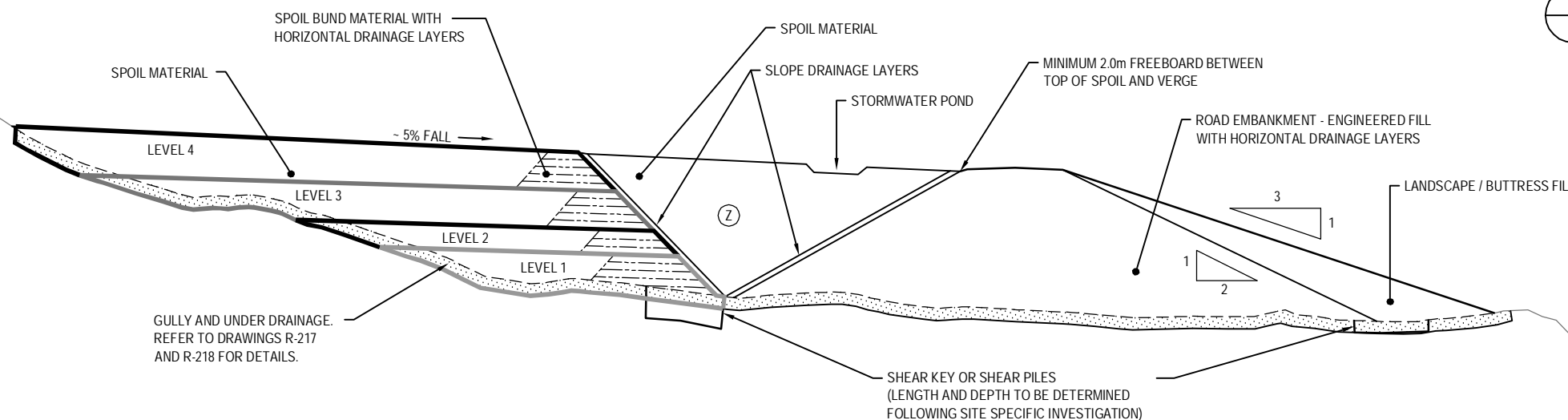
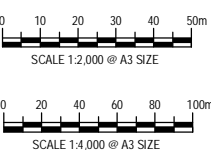
- STEP 1. CLEAR VEGETATION FROM AREA (L) AND STABILISE THE AREA WITH MULCH.
- STEP 2. EXTEND THE DISCHARGE PIPEWORK FROM SRP3 TO THE EXISTING WATERCOURSE.
- STEP 3. ERECT SUPER SILT FENCE (M) ACROSS THE GULLY DOWNHILL OF SHEAR KEY LOCATION.
- STEP 4. CONSTRUCT THE SHEAR KEYS WEST OF THE PROPOSED ROAD ALIGNMENT;
 - EXCAVATED UNSUITABLE MATERIAL FROM THE SHEAR KEY EXCAVATION IS TO BE PLACED AND SPREAD IN AREAS (E) AND/OR (H) THE DWD IN AREAS (E) AND (H) ARE TO BE MAINTAINED AND FLOWS DIRECTED TO SRPS 1 AND 2 RESPECTIVELY DURING FILLING WORKS.
 - STABILISE DEPOSITED MATERIAL WITH MULCH AT THE END OF EACH WORKING DAY, OR WHEN RAIN IS FORECAST.
- STEP 5. PUMP GROUNDWATER AND SURFACE WATER RUNOFF FROM THE SHEAR KEY EXCAVATIONS IN AREA (L) TO SRP 3.
- STEP 6. CONSTRUCT GULLY DRAINS THROUGH AND DOWNSTREAM OF THE SHEAR KEY LOCATIONS (K) AND (L) AND CONNECT TO WATERCOURSE ONCE AREA ABOVE IS STABILISED.
 - UPON COMPLETION OF THE SHEAR KEYS AND THE WORK AREA STABILISED WITH MULCH SRP 1, 2 AND 3 CAN BE DECOMMISSIONED.



