

Proposed Ardderroo Wind Farm Development, Co. Galway

Planning Permission Application Drawings



Planning & Environmental Consultants

Schedule of Drawings

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 7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
 8. Final levels may vary depending on local ground conditions.

Drawing Legend

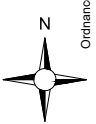
— Planning Application Boundary

Location Context Map

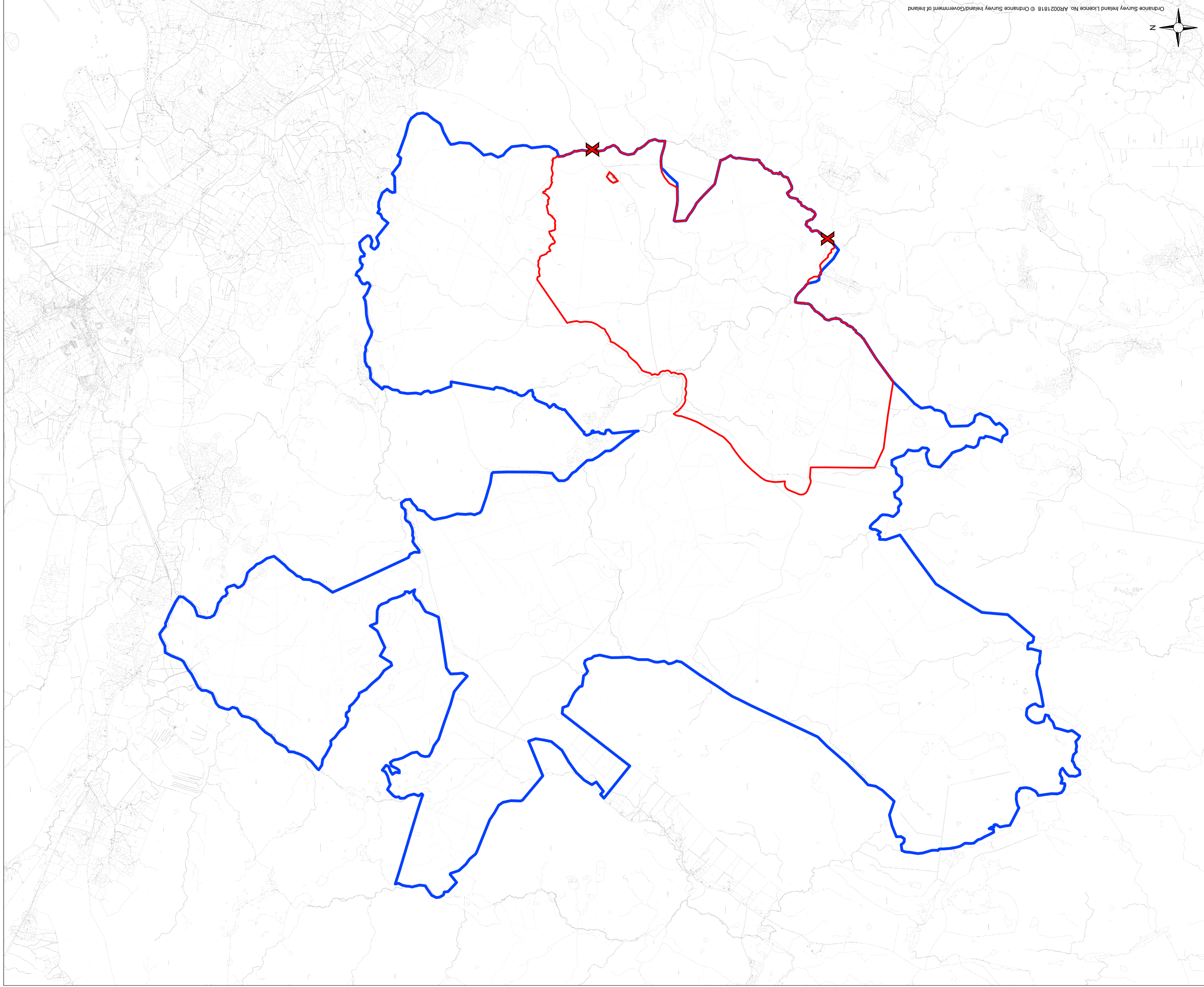
PROJECT TITLE:
Arderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT NO: 160815	DRAWING NO: 0815 - 01
SCALE: 1:50,000 @ A3	DATE: 22.11.2018
OS SHEET NO.: OS1022, OS1024, OS1222, OS1224	

McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthynos.ie
 website: www.mccarthynos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279



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DRAWING TITLE

Site Location Map

PROJECT TITLE: **Ardderoo Wind Farm, Co. Galway**

DRAWING BY: **Joseph O'Brien** CHECKED BY: **Jimmy Green**

PROJECT NO: **160815** DRAWING NO: **0815 - 02**

SCALE: **1:50,000 @A3** DATE: **22.11.2018**

OS SHEET No.: **SP16 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**

Drawing Legend

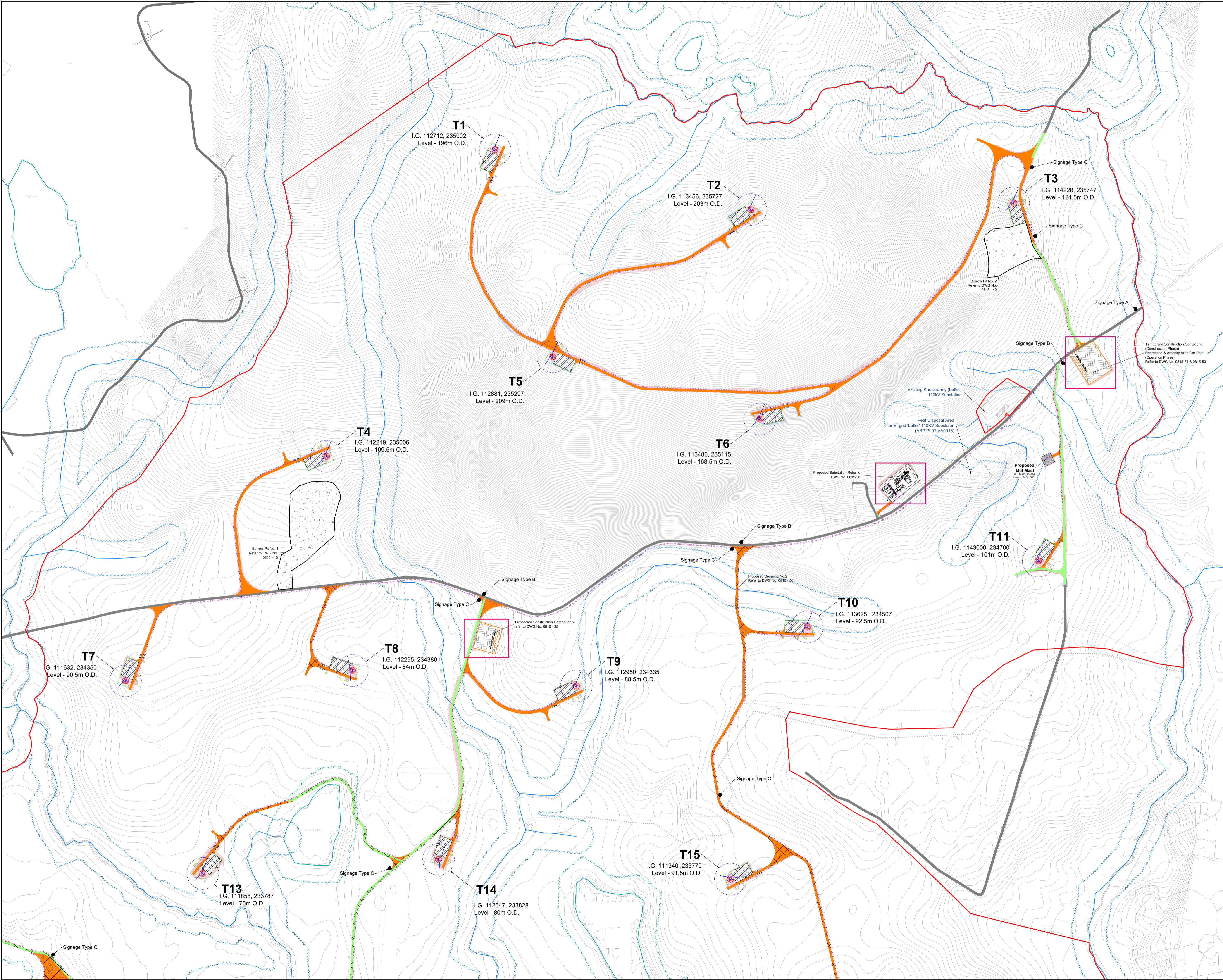
- Planning Application Boundary
- Landowners Boundary
- X Site Notice

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McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthkys.ie
 website: www.mccarthkys.ie
 Tel: +353 91 735611
 Fax: +353 91 772719



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Drawing Legend

	Planning Application Boundary
	Existing Road To Be Upgraded
	Existing Floating Road to be Upgraded
	Proposed New Road
	Proposed New Floating Road
	Existing Road
	Works Area
	Soft Levelled Area
	Crane Pad Hardstanding Area
	Borrow Pit
	Indicative Internal Electrical Cable Trench
	Turbine and Swept Area
	Turbine Foundation
	River/Stream
	River/Stream Buffer 50m
	Lakes
	Lakes 50m Buffer
	Recreation Signage
	Indicative Cut
	Indicative Fill
	Indicative Grid Connection Cabling Route

DRAWING TITLE:
Site Layout Plan
Sheet 1 of 3

PROJECT TITLE:
 Ardderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT NO.: 160815	DRAWING NO.: 0815 - 04
SCALE: 1:5,000 @A1	DATE: 22.11.2018

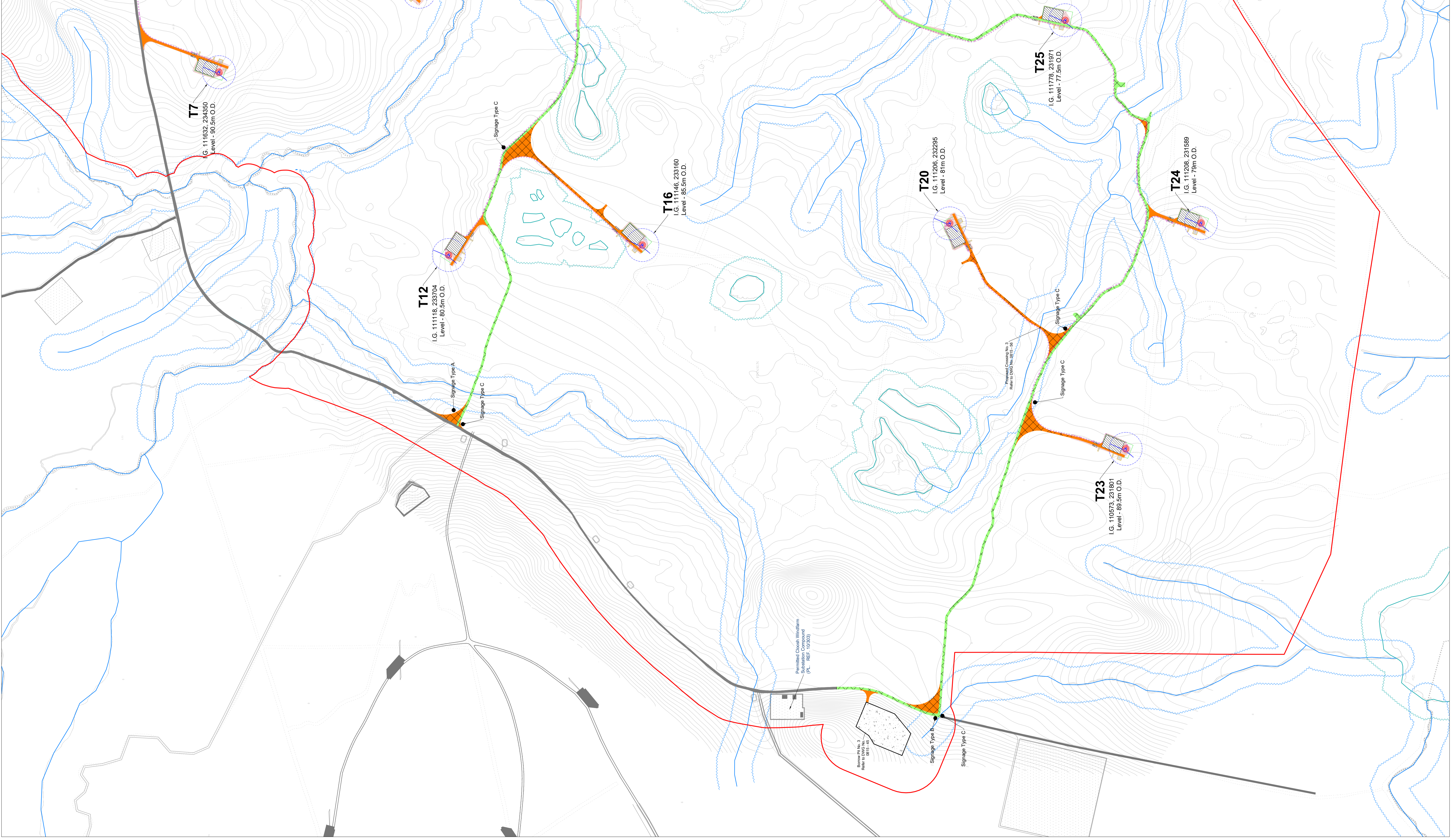
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McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279

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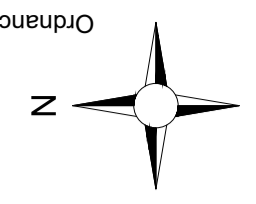
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Drawing Legend

- Planning Application Boundary
- Existing Road To Be Upgraded
- Existing Floating Road to be Upgraded
- Proposed New Road
- Proposed New Floating Road
- Existing Road
- Works Area
- Soft Levelled Area
- Crane Pad Handstanding Area
- Borrow Pit
- Indicative Internal Electrical Cable Trench
- Turbine and Swept Area
- Turbine Foundation
- River/Stream
- River/Stream Buffer 50m
- Lakes
- Lakes 50m Buffer
- Recreation Signage
- Indicative Cut
- Indicative Fill



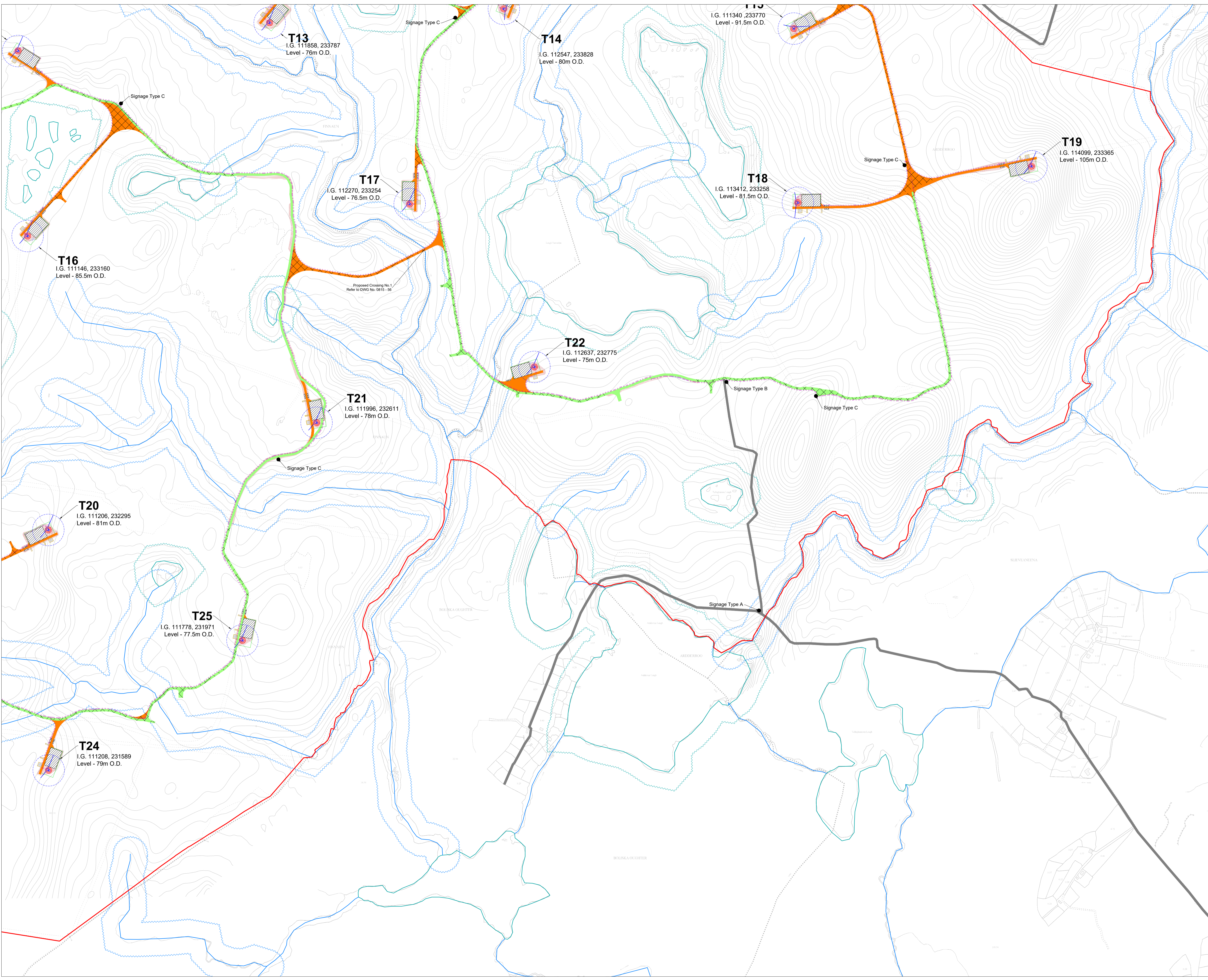
**Site Layout Plan
Sheet 2 of 3**

DRAWING TITLE: Ardderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No: 160815	DRAWING No: 0815 - 05
SCALE: 1:5,000 @A1	DATE: 22.11.2018

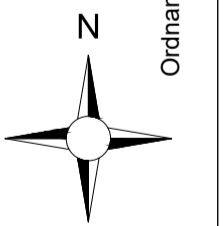
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McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 725611
 Fax: +353 91 717279



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DRAWING TITLE:
**Site Layout Plan
 Sheet 3 of 3**

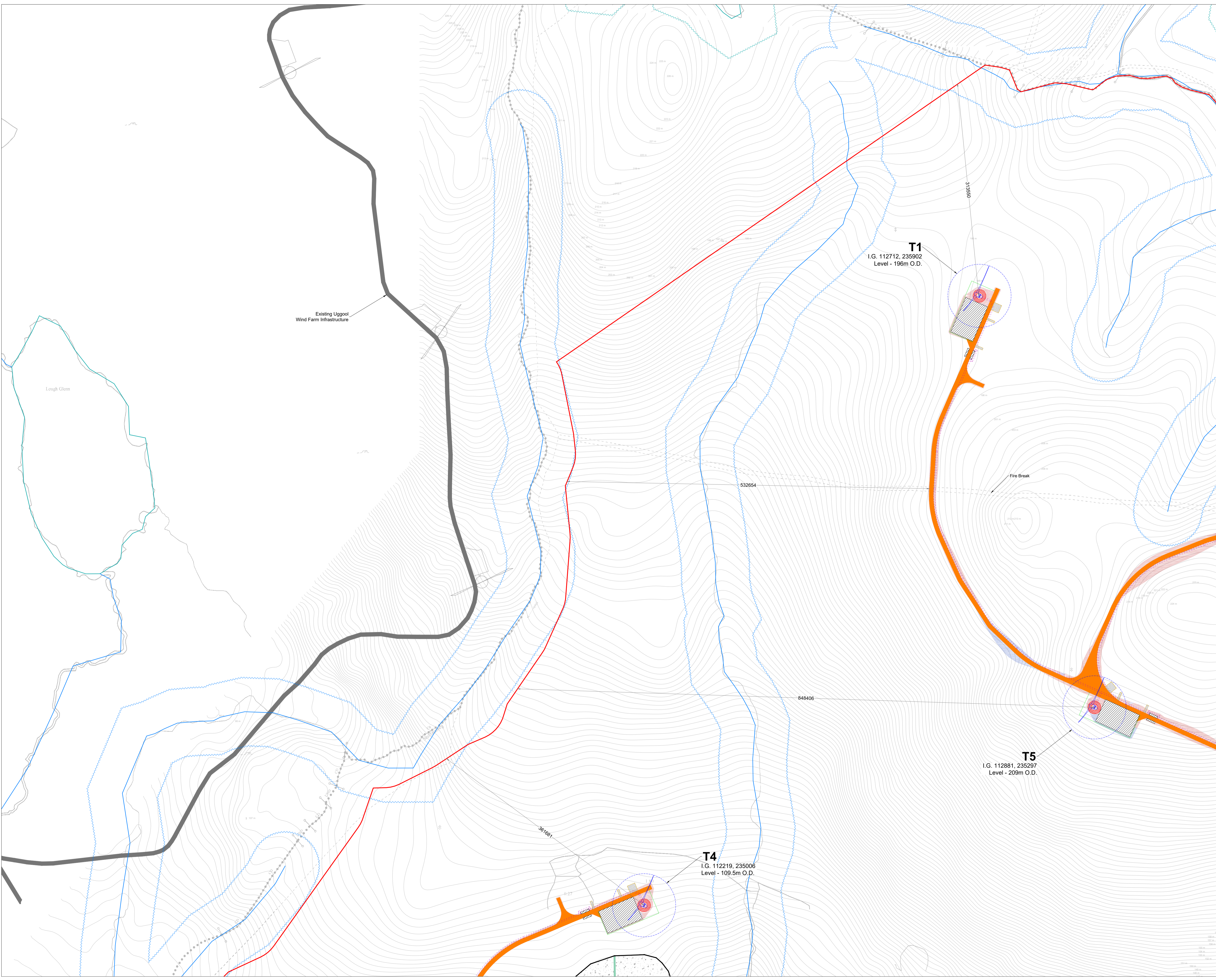
PROJECT TITLE:
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DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 06
SCALE: 1:5,000 @A1	DATE: 22.11.2018

OS SHEET No.:
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McCarthy Keville O'Sullivan
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthynos.ie
 website: www.mccarthynos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279

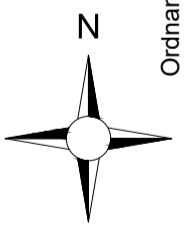
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Drawing Legend

	Planning Application Boundary
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	Works Area
	Soft Levelled Area
	Crane Pad Hardstanding Area
	Borrow Pit
	Indicative Internal Electrical Cable Trench
	Turbine and Swept Area
	Turbine Foundation
	River/Stream
	River/Stream Buffer 50m
	Lakes
	Lakes 50m Buffer
	Indicative Cut
	Indicative Fill

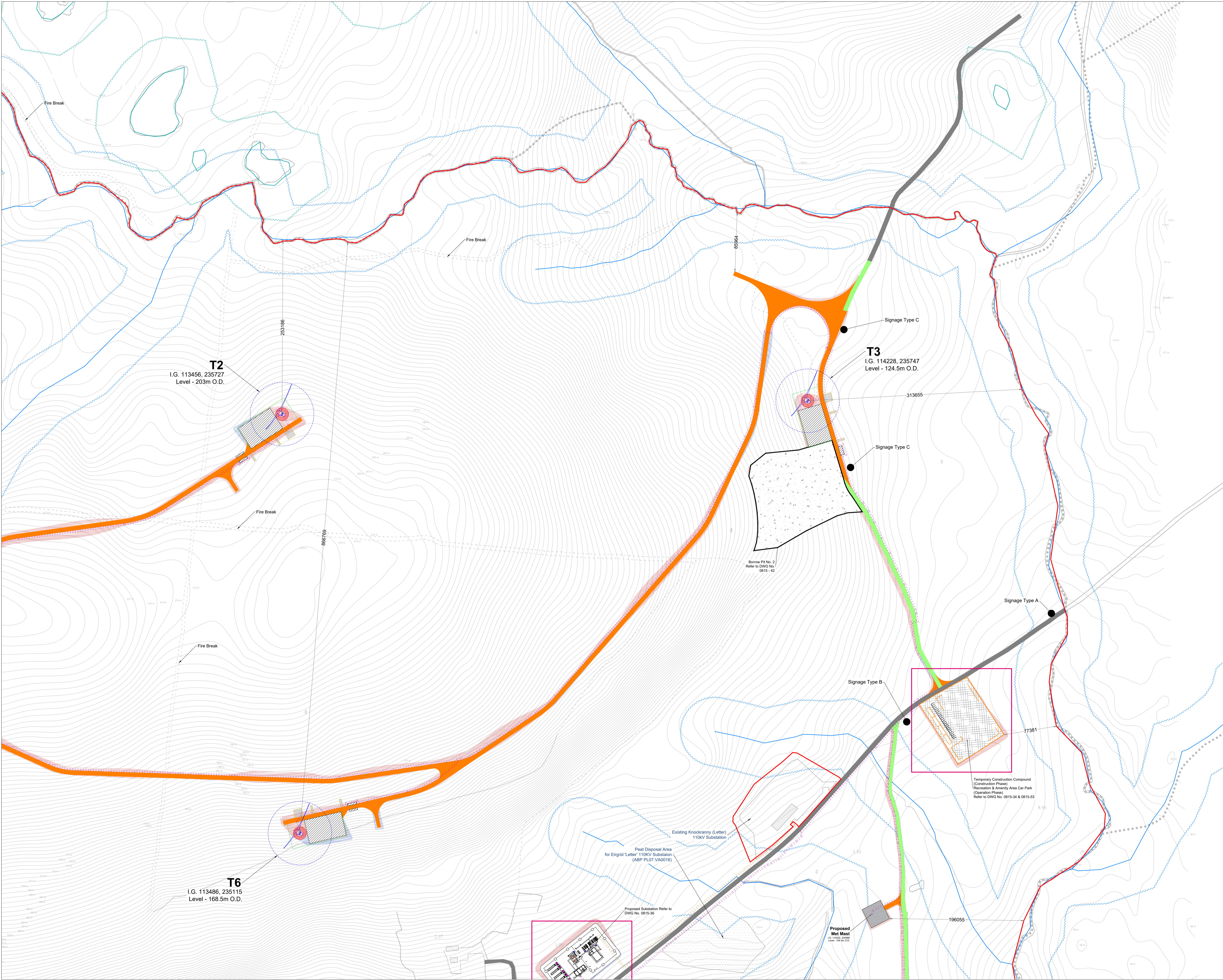


DRAWING TITLE:
**Site Layout Plan
 Sheet 1 of 12**

PROJECT TITLE:
 Ardderroo Wind Farm, Co. Galway

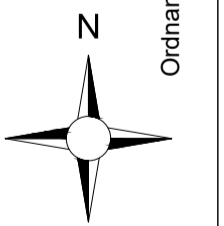
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 08
SCALE: 1:2,500 @A1	DATE: 22.11.2018

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 - Borrow Pit
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 - Turbine and Swept Area
 - Turbine Foundation
 - River/Stream
 - River/Stream Buffer 50m
 - Lakes
 - Lakes 50m Buffer
 - Recreation Signage
 - Indicative Cut
 - Indicative Fill
 - Indicative Grid Connection Cabling Route

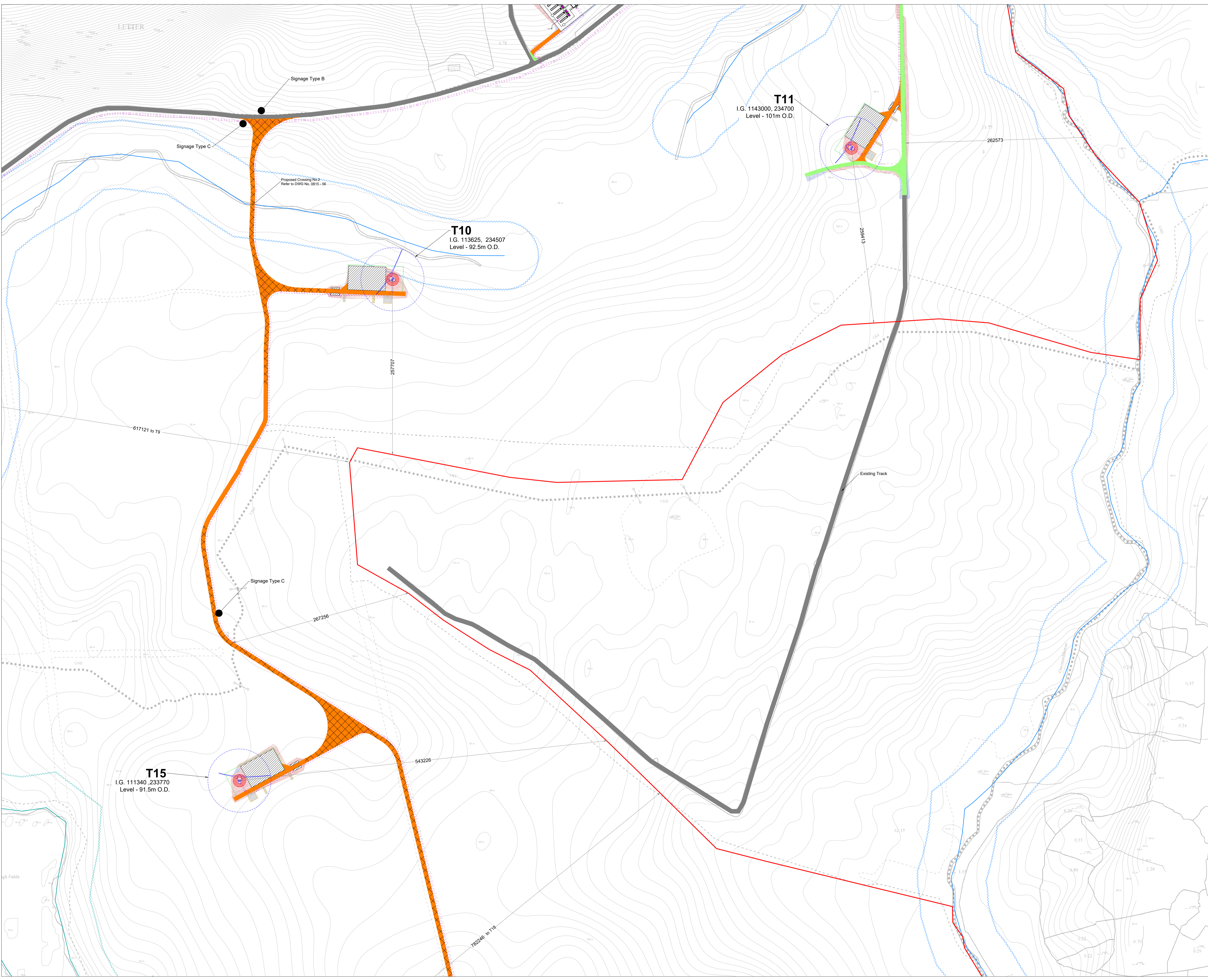


DRAWING TITLE:
**Site Layout Plan
 Sheet 2 of 12**

PROJECT TITLE:
 Ardderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 09
SCALE: 1:2,500 @A1	DATE: 22.11.2018

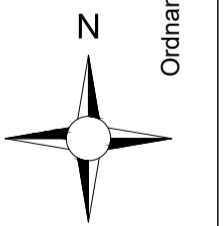
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 7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
 8. Final levels may vary depending on local ground conditions.

Drawing Legend

	Planning Application Boundary
	Existing Road To Be Upgraded
	Existing Floating Road to be Upgraded
	Proposed New Road
	Proposed New Floating Road
	Existing Road
	Works Area
	Soft Levelled Area
	Crane Pad Hardstanding Area
	Indicative Internal Electrical Cable Trench
	Turbine and Swept Area
	Turbine Foundation
	River/Stream
	River/Stream Buffer 50m
	Lakes
	Lakes 50m Buffer
	Recreation Signage
	Indicative Cut
	Indicative Fill
	Indicative Grid Connection Cabling Route

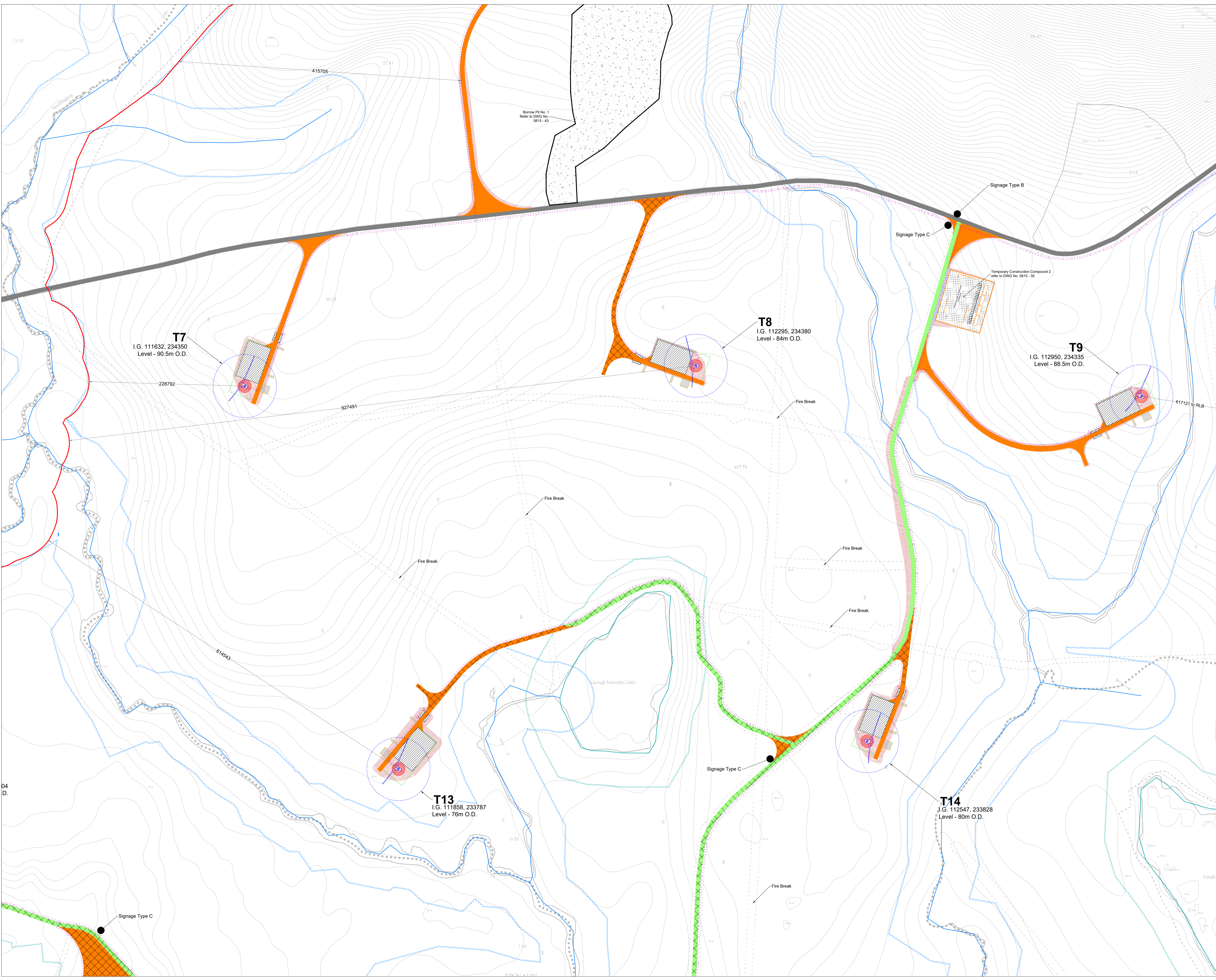


DRAWING TITLE:
**Site Layout Plan
 Sheet 3 of 12**

PROJECT TITLE:
 Ardderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 10
SCALE: 1:2,500 @A1	DATE: 22.11.2018

OS SHEET No.:
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 7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
 8. Final levels may vary depending on local ground conditions.

Drawing Legend

	Planning Application Boundary
	Existing Road To Be Upgraded
	Existing Floating Road to be Upgraded
	Proposed New Road
	Proposed New Floating Road
	Existing Road
	Works Area
	Soft Levelled Area
	Crane Pad Hardstanding Area
	Borrow Pit
	Indicative Internal Electrical Cable Trench
	Turbine and Swept Area
	Turbine Foundation
	River/Stream
	River/Stream Buffer 50m
	Lakes
	Lakes 50m Buffer
	Recreation Signage
	Indicative Cut
	Indicative Fill

DRAWING TITLE:
Site Layout Plan
Sheet 4 of 12

PROJECT TITLE:
 Arderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 11
SCALE: 1:2,500 @A1	DATE: 22.11.2018

OS SHEET No.:
 0800, 0804, 0808, 0812, 0816, 0820, 0824, 0828, 0832, 0836, 0840, 0844, 0848, 0852, 0856, 0860, 0864, 0868, 0872, 0876, 0880, 0884, 0888, 0892, 0896, 0900, 0904, 0908, 0912, 0916, 0920, 0924, 0928, 0932, 0936, 0940, 0944, 0948, 0952, 0956, 0960, 0964, 0968, 0972, 0976, 0980, 0984, 0988, 0992, 0996, 1000, 1004, 1008, 1012, 1016, 1020, 1024, 1028, 1032, 1036, 1040, 1044, 1048, 1052, 1056, 1060, 1064, 1068, 1072, 1076, 1080, 1084, 1088, 1092, 1096, 1100, 1104, 1108, 1112, 1116, 1120, 1124, 1128, 1132, 1136, 1140, 1144, 1148, 1152, 1156, 1160, 1164, 1168, 1172, 1176, 1180, 1184, 1188, 1192, 1196, 1200, 1204, 1208, 1212, 1216, 1220, 1224, 1228, 1232, 1236, 1240, 1244, 1248, 1252, 1256, 1260, 1264, 1268, 1272, 1276, 1280, 1284, 1288, 1292, 1296, 1300, 1304, 1308, 1312, 1316, 1320, 1324, 1328, 1332, 1336, 1340, 1344, 1348, 1352, 1356, 1360, 1364, 1368, 1372, 1376, 1380, 1384, 1388, 1392, 1396, 1400, 1404, 1408, 1412, 1416, 1420, 1424, 1428, 1432, 1436, 1440, 1444, 1448, 1452, 1456, 1460, 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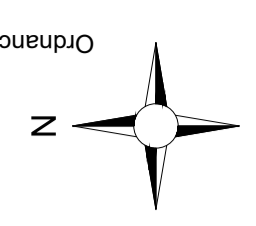
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Drawing Legend

- Planning Application Boundary
- Existing Road To Be Upgraded
- Existing Floating Road to be Upgraded
- Proposed New Road
- Proposed New Floating Road
- Existing Road
- Works Area
- Soft Levelled Area
- Claire Pad Handstanding Area
- Borrow Pit
- Indicative Internal Electrical Cable Trench
- Turbine and Sweep Area
- Turbine Foundation
- River/Stream
- River/Stream Buffer 50m
- Lakes
- Lakes 50m Buffer
- Recreation Signage
- Indicative Cut
- Indicative Fill



**Site Layout Plan
Sheet 7 of 12**

DRAWING TITLE: Arderroo Wind Farm, Co. Galway

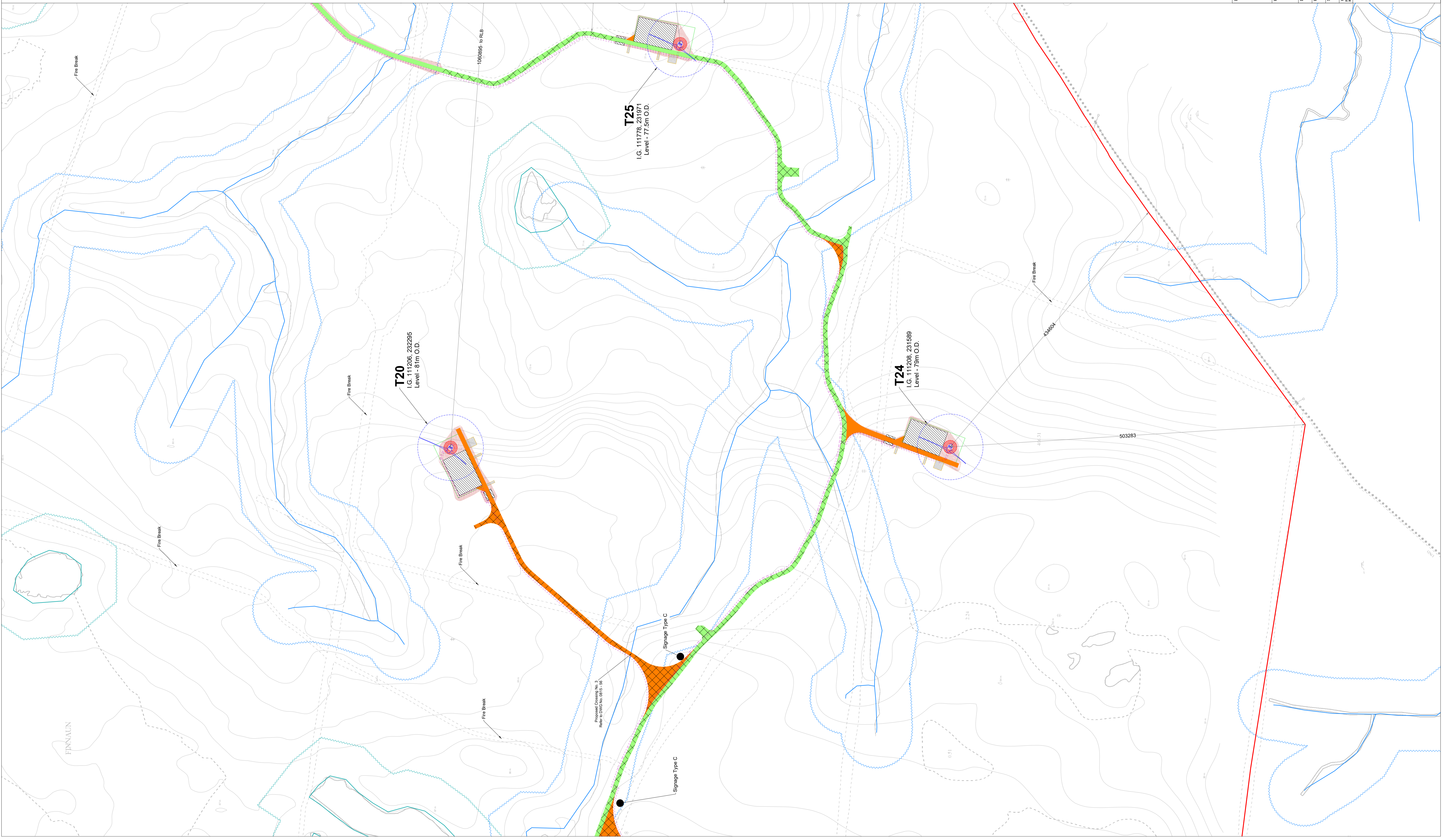
DRAWING BY: Joseph O Brien	CHECKED BY: Jimmy Green
PROJECT No: 160015	DRAWING No: 0815 - 14
SCALE: 1:2,500 @A1	DATE: 22.11.2018

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McCarthy Keville O'Sullivan Ltd.
Planning & Environmental Consultants
Block 1,
Galway Financial Services Centre,
Moneenageisha Road,
Galway, Ireland.
email: info@mccarthykos.ie
website: www.mccarthykos.ie
Tel: +353 91 735811
Fax: +353 91 771279

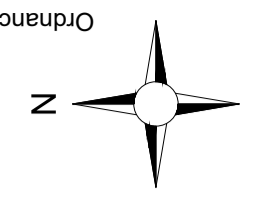
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- Existing Floating Road to be Upgraded
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- Proposed New Floating Road
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- Soft Levelled Area
- Crane Pad Handstanding Area
- Indicative Internal Electrical Cable Trench
- Turbine and Swept Area
- Turbine Foundation
- River/Stream
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- Lakes
- Lakes 50m Buffer
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- Indicative Cut
- Indicative Fill



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DRAWING TITLE:
Site Layout Plan
Sheet 8 of 12

PROJECT TITLE:
Arderroo Wind Farm, Co. Galway

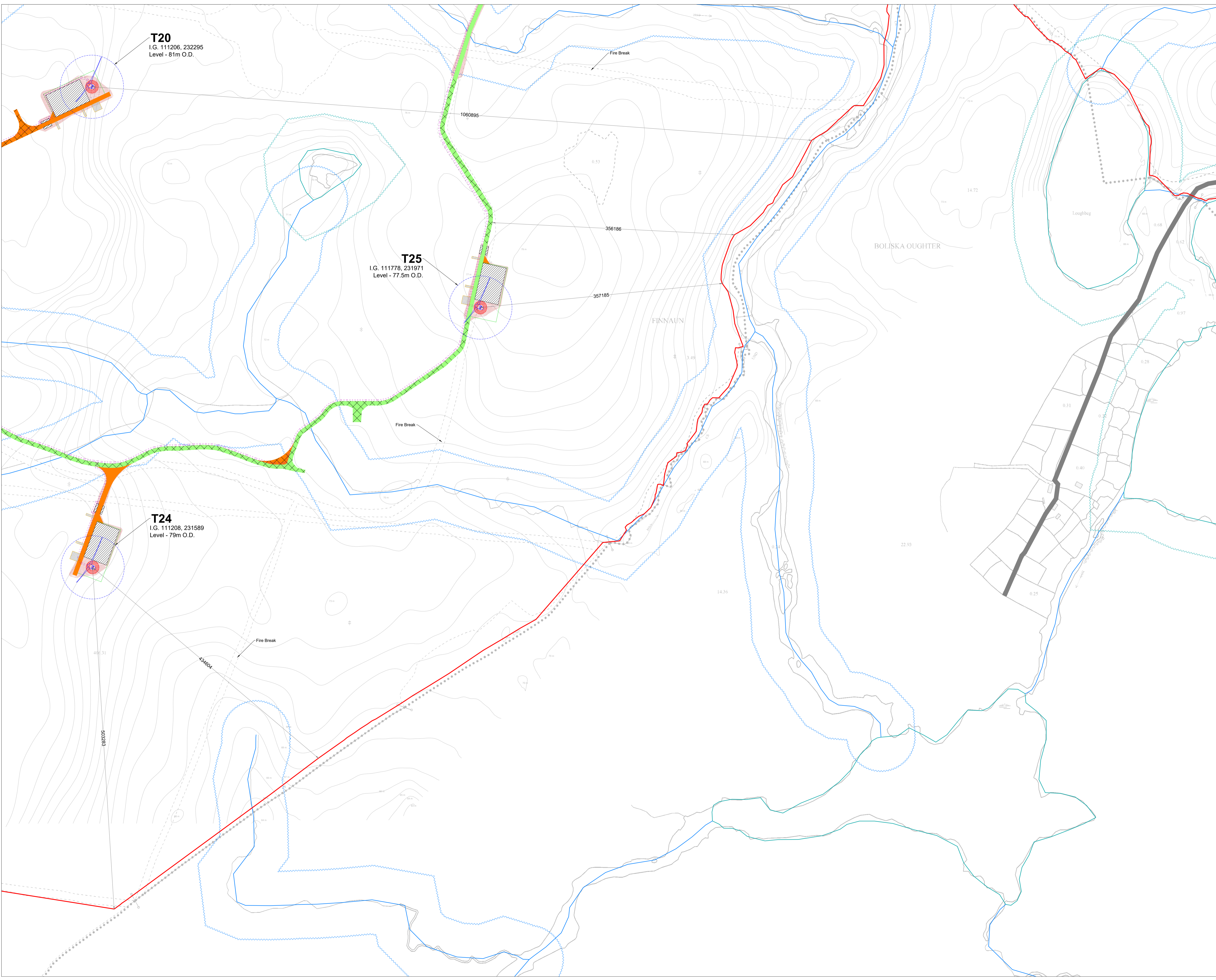
DRAWING BY: Joseph O'Brien
CHECKED BY: Jimmy Green

PROJECT No.: 160015
DRAWING No.: 0815 - 15

SCALE: 1:2,500 @A1
DATE: 22.11.2018

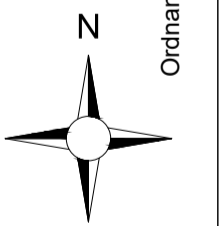
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McCarthy Keville O'Sullivan Ltd.
Planning & Environmental Consultants
Block 1,
Galway Financial Services Centre,
Moneengaishe Road,
Galway, Ireland.
email: info@mccarthkys.ie
website: www.mccarthkys.ie
Tel: +353 91 735811
Fax: +353 91 771279



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DRAWING TITLE:
**Site Layout Plan
 Sheet 9 of 12**

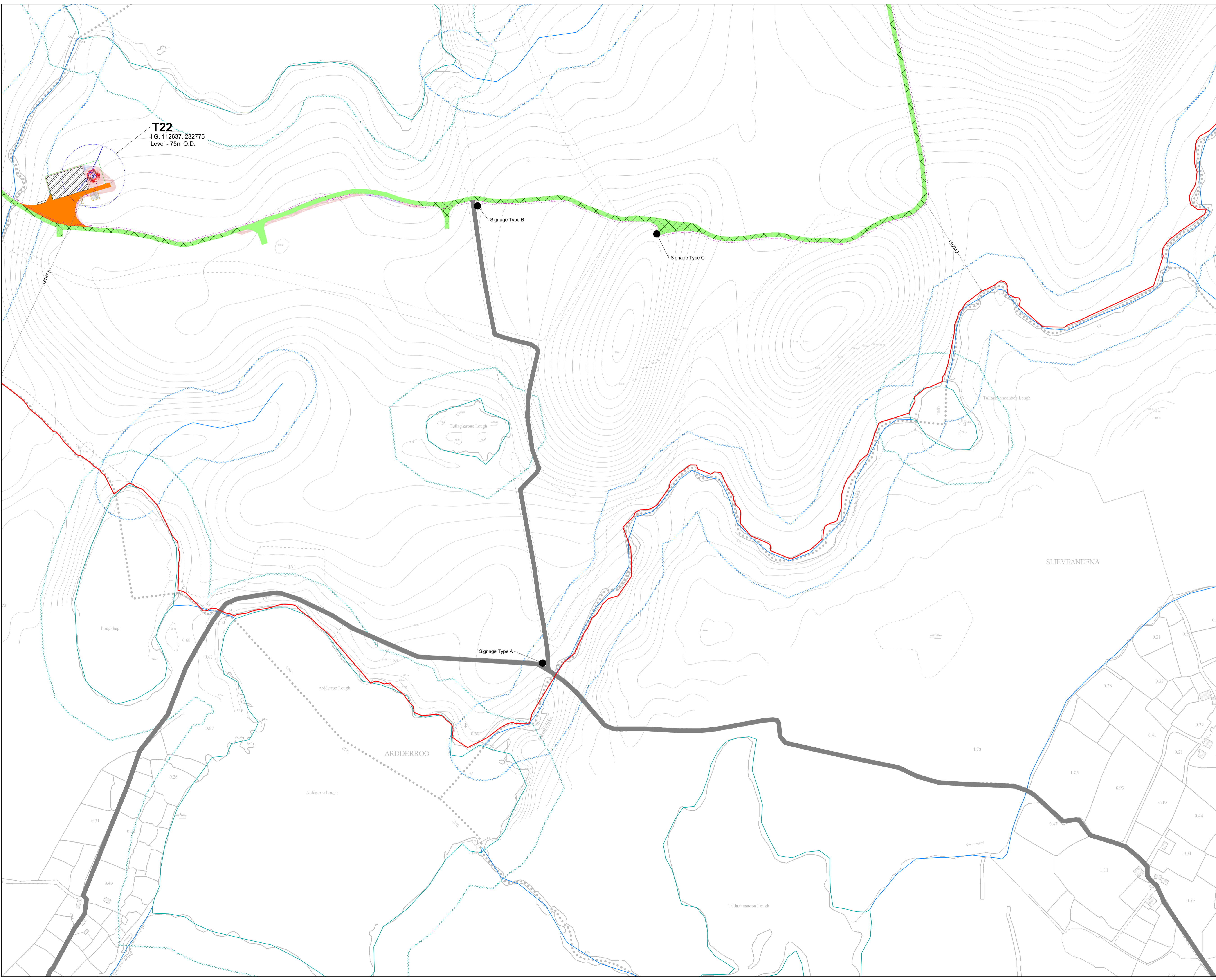
PