

LONG SECTION (M)

— — — — — EXISTING GROUND LEVEL

— — — — — PROPOSED TRACK LEVEL

LONGITUDINAL SECTION  
SCALE 1:2500H/1:500V

**SIGNIFICANT RESIDUAL RISKS**

The following table provides a summary of the residual risks identified for the proposed project and details the mitigation and control measures proposed to address these risks.

Description of Risk	Risk No.
Climate Change	1
Accessibility	2
Residual Risk	3
Tree Retention	4
Watercourse	5
Soil	6
Groundwater	7
Archaeology	8
Ecology	9
Heritage	10
Visual Amenity	11
Noise	12
Construction	13
Operational	14
Health and Safety	15

- Notes**
- Existing information based on surveys provided by others and O&M plans.
  - Any design, including earthworks, is preliminary for Stage 1 submission purposes only. The design will be developed and refined during Stage 2.
  - Any earthworks design assumes a 1:2 slope.
  - Design speed based on 80km/h.



No.	Date	Author	Check	Appr.
1	11/11/23	CH2M HILL FAIRHURST		
2	11/11/23			
3	11/11/23			
4	11/11/23			

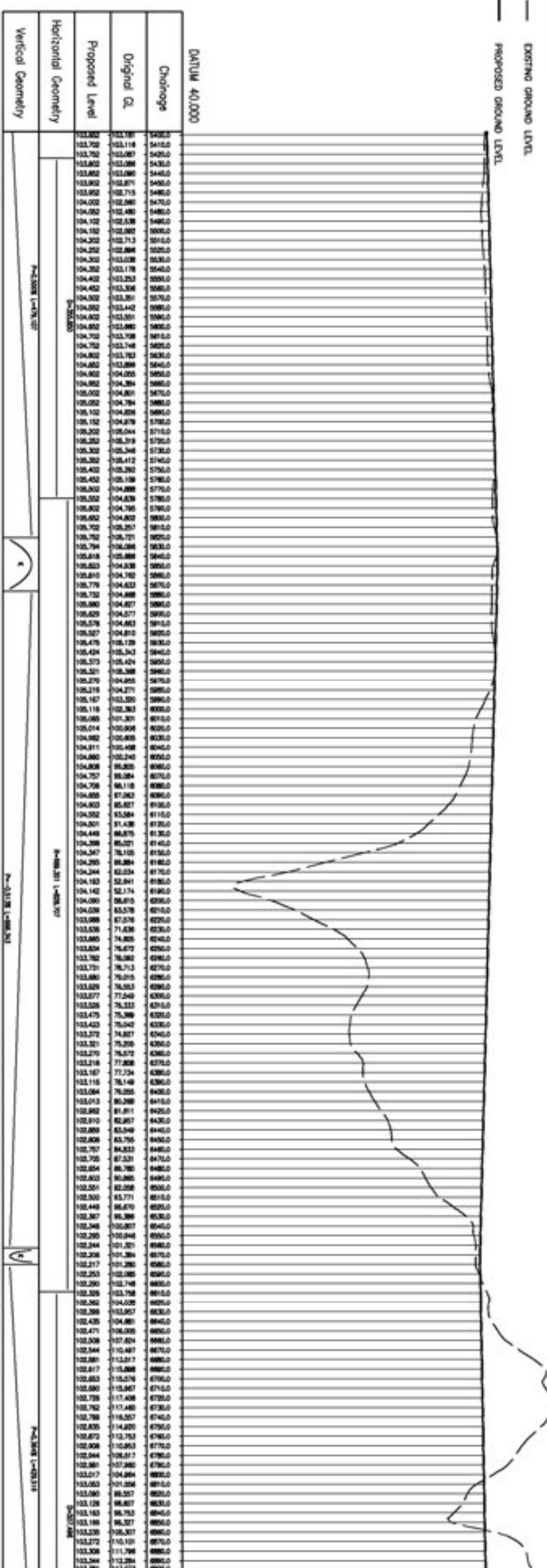
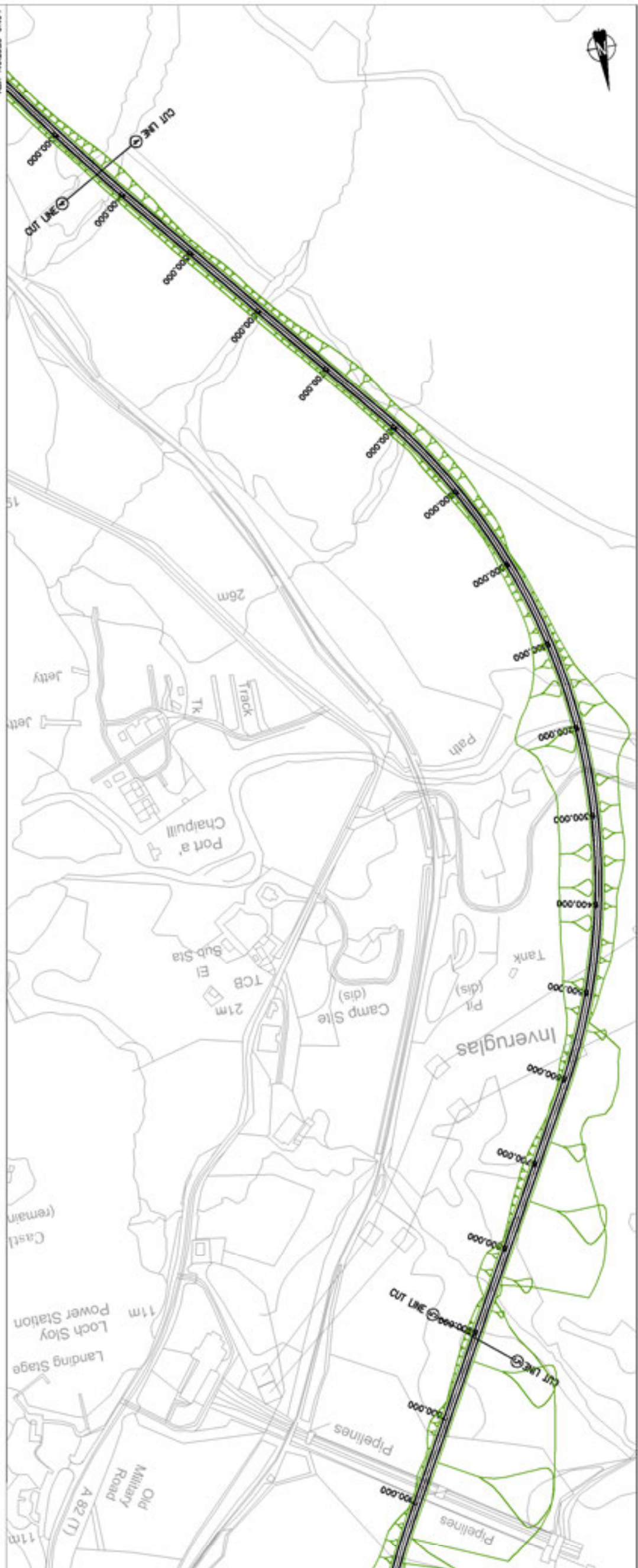
**CH2M HILL FAIRHURST**

CH2M HILL FAIRHURST  
100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

Option 3  
HIGH ROAD  
(TARBET TO GEAR LOCH TO INVERARMAN)  
SHEET 4 OF 10

476416-0000-303

4.0



LONGITUDINAL SECTION  
SCALE 1:2500H/1:500V

**SIGNIFICANT RESIDUAL RISKS**

The following table provides a summary of the risks identified during the design process. Risks are ranked based on their potential impact and likelihood of occurrence. Risks are categorized as High, Medium, or Low.

Description of Risk	Risk No.	Category
EXISTING UTILITIES	1	High
ADJACENT ACTIVITIES	2	Medium
RESTRICTED SITE	3	Medium
TRAFFIC	4	Medium
RETAINANCE WITH ADJACENT	5	Medium
ROAD TO HIGHWAYS	6	Medium
ROAD TO SUBSTANCES	7	Medium
CONFLICT WITH EXISTING	8	Medium
CONFLICT WITH EXISTING	9	Medium
CONFLICT WITH EXISTING	10	Medium
CONFLICT WITH EXISTING	11	Medium
CONFLICT WITH EXISTING	12	Medium
CONFLICT WITH EXISTING	13	Medium
CONFLICT WITH EXISTING	14	Medium
CONFLICT WITH EXISTING	15	Medium
CONFLICT WITH EXISTING	16	Medium
CONFLICT WITH EXISTING	17	Medium
CONFLICT WITH EXISTING	18	Medium
CONFLICT WITH EXISTING	19	Medium
CONFLICT WITH EXISTING	20	Medium

- Notes**
- Existing information based on surveys provided by others and O&M plans.
  - Any design, including earthworks, is preliminary for Design Stage 1 submission purposes only. The design will be developed and refined during Design Stage 2.
  - Any earthworks design assumes a 1:2 slope.
  - Design speed based on 800 kph.



No.	Date	Revised	By	Checked
1	11/11/23	11/11/23	11/11/23	11/11/23
2	11/11/23	11/11/23	11/11/23	11/11/23
3	11/11/23	11/11/23	11/11/23	11/11/23
4	11/11/23	11/11/23	11/11/23	11/11/23
5	11/11/23	11/11/23	11/11/23	11/11/23

**CH2MHILL FAIRHURST**

CH2M HILL FAIRHURST  
100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

Prepared by: CH2M HILL FAIRHURST  
Date: 11/11/23  
Scale: 1:2500H/1:500V  
Sheet: 5 OF 10

**OPTION 3  
HIGH ROAD  
(TARGET TO GEAR LOCH TO INVERARMAN)**

SHEET 5 OF 10

Drawn by: CH2M HILL FAIRHURST  
Checked by: CH2M HILL FAIRHURST  
Approved by: CH2M HILL FAIRHURST  
Date: 11/11/23  
Scale: 1:2500H/1:500V  
Sheet: 5 OF 10

476416-0000-304

4.0



LONG SECTION XZEL  
 --- EXISTING GROUND LEVEL  
 --- PROPOSED GROUND LEVEL

DATUM 73.000

Chainage	Original CL	Proposed Level	Horizontal Geometry	Vertical Geometry
0+000	73.000	73.000		
0+010	73.000	73.000		
0+020	73.000	73.000		
0+030	73.000	73.000		
0+040	73.000	73.000		
0+050	73.000	73.000		
0+060	73.000	73.000		
0+070	73.000	73.000		
0+080	73.000	73.000		
0+090	73.000	73.000		
0+100	73.000	73.000		
0+110	73.000	73.000		
0+120	73.000	73.000		
0+130	73.000	73.000		
0+140	73.000	73.000		
0+150	73.000	73.000		
0+160	73.000	73.000		
0+170	73.000	73.000		
0+180	73.000	73.000		
0+190	73.000	73.000		
0+200	73.000	73.000		
0+210	73.000	73.000		
0+220	73.000	73.000		
0+230	73.000	73.000		
0+240	73.000	73.000		
0+250	73.000	73.000		
0+260	73.000	73.000		
0+270	73.000	73.000		
0+280	73.000	73.000		
0+290	73.000	73.000		
0+300	73.000	73.000		
0+310	73.000	73.000		
0+320	73.000	73.000		
0+330	73.000	73.000		
0+340	73.000	73.000		
0+350	73.000	73.000		
0+360	73.000	73.000		
0+370	73.000	73.000		
0+380	73.000	73.000		
0+390	73.000	73.000		
0+400	73.000	73.000		
0+410	73.000	73.000		
0+420	73.000	73.000		
0+430	73.000	73.000		
0+440	73.000	73.000		
0+450	73.000	73.000		
0+460	73.000	73.000		
0+470	73.000	73.000		
0+480	73.000	73.000		
0+490	73.000	73.000		
0+500	73.000	73.000		
0+510	73.000	73.000		
0+520	73.000	73.000		
0+530	73.000	73.000		
0+540	73.000	73.000		
0+550	73.000	73.000		
0+560	73.000	73.000		
0+570	73.000	73.000		
0+580	73.000	73.000		
0+590	73.000	73.000		
0+600	73.000	73.000		
0+610	73.000	73.000		
0+620	73.000	73.000		
0+630	73.000	73.000		
0+640	73.000	73.000		
0+650	73.000	73.000		
0+660	73.000	73.000		
0+670	73.000	73.000		
0+680	73.000	73.000		
0+690	73.000	73.000		
0+700	73.000	73.000		
0+710	73.000	73.000		
0+720	73.000	73.000		
0+730	73.000	73.000		
0+740	73.000	73.000		
0+750	73.000	73.000		
0+760	73.000	73.000		
0+770	73.000	73.000		
0+780	73.000	73.000		
0+790	73.000	73.000		
0+800	73.000	73.000		
0+810	73.000	73.000		
0+820	73.000	73.000		
0+830	73.000	73.000		
0+840	73.000	73.000		
0+850	73.000	73.000		
0+860	73.000	73.000		
0+870	73.000	73.000		
0+880	73.000	73.000		
0+890	73.000	73.000		
0+900	73.000	73.000		
0+910	73.000	73.000		
0+920	73.000	73.000		
0+930	73.000	73.000		
0+940	73.000	73.000		
0+950	73.000	73.000		
0+960	73.000	73.000		
0+970	73.000	73.000		
0+980	73.000	73.000		
0+990	73.000	73.000		
1+000	73.000	73.000		

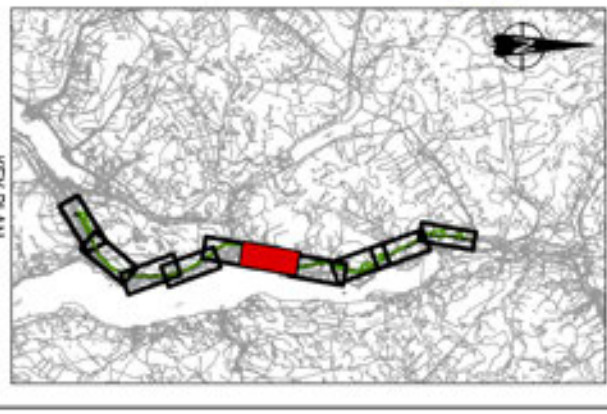
LONGITUDINAL SECTION  
 SCALE 1:2500H/1:500V

### SIGNIFICANT RESIDUAL RISKS

The following table lists any residual risks remaining after the proposed mitigation measures have been implemented. The risks are ranked according to their significance and the likelihood of their occurrence.

Description of Risk	Ref. No.
Climate Change	1
Accidental Incidents	2
Existing Infrastructure	3
Travel	4
Interference with Rail	5
Access to Highways	6
Access to Waterways	7
Construction Method	8
Construction Method	9
Construction Method	10
Construction Method	11
Construction Method	12
Construction Method	13
Construction Method	14
Construction Method	15
Construction Method	16
Construction Method	17
Construction Method	18
Construction Method	19
Construction Method	20

- ### Notes
- Existing information based on surveys provided by others and O&P plans.
  - Any design changes, including earthworks, are preliminary for Design Stage 1 submission purposes only. The design will be developed and refined during Design Stage 2.
  - Any earthworks design assumes a 1:2 slope.
  - Design speed based on 800 kph.



Client: **CH2MHILL FAIRHURST**

Project: **A&P TARGET TO INVERARVAN UPGRADE**

Option: **OPTION 3 HIGH ROAD (TARGET TO GEAR LOCH TO INVERARVAN)**

Sheet: **SHEET 6 OF 10**

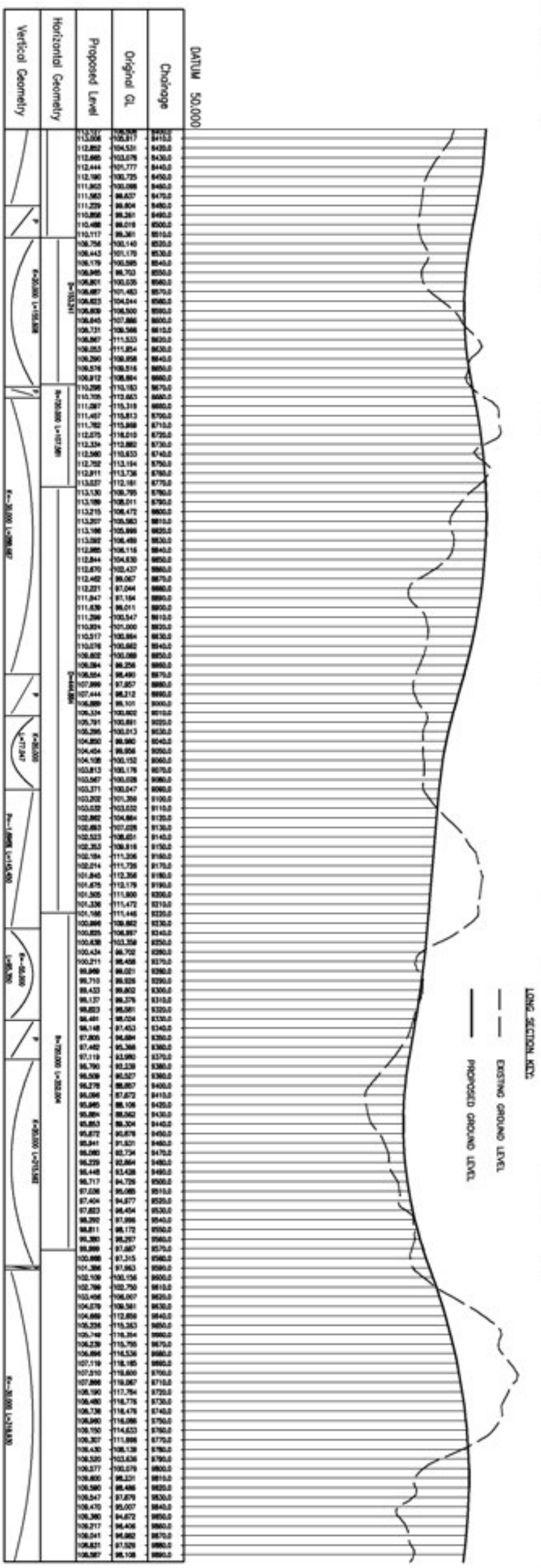
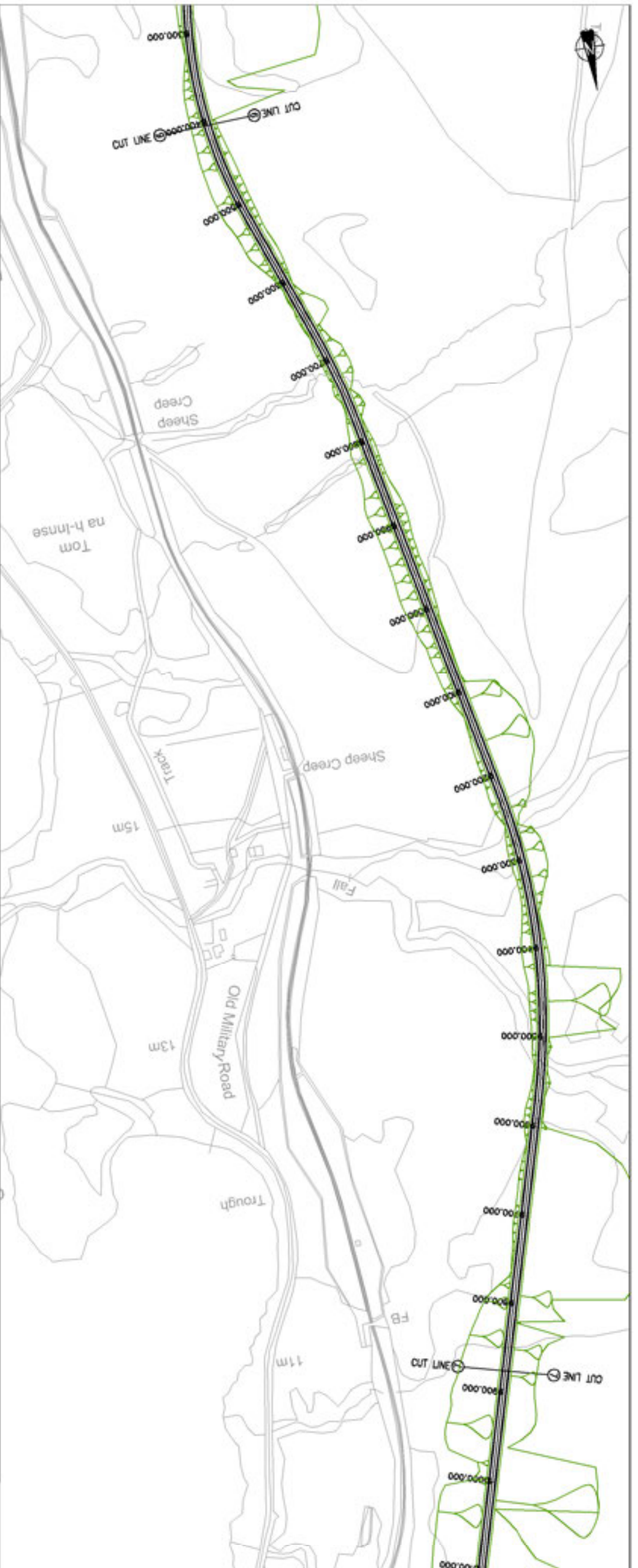
Drawn by: **476416-0000-305**

Checked by: **476416-0000-305**

Scale: **1:2500H/1:500V**

Date: **11/12/23**

Version: **4.0**



DATUM 50.000	
Change	0+000 50.000
Original CL	0+000 50.000
Proposed Level	0+000 50.000
Horizontal Geometry	0+000 50.000
Vertical Geometry	0+000 50.000

LONGITUDINAL SECTION  
SCALE 1:2500H/1:500V

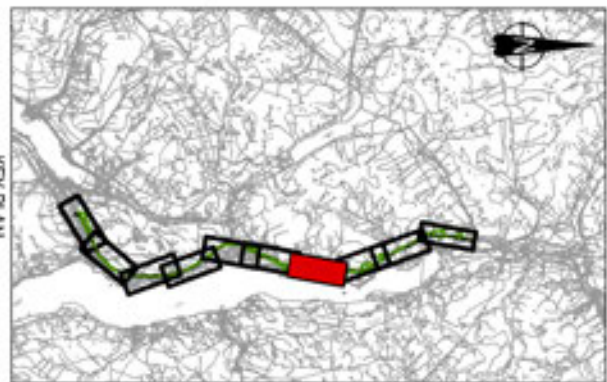
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**SIGNIFICANT RESIDUAL RISKS**

Description of Risk	Risk No.
EXISTING STRUCTURES	1
ADJACENT STRUCTURES	2
EXISTING ROAD	3
EXISTING UTILITIES	4
ADJACENT UTILITIES	5
ADJACENT TO HIGHWAYS	6
ADJACENT TO WATERWAYS	7
ADJACENT TO SENSITIVE AREAS	8
ADJACENT TO HISTORIC SITES	9
ADJACENT TO ENVIRONMENTAL SENSITIVE AREAS	10
ADJACENT TO CULTURAL HERITAGE	11
ADJACENT TO NATURAL HERITAGE	12
ADJACENT TO BIODIVERSITY	13
ADJACENT TO WILDLIFE	14
ADJACENT TO PLANT AND ANIMAL COMMUNITIES	15
ADJACENT TO SOILS	16
ADJACENT TO CLIMATE CHANGE	17
ADJACENT TO AIR QUALITY	18
ADJACENT TO NOISE	19
ADJACENT TO VIBRATION	20

**Notes**

- Existing information based on surveys provided by others and O&P plans.
- Any ground design, including earthworks, is preliminary for Design Stage 1 submission purposes only. The design will be developed and refined during Design Stage 2.
- Any earthworks design assumes a 1:2 slope.
- Design speed based on 800 kph.



**CH2MHILL FAIRHURST**

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Project: **ADD TARGET TO INVERARMAN UPGRADE**

Design: **OPTION 3 HIGH ROAD (TARGET TO GEAR LOCH TO INVERARMAN) SHEET 7 OF 10**

Drawn by: **0300000** Date: 03.11.13  
 Checked by: **0300000** Date: 11.12.13  
 Approved by: **0300000** Date: 11.12.13

Drawing No: **476416-0000-306** Revision: **4.0**

Drawing Scale: 1:2000 (H) 1:500 (V) Plot Scale: **1:500**



LONGITUDINAL SECTION  
SCALE 1:2500H/1:500V

DATUM 50.000	
Chainage	50.000
Original O.L.	171.250
Proposed Level	171.250
Horizontal Geometry	171.250
Vertical Geometry	171.250

LONG SECTION KEYS  
 --- EXISTING GROUND LEVEL  
 --- PROPOSED GROUND LEVEL

**SIGNIFICANT RESIDUAL RISKS**

The following table lists any residual risks remaining after the proposed works and any measures to be taken to avoid, reduce or control these risks.

Description of Risk	Risk No.
EXISTING STRUCTURES	1
ADJACENT ACTIVITIES	2
EXISTING ROAD USE	3
TRAFFIC	4
INTERFERENCE WITH PUBLIC SERVICES	5
HAZARD TO ROADWAY	6
HAZARD TO UTILITIES	7
ENVIRONMENTAL IMPACTS	8
CONSTRUCTION SAFETY	9
OVERHEAD CABLES	10
OVERHEAD POWER LINES	11
ADJACENT PLANTS, TREES & FOLIAGE	12

- Notes**
- Existing information based on surveys provided by others and OIE plans.
  - Any ground design, including earthworks, shall be preliminary for Stage 1 submission purposes only. The design will be developed and refined during Stage 2.
  - Any earthworks design assumes a 1:2 slope.
  - Design speed based on 800 kph.



No.	Rev.	Date	Description
1.0	1.0	11/11/2023	Issue for tender
2.0	1.0	11/11/2023	Issue for tender
3.0	1.0	11/11/2023	Issue for tender
4.0	1.0	11/11/2023	Issue for tender

**CH2MHILL FAIRHURST**

CH2M HILL FAIRHURST  
 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200

Project: A&P TARGET TO INVERARVAN UPGRADE

Option: OPTION 3  
 HIGH ROAD  
 (TARGET TO GEAR LOCH TO INVERARVAN)  
 SHEET 8 OF 10

Drawn by: D. BROWN Date: 05/11/23  
 Checked by: E. MCKENZIE Date: 15/11/23  
 Approved by: T. SMITH Date: 15/11/23

Drawing No: **476416-0000-307** Revision: **4.0**

Drawing Scale: 1:2500H/1:500V (1:2500H/1:500V) Plot Scale: 1:2500H/1:500V



LONGITUDINAL SECTION  
SCALE 1:2500H/1:500V

**SIGNIFICANT RESIDUAL RISKS**

The following table identifies any residual risks remaining after the proposed works and the design team has taken the appropriate and reasonable steps to reduce the risk.

Description of Risk	Risk No.
EXISTING STRUCTURES	1
ADJACENT ACTIVITIES	2
RESIDENTS	3
TRAFFIC	4
REINFORCEMENT WITHIN ROAD	5
ROAD TO BE MAINTAINED	6
ROAD TO BE MAINTAINED	7
CONTRACT RETENTION	8
CONTRACT RETENTION	9
CONTRACT RETENTION	10
CONTRACT RETENTION	11
CONTRACT RETENTION	12
CONTRACT RETENTION	13
CONTRACT RETENTION	14
CONTRACT RETENTION	15
CONTRACT RETENTION	16
CONTRACT RETENTION	17
CONTRACT RETENTION	18
CONTRACT RETENTION	19
CONTRACT RETENTION	20

- Notes**
- Existing information based on surveys provided by others and O&P plans.
  - Any design, including earthworks, shall be preliminary for Stage 1 submission purposes only. The design will be developed and refined during Stage 2.
  - Any earthworks design assumes a 1:2 slope.
  - Design speed based on 800 kph.



No.	Rev.	Date	Description
1.0	1.0	11/11/2020	Issue for tender
1.0	1.1	11/11/2020	Design team has been appointed
1.0	1.2	11/11/2020	Final design and construction documents
1.0	1.3	11/11/2020	Final design and construction documents
1.0	1.4	11/11/2020	Final design and construction documents

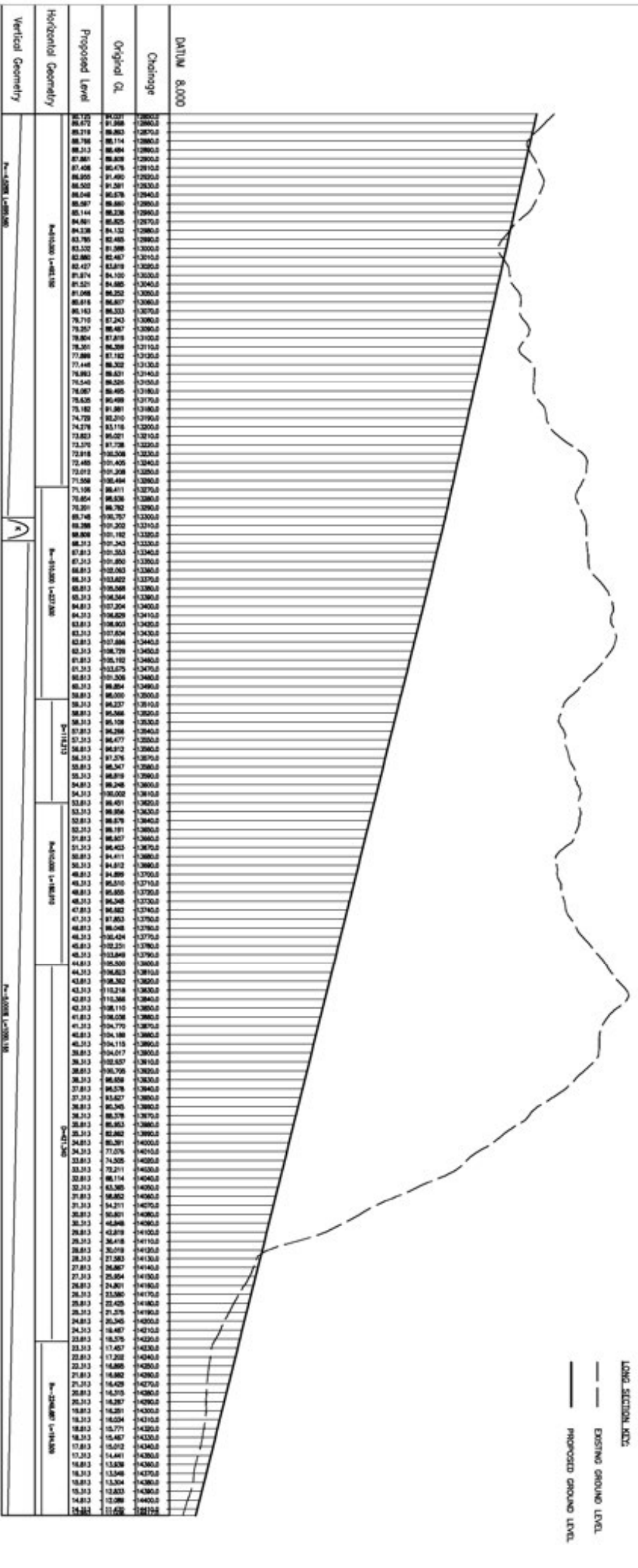
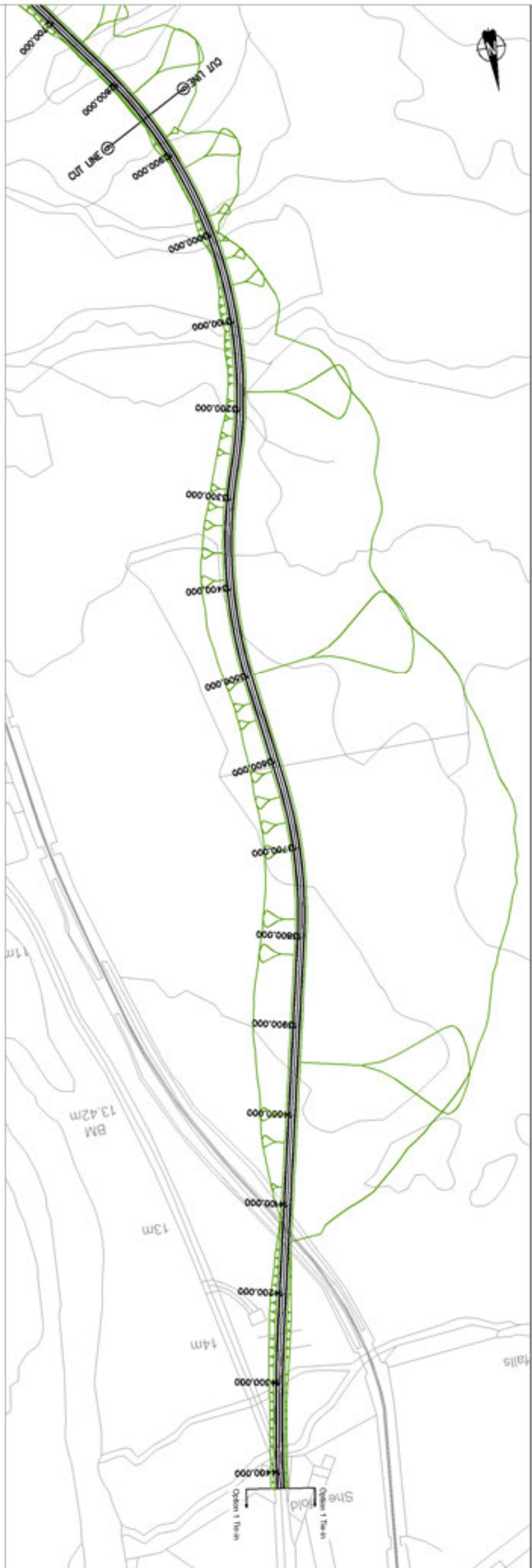
**CH2MHILL FAIRHURST**

CH2M HILL FAIRHURST JV  
 CH2M HILL FAIRHURST JV  
 CH2M HILL FAIRHURST JV  
 CH2M HILL FAIRHURST JV

**OPTION 3**  
**HIGH ROAD**  
**TARGET TO GEAR LOCH TO INVERARMAN**  
**SHEET 9 OF 10**

Drawn by: 030002 Date: 01/11/20  
 Checked by: 030002 Date: 11/11/20  
 Approved by: 030002 Date: 11/11/20  
 Drawing No: 476416-0000-308  
 Drawing Scale: 1:2500H/1:500V  
 Date: 11/11/20  
 Project No: 476416-0000-308  
 Project Name: HIGH ROAD TARGET TO GEAR LOCH TO INVERARMAN  
 Project Location: SHEET 9 OF 10

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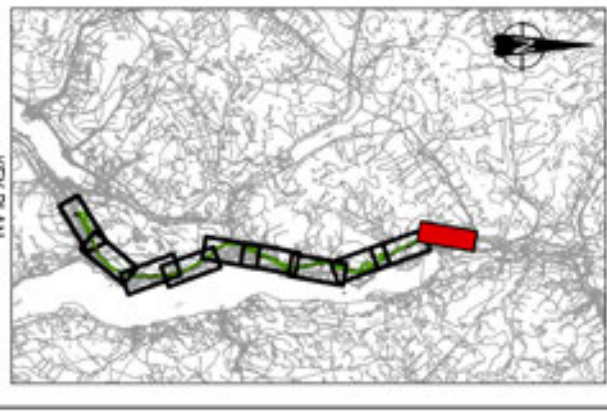


### SIGNIFICANT RESIDUAL RISKS

The following information is provided to assist the client in understanding the risks associated with the proposed project. It is intended to be used in conjunction with the other information provided in this report.

Description of Risk	Risk No.
Climate Change	1
Asbestos	2
Historic Heritage	3
Tree Retention	4
Watercourse	5
Soil Contamination	6
Groundwater	7
Archaeology	8
Overhead Cables	9
Adjacent Properties	10
Adjacent Traffic	11
Adjacent Noise	12

- ### Notes
- Existing information based on surveys provided by others and O&P plans.
  - Any design, including earthworks, is preliminary for Stage 1 submission purposes only. The design will be developed and refined during Stage 2.
  - Any earthworks design assumes a 2 degree design speed based on 800 kph.



Rev.	Date	Description	By	Check
1.0	11/11/2020	Issue for client review	JM	AM
2.0	11/11/2020	Revised design	JM	AM
3.0	11/11/2020	Final design	JM	AM

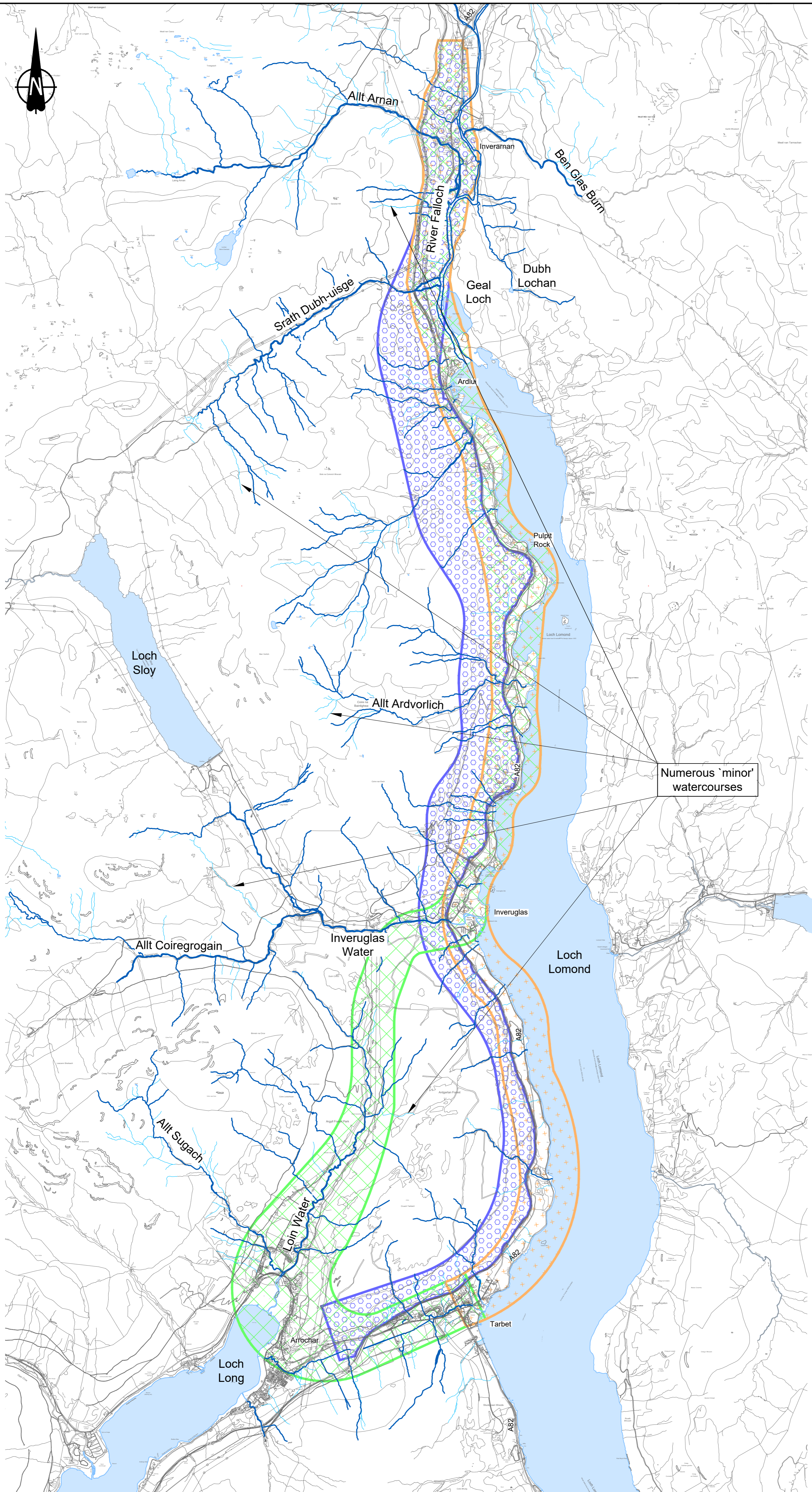
**CH2MHILL FAIRHURST**  
 CIVIL ENGINEERING  
 10000 14th Avenue, Suite 100  
 Edmonton, Alberta T5C 1K7  
 Tel: 780-443-7200 Fax: 780-443-7201  
 www.ch2mhill.com

**476416-0000-309**  
 HIGH ROAD  
 (TARGET TO GEAR LOCH TO INVERANMAN)  
 SHEET 10 OF 10  
 SCALE: 1:2500H/1:500V

Drawn by: J. BROWN Date: 03/11/21  
 Checked by: J. BROWN Date: 11/11/21  
 Approved by: J. BROWN Date: 11/11/21  
 Drawing No: 476416-0000-309  
 Drawing Scale: 1:2500H/1:500V  
 Date: 11/11/21  
 Project: HIGH ROAD

Prepared by: CH2MHILL  
 Office: Edmonton  
 Date: 11/11/21

LONGITUDINAL SECTION  
 SCALE 1:2500H/1:500V



**Key:**

- + Route Corridor 1
- + Route Corridor 2
- + Route Corridor 3

**Water Designations:**

- Water Body (loch/loch/pond)
- Major Watercourse (shown on 1:50,000 OS Map)
- Minor Watercourse

**Notes:**


1. Only water bodies of significance to the scheme have been shown.
2. Full extents of water bodies not shown.
3. Other water bodies not shown on this drawing may also be present in the area of interest.

Numerous 'minor' watercourses

SIGNIFICANT RESIDUAL RISKS	
<i>The following list provides a cross reference between this drawing and the Designer's Health and Safety Risk Assessment, and identifies those areas of Significant Residual Risk:</i>	
Description of Risk	Ref. No.
CLIENT OPERATIONS	1
ADJACENT ACTIVITIES	2
RESTRICTED SITE	3
TRAFFIC	4
INTERFACE WITH PUBLIC	5
NEAR TO HIGHWAYS	6
NEAR TO RAILWAYS	7
NEAR TO WATERWAYS	8
GROUND INSTABILITY	9
CONTAMINATION/SOIL GAS	10
GROUND WATER	11
INUNDATION	12
SERVICES	13
OVERHEAD CABLES	14
INSECT ATTACK (INCL. MIDGE & TICKS)	15

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Revision	By	Checked	Approved	Date	Description
1.0	KAB	MLJ	ELC	15.11.13	Draft issue.
2.0	KAB	MLJ	ELC	12.12.13	Minor presentational amendments. Significant residual risks box revised.
3.0	CK	MLJ	ELC	28.02.14	Consultant's logo revised

Client:   
 The Scottish Government

**CH2MHILL. FAIRHURST**  
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Project: **A82 TARBET TO INVERARNAN UPGRADE**

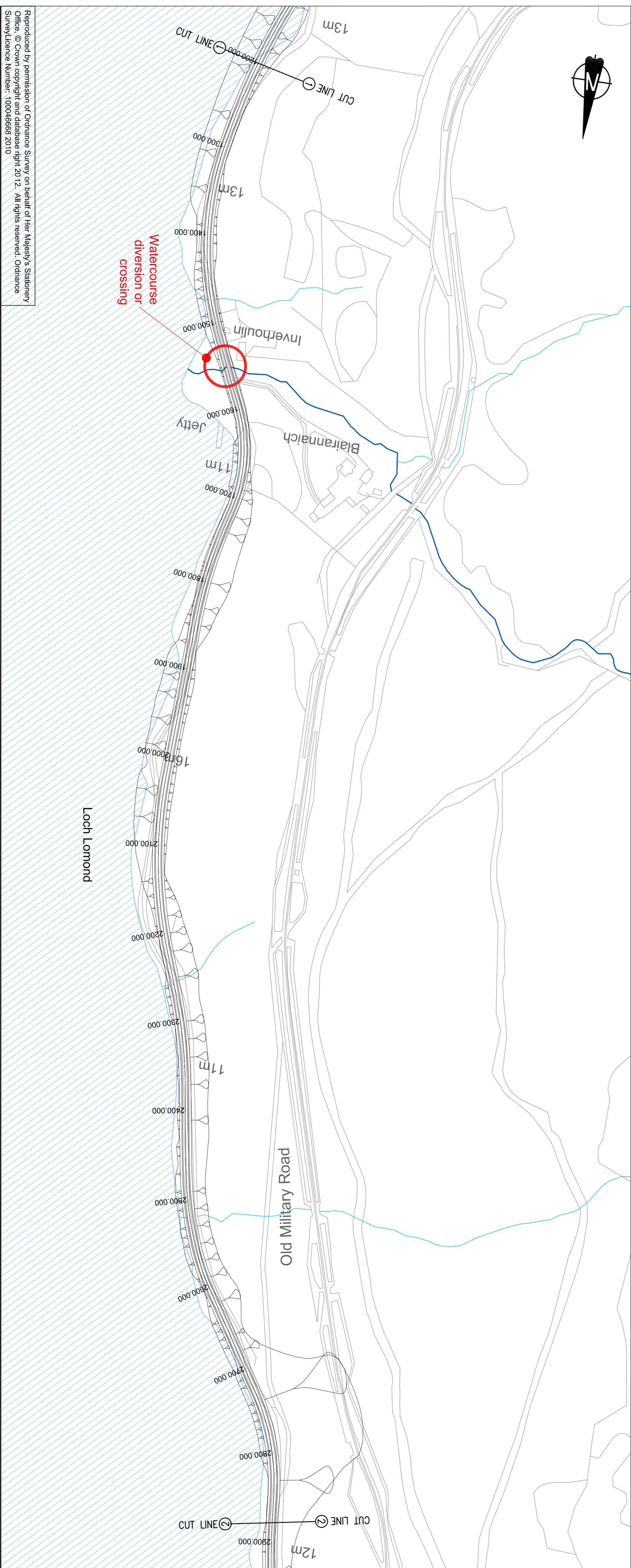
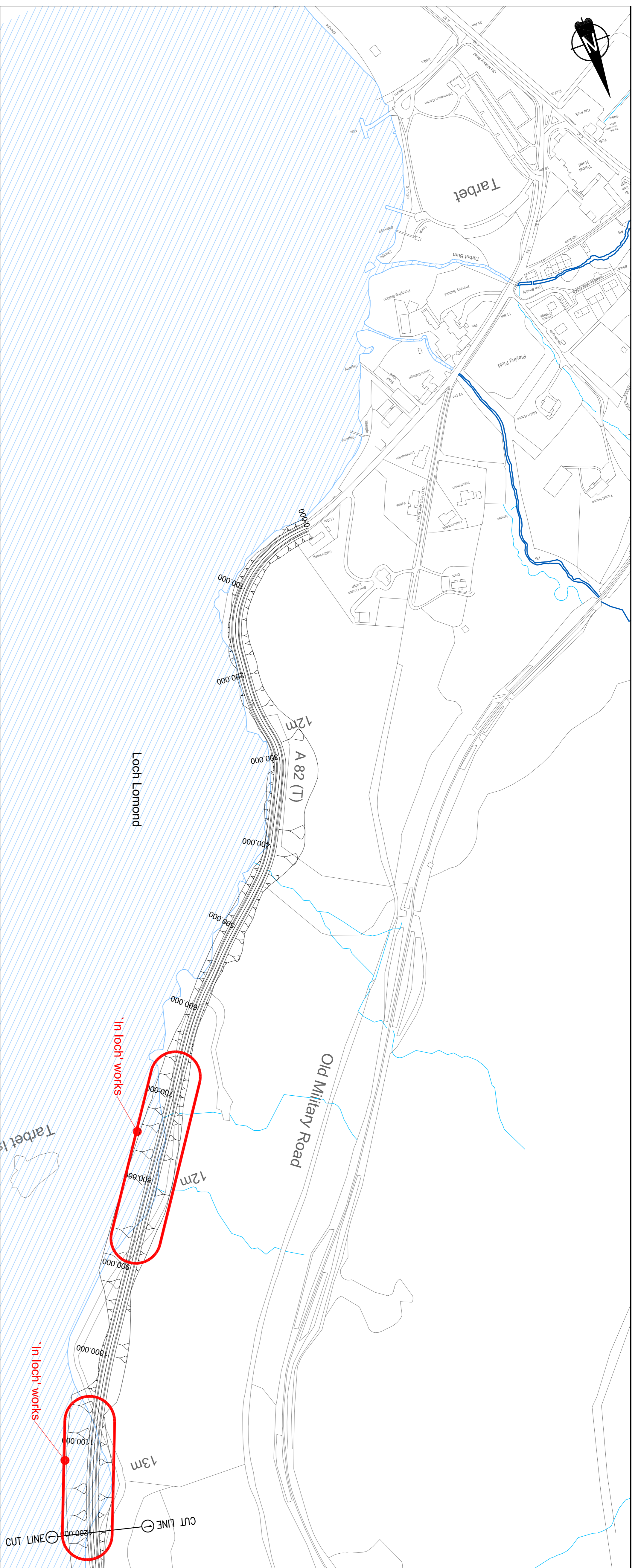
Drawing Title: **WATER FEATURES LOCATION PLAN**

Drawn by: KAB Date: 28/10/13  
 Checked by: MLJ Date: 12/11/13  
 Approved by: ELC Date: 12/11/13

Drawing No. **476416-0500-001** Revision **3.0**

Drawing Scale: 1:25,000 at A1 (1:50,000 at A3)  
 CAD Filename:





**SIGNIFICANT RESIDUAL RISKS**

The following table provides a cross reference between the drawing and the Designer's Health and Safety Risk Assessment, and identifies those areas of Significant Residual Risk

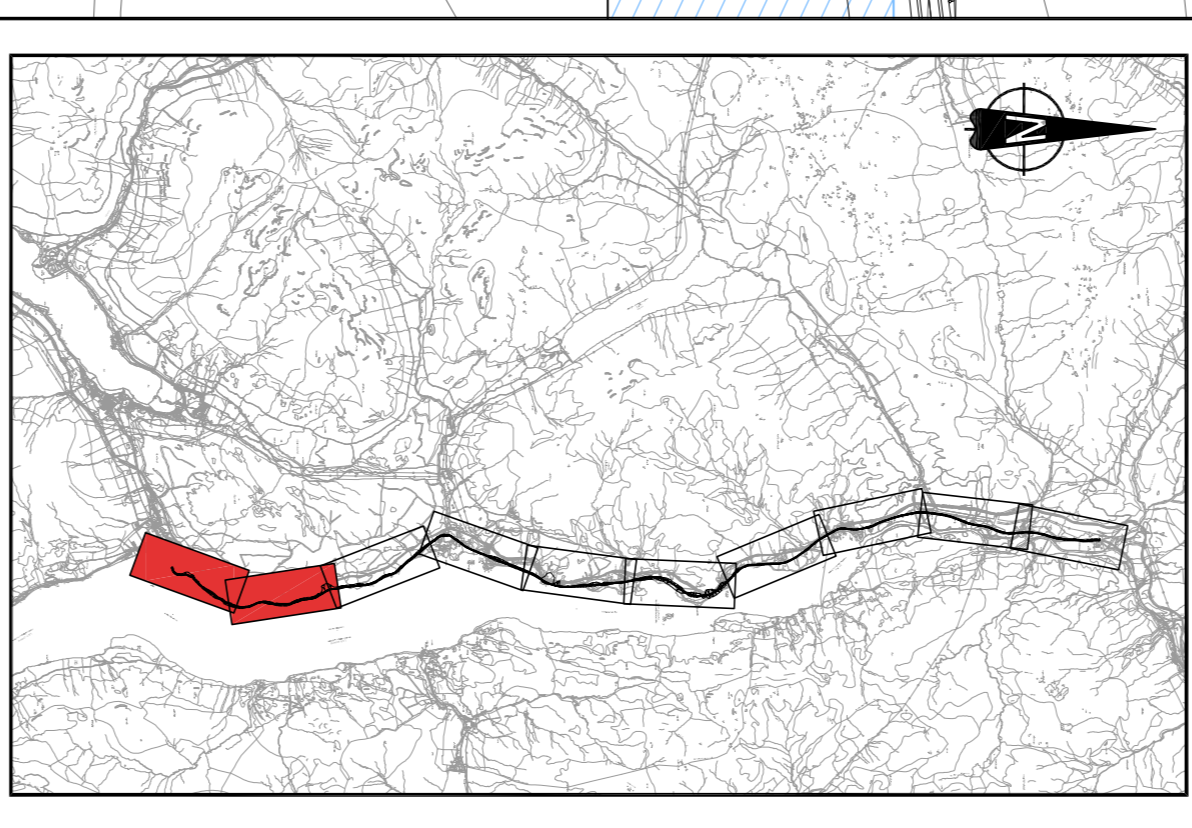
Description of Risk	Ref. No.
CLIENT OPERATIONS	1
ADJACENT ACTIVITIES	2
RESTRICTED SITE	3
TRAFFIC	4
INTERFERENCE WITH PUBLIC	5
NEAR TO HIGHWAYS	6
NEAR TO WATERWAYS	7
GROUND INSTABILITY	8
CONTAMINATION/SOIL GAS	9
GROUND WATER	10
INUNDATION	11
SERVICES	12
OVERHEAD CABLES	13
INSECT ATTRACK (MICE & TICKS)	14
	15

Notes:

1. Alignment design, including earthworks extent, is preliminary for DMRB Stage 1. The design will be developed and refined during DMRB Stage 2.
2. Engineering interventions have been noted for 'major' watercourses (shown on 1:50,000 OS Map) only. However engineering works will also be required on the 'minor' watercourses.
3. No drainage outfall locations shown.
4. Watercourse crossing denotes culvert or bridge.
5. Other water features not shown on the drawing may also be present in the area of interest.

Key:

- Major watercourse (shown on 1:50,000 OS Map)
- Minor watercourse
- Water body (loch/dam/pond)



KEY PLAN

Rev	By	Chkd	Layout	Date	Description
3.0	CK	MLJ	ELC	28/02/14	Consultant's sign-off/checked
2.0	KAB	MLJ	ELC	12/12/13	Minor professional review/checked
1.0	CK	MLJ	ELC	12/12/13	Submitted for approval/checked

Client:

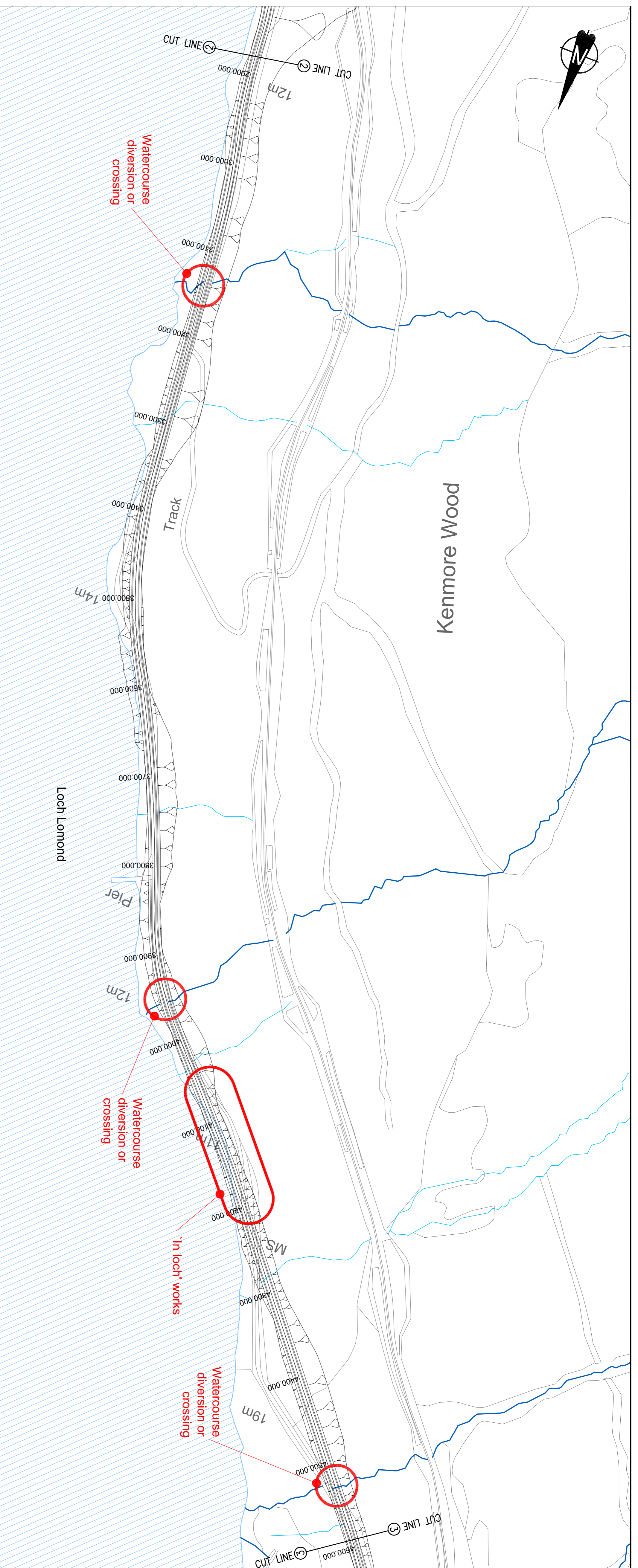
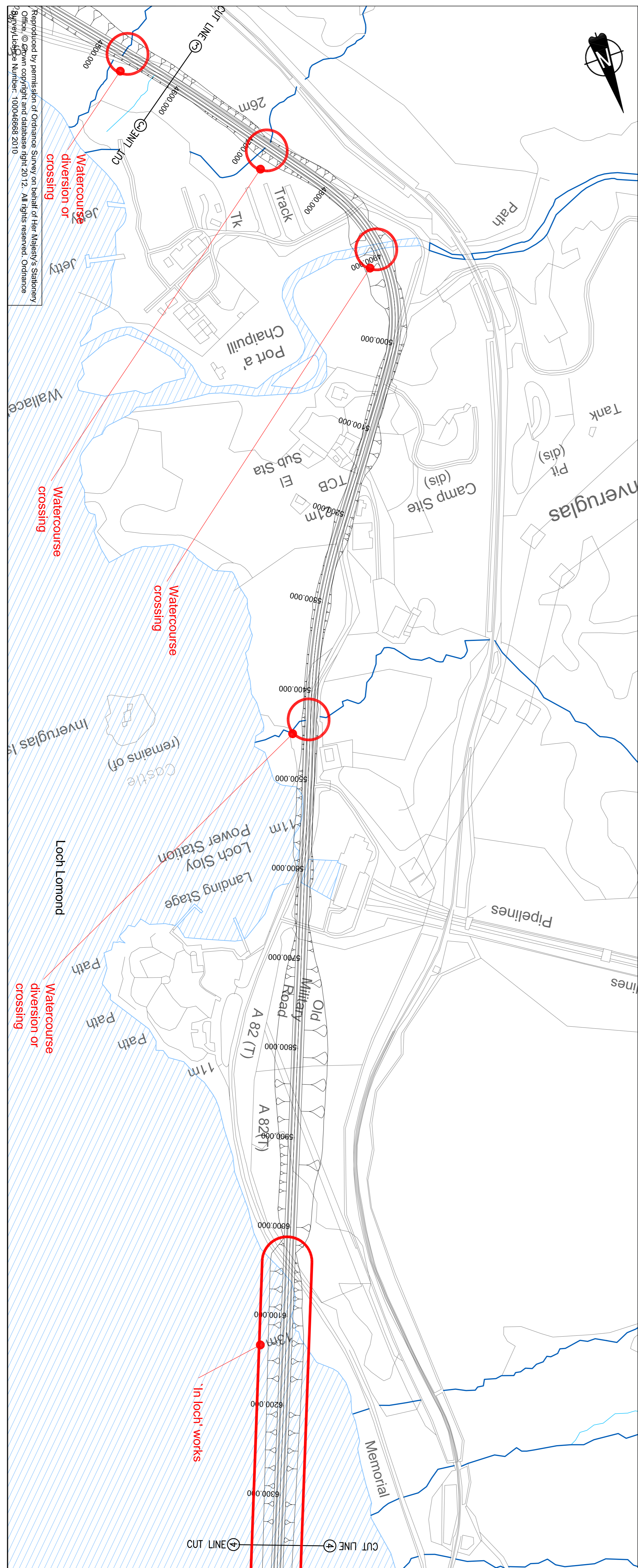


**CH2MHILL** **FAIRHURST**  
 CH2M Hill Fairhurst JV  
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Project:  
**A82 TARBET TO INVERARVAN UPGRADE**

Drawing:  
**OPTION 1**  
**ENGINEERING ASSESSMENT**  
**DRAINAGE AND WATER ENVIRONMENT**  
**SHEET 1 OF 5**

Drawn by: KAB Date: 07/11/13  
 Checked by: MLJ Date: 11/11/13  
 Approved by: ELC Date: 11/11/13  
 Drawing No: **476416-0500-002** Revision: **3.0**  
 Drawing Scale: 1:2500 at A1 (1:3000 at A3) Plot Scale:  
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**SIGNIFICANT RESIDUAL RISKS**

The following list provides a cross reference between this drawing and the Designer's Health and Safety Risk Assessment, and defines those areas of Significant Residual Risk.

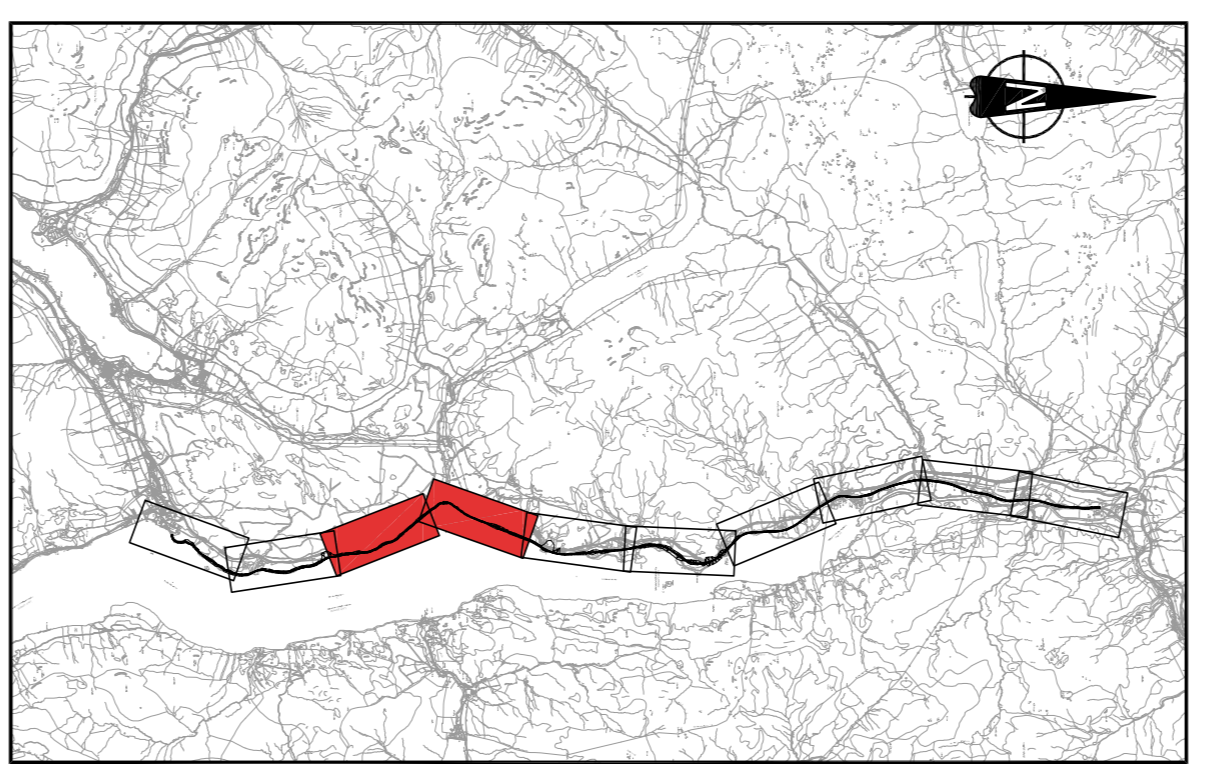
Description of Risk	Ref. No.
CLIENT OPERATIONS	1
ADJACENT ACTIVITIES	2
RESTRICTED SITE	3
TRAFFIC	4
INTERFERENCE WITH PUBLIC	5
NEAR TO HIGHWAYS	6
NEAR TO WATERWAYS	7
GROUND INSTABILITY	8
CONTAMINATION/SOIL GAS	9
GROUND WATER	10
INUNDATION	11
SERVICES	12
OVERHEAD CABLES	13
INSECT ATTACK (INCL. LINDSEY & TICKS)	14
	15

Notes:

- Alignment design, including earthworks extent, is preliminary for DMRB Stage 1. The design will be developed and refined during DMRB Stage 2.
- Engineering interventions have been noted for 'major' watercourses (shown on 1:50,000 OS Map) only. However engineering works will also be required on the 'minor' watercourses.
- No drainage outfall locations shown.
- Watercourse crossing denotes culvert or bridge.
- Other water features not shown on the drawing may also be present in the area of interest.

Key:

- Major watercourse (shown on 1:50,000 OS Map)
- Minor watercourse
- Water body (topographical)



**CH2MHILL** **FAIRHURST**

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Client: **AS2 TARBET TO INVERARVAN UPGRADE**

Project: **OPTION 1  
ENGINEERING ASSESSMENT  
DRAINAGE AND WATER ENVIRONMENT  
SHEET 2 OF 5**

Drawn By: KAB Date: 07/11/13  
 Checked by: ILL Date: 11/11/13  
 Approved by: ELC Date: 11/11/13

Drawing No: **476416-0500-003** Revision: **3.0**

Drawing Scale: 1:2500 at A1 (1:3000 at A3) Pkg. Scale:  
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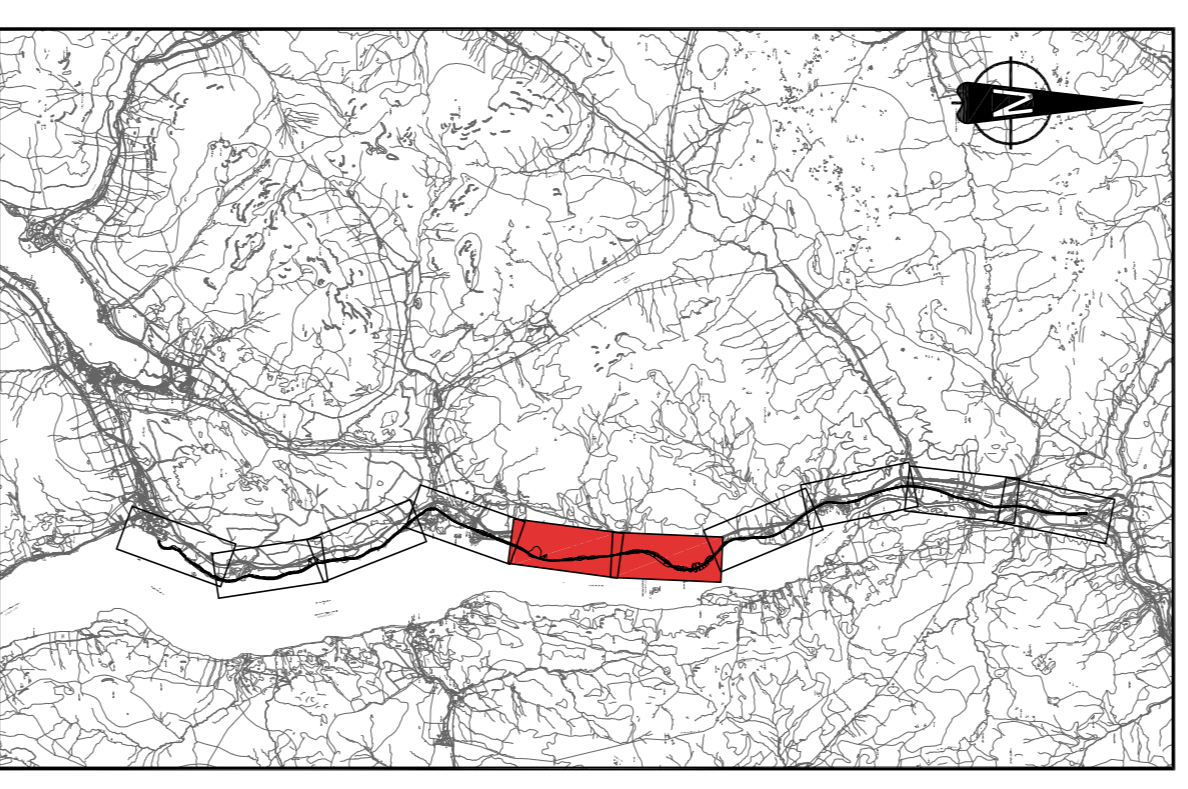
**SIGNIFICANT RESIDUAL RISKS**

The following provides a cross reference between the drawing and the Designer's Health and Safety Risk Assessment, and defines those areas of Significant Residual Risk.

Description of Risk	Ref. No.
CLIENT OPERATIONS	1
ADJACENT ACTIVITIES	2
RESTRICTED SITE	3
TRAFFIC	4
INTERFERENCE WITH PUBLIC	5
NEAR TO HIGHWAYS	6
NEAR TO RAILWAYS	7
NEAR TO WATERWAYS	8
GROUND INSTABILITY	9
CONTAMINATION/SOIL GAS	10
GROUND WATER	11
INUNDATION	12
SERVICES	13
OVERHEAD CABLES	14
UNSEEN AT RACK (INCL. LIMBS & TIGS)	15

Notes:  
 1. Alignment design, including earthworks extent, is preliminary for DMRB Stage 1. Design and construction details will be developed and refined during DMRB Stage 2.  
 2. Engineering interventions have been noted for 'major' watercourses (shown on 1:50,000 OS Map) only. However engineering works will also be required on the 'minor' watercourses.  
 3. No drainage outfall locations shown.  
 4. Watercourse crossing denotes culvert or bridge.  
 5. Other water features not shown on the drawing may also be present in the area of interest.

- Key:
- Major watercourse (shown on 1:50,000 OS Map)
  - Minor watercourse
  - Water body (loch/lochann/pond)



**KEY PLAN**

Rev	By	Chkd	Layout	Date	Description
3.0	CK	NLU	ELC	26/02/14	Consultant's logo updated.
2.0	KAB	NLU	ELC	12/12/13	Minor professional details amendments.
1.0	CK	NLU	ELC	12/12/13	Stage 1 design and construction details.

Client:

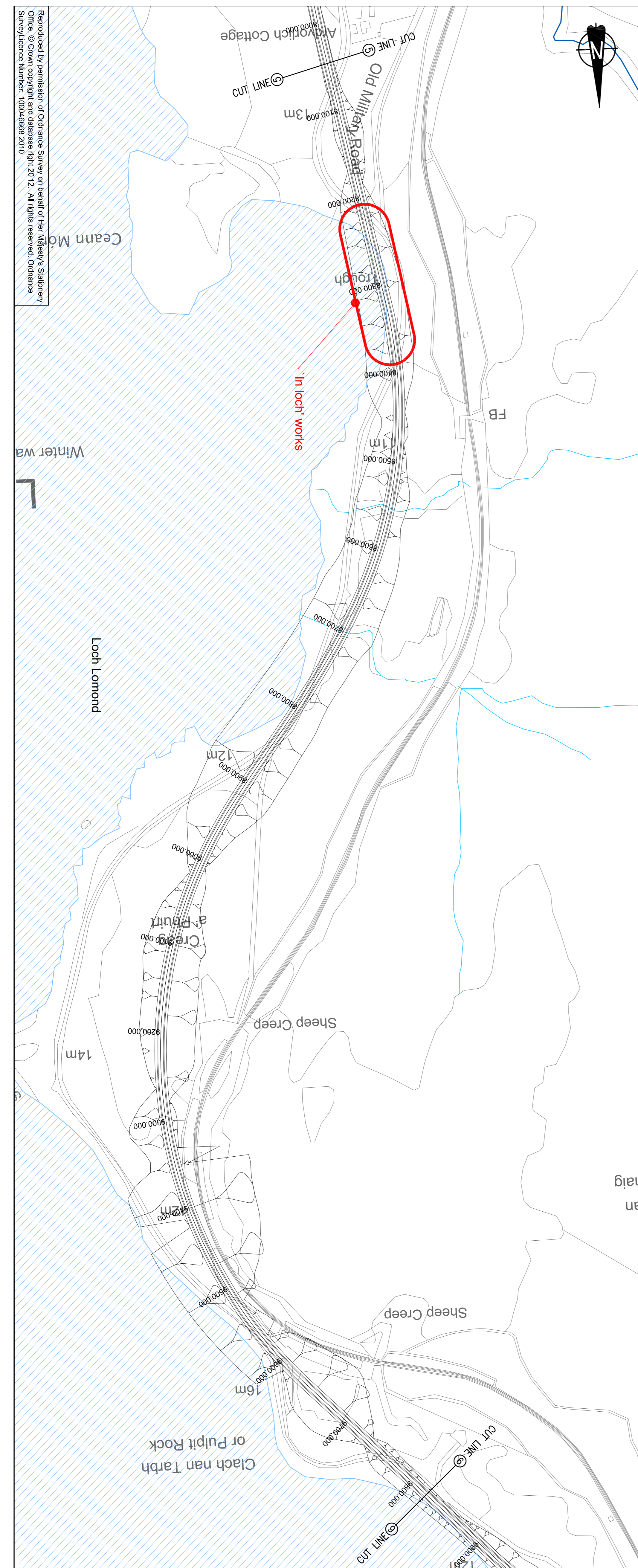
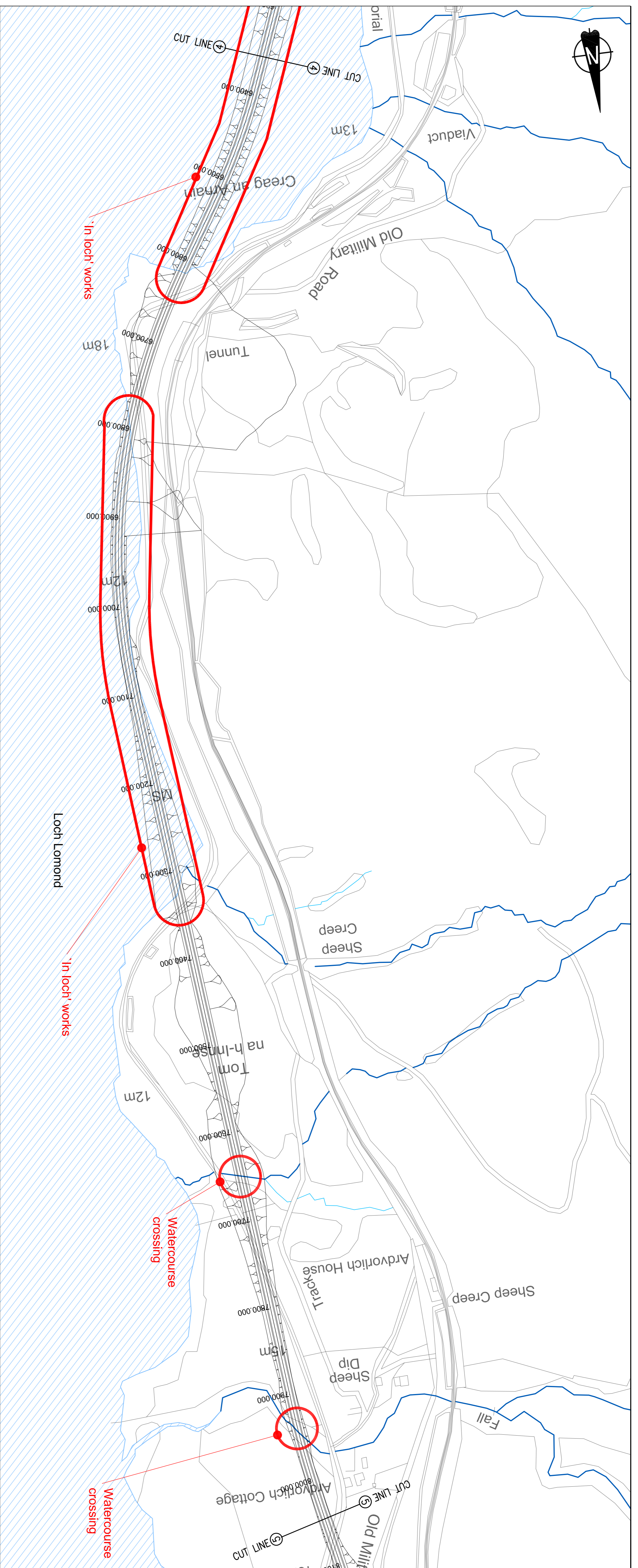
**CH2MHILL** **FAIRHURST**

**CH2M Hill** Fairhurst JV  
 C/O CH2M Hill, 380 Strathclyde Parade Glasgow, G3 7 3AU  
 Tel: +44 (0)141 552 2000 Fax: +44 (0)141 552 2525

Project:  
**A82 TARBET TO INVERARVAN UPGRADE**

Drawing:  
**OPTION 1  
 ENGINEERING ASSESSMENT  
 DRAINAGE AND WATER ENVIRONMENT  
 SHEET 3 OF 5**

Drawn By: KAB Date: 07/11/13  
 Checked by: NLU Date: 11/11/13  
 Approved by: ELC Date: 11/11/13  
 Drawing No: **476416-0500-004** Revision: **3.0**  
 Drawing Scale: 1:2500 at A1 (1:5000 at A3) Plot Scale:  
 OAD Filename: Page:



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**SIGNIFICANT RESIDUAL RISKS**

The following table provides a cross reference between the drawing and the Designer's Health and Safety Risk Assessment, and defines those areas of Significant Residual Risk

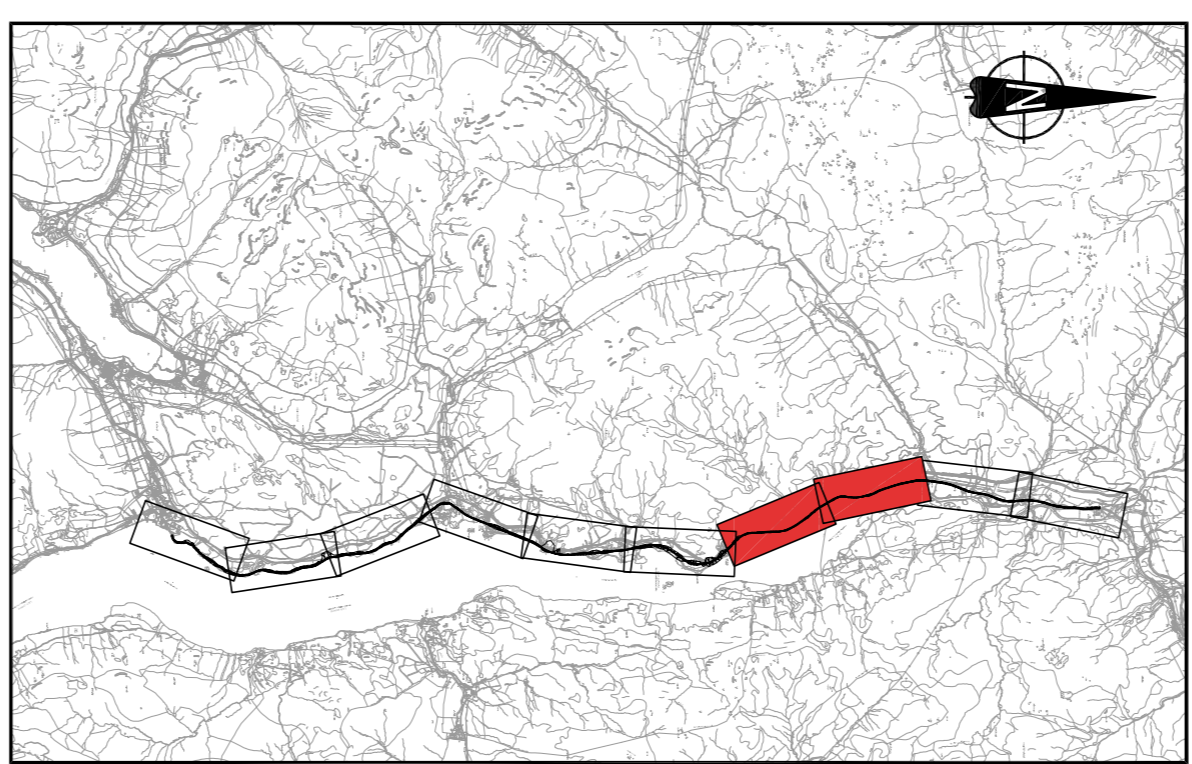
Description of Risk	Ref. No.
CLIENT OPERATIONS	1
ADJACENT ACTIVITIES	2
RESTRICTED SITE	3
TRAFFIC	4
INTERFERENCE WITH PUBLIC	5
NEAR TO HIGHWAYS	6
NEAR TO RAILWAYS	7
NEAR TO WATERWAYS	8
GROUND INSTABILITY	9
CONTAMINATION/SOIL GAS	10
GROUND WATER	11
INUNDATION	12
SERVICES	13
OVERHEAD CABLES	14
INSECT ATTRACK (INCL. MIDGE & TICKS)	15

Notes:

1. Alignment design, including earthworks extent, is preliminary for DMRB Stage 1 and has not been approved. The design will be developed and refined during DMRB Stage 2.
2. Engineering interventions have been noted for 'major' watercourses (shown on 1:50,000 OS Map) only. However engineering works will also be required on the 'minor' watercourses.
3. No drainage outfall locations shown.
4. Watercourse crossing denotes culvert or bridge.
5. Other water features not shown on the drawing may also be present in the area of interest.

Key:

- Major watercourse (shown on 1:50,000 OS Map)
- Minor watercourse
- Water body (topographical)



**KEY PLAN**

Rev	By	Chkd	Issued	Date	Description
3.0	CK	MLJ	ELC	28/02/24	Consultation sign updated
2.0	KAB	MLJ	ELC	12/12/23	Minor presentation amendments
1.0	CK	MLJ	ELC	07/11/23	Issue for consultation

Client: **CH2MHILL** **FAIRHURST**

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 C/O: CH2M Hill, 380, Market Road, Paisley, Glasgow, G13 3AU  
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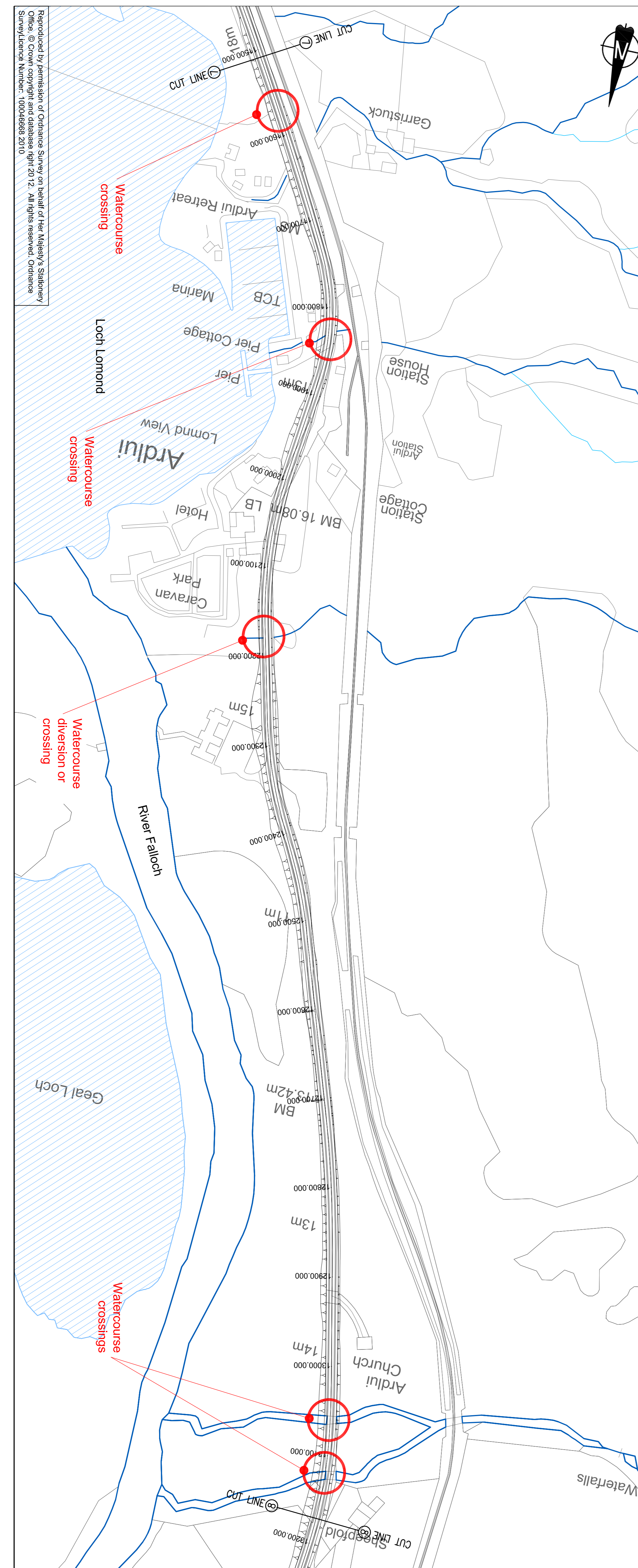
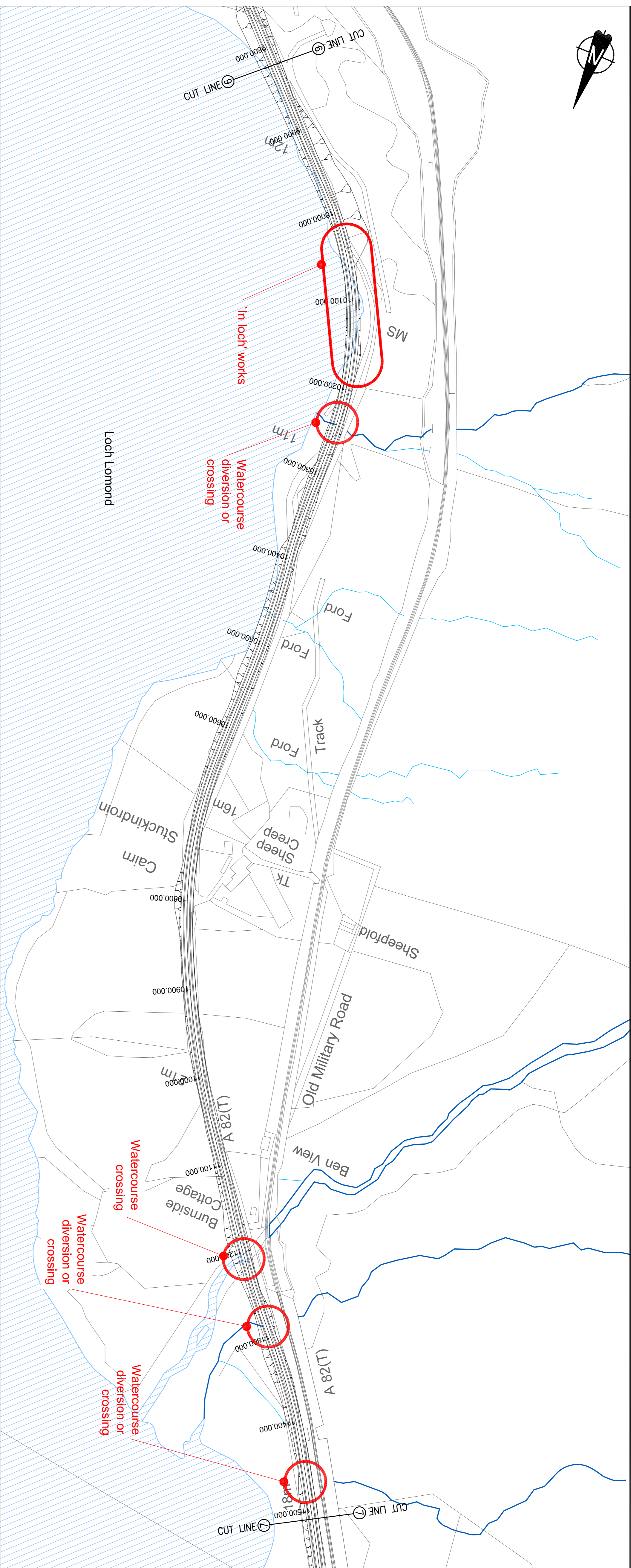
Project: **A82 TARBET TO INVERARVAN UPGRADE**

Drawing: **OPTION 1  
ENGINEERING ASSESSMENT  
DRAINAGE AND WATER ENVIRONMENT  
SHEET 4 OF 5**

Drawn By: KAB Date: 07/11/23  
 Checked By: MLJ Date: 11/11/23  
 Approved By: ELC Date: 11/11/23

Drawing No: **476416-0500/005** Revision: **3.0**

Drawing Scale: 1:2500 at A1 (1:5000 at A3)  
 Pkg. Scale:  
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 Reference file path: L:\97376\Current\Drawings\0500 Drainage\  
 User and Plot Date: cckley; 28/2/2024 - 12 pm



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