SECTION B
SCALE 1:2000 @ A3

STAGE 6 - OPERATIONS FILLING BEHIND SPOIL BUND

- STEP 1. CONSTRUCT SPOIL BUND UP TO LEVEL 1 AND STABILISE THE SURFACE AREA WITH MULCH UPON COMPLETION.
- STEP 2. CONSTRUCT SRPS 4 AND 5.
- STEP 3. CLEAR THE REMAINING VEGETATION UPHILL OF THE SPOIL BUND,
 - CONSTRUCT DWDs WITHIN THE CLEARED AREA AND DISCHARGE SEDIMENT LADEN RUNOFF INTO SRPS 4 AND 5.
- STEP 4. COMMENCE FILLING OPERATIONS BEHIND THE SPOIL BUND UNTIL LEVEL 1 IS REACHED,
 - THE FILLING OPERATIONS WILL REQUIRE THAT THE DWDs WITHIN THE WORKS AREA ARE ADJUSTED AND MOVED THROUGHOUT THE FILLING OPERATION AND DISCHARGE TO SRPS 4 AND 5.
 - STABILISE OPEN AREAS AS REQUIRED.
- STEP 5. ONCE LEVEL 1 OF FILLING OPERATIONS IS COMPLETE, COMMENCE FILLING OPERATIONS FOR LEVELS 2, 3 AND 4 FOLLOWING STEPS 1 AND 4 ABOVE. UNTIL AREA BEHIND SPOIL BUND IS FILLED (LEVELS 2 TO 4).
 - THE ADJUSTMENT OF THE DWDs WITHIN THE FILL AREA BEHIND THE SPOIL BUND WILL BE CONSTANTLY MONITORED TO ENSURE THAT SEDIMENT LADEN RUNOFF IS DISCHARGED TO SRPS 4 AND 5.
 - UPON COMPLETION OF FILLING OPERATIONS SRP 4 AND 5 CAN BE DECOMMISSIONED.



SECTION A
SCALE 1:2000 @ A3

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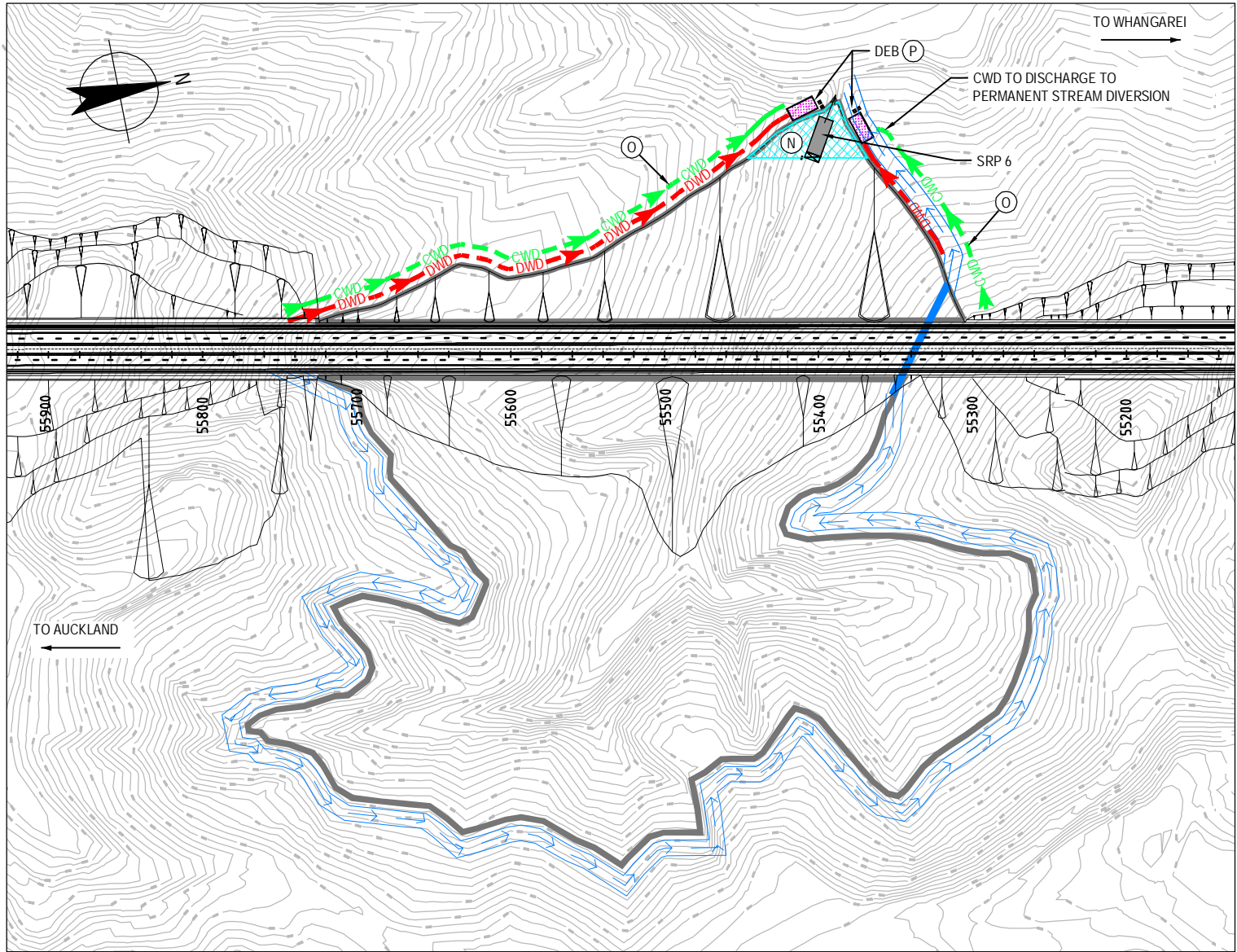


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ARA TŪHONO - PŪHOI TO WELLSFORD			
PŪHOI TO WARKWORTH - FOR RMA APPROVALS			
DRAWN SP / AN	DRAFTING CHECK TC	REVIEWED DISCIPLINE MANAGER MW	APPROVED ALLIANCE MANAGER TI
DESIGNED TC	DESIGN REVIEW GR		

CONSTRUCTION WATER MANAGEMENT CONCEPT PLAN - SPOIL SITE SL10 STAGING PLAN - SHEET 4 OF 5			
SCALE AS SHOWN	CONTRACT No PA3748	DRAWING No ES-094	AMDT 0

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STAGE 7 AND STAGE 8
SCALE 1:4000 @ A3

KEY

PERMANENT STREAM DIVERSION TYPE 2

SEDIMENT RETENTION POND (SRP) WITH FLOCCULATION SHEDS

SPOIL SITE SL10 OUTLINE

AREA N - VEGETATION TO BE CLEARED

NOTES

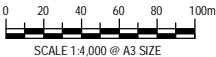
1. THE CONSTRUCTION WATER MANAGEMENT PLAN FOR SPOIL SITE SL10 HAS BEEN PROVIDED AS AN EXAMPLE. THIS METHODOLOGY IS APPLIED TO ALL OTHER SPOIL SITES.
2. GULLY DRAIN TO BE SET OUT ON SITE TO FOLLOW LOW POINT OF GULLY.
3. THIS SET OF PLANS IDENTIFIES A STAGED PROCESS AND SHOULD BE READ SEQUENTIALLY.

STAGE 7 - CONSTRUCT ROAD EMBANKMENT

- STEP 1. CLEAR REMAINING VEGETATION WITHIN SL10 PLAN AREA AND CONSTRUCT SRP6.
 - OPEN AREAS OF CLEARED GROUND WILL BE STABILISED AS REQUIRED.
- STEP 2. CONSTRUCT CWDs WITHIN AREA (N) AND DISCHARGE TO SRP 6
- STEP 3. ESTABLISH CWDs (O) UPHILL OF THE EMBANKMENT FOOTPRINT.
- STEP 4. COMMENCE CONSTRUCTION OF ROAD EMBANKMENT AND STABILISE AS REQUIRED.
 - RUNOFF FROM ROAD EMBANKMENT TO BE DISCHARGED TO SRP 6.
- STEP 5. ONCE ROAD EMBANKMENT IS COMPLETED, AREA BETWEEN EMBANKMENT AND SPOIL CAN BE FILLED (AREA (Z) ON SECTION A, REFER TO DRAWING ES-094)

STAGE 8 - LANDSCAPE FILL

1. CONSTRUCT DWDS AND DEBS (P) AT BASE OF ROAD EMBANKMENT
2. DECOMMISSION SRP 6
3. COMMENCE FILLING OF EMBANKMENT FACE WITH LANDSCAPE BUTTRESS FILL (SEE SHEET 4 - ES-094) AND PROGRESSIVELY STABILISE WITH MULCH.
 - ONCE FILLING WORKS ARE COMPLETE STABILISE WITH TOPSOIL AND ESTABLISH PERMANENT PLANTING
4. ONCE AREA IS STABILISED AND PLANTING IS ESTABLISHED DECOMMISSION THE DEBS (P).



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ARA TŪHONO - PŪHOI TO WELLSFORD			
PŪHOI TO WARKWORTH - FOR RMA APPROVALS			
DRAWN SP / AN	DRAFTING CHECK TC	REVIEWED DISCIPLINE MANAGER MW	APPROVED ALLIANCE MANAGER TI
DESIGNED TC	DESIGN REVIEW GR		

CONSTRUCTION WATER MANAGEMENT CONCEPT PLAN - SPOIL SITE SL10 STAGING PLAN - SHEET 5 OF 5			
SCALE AS SHOWN	CONTRACT No PA3748	DRAWING No ES-095	AMD 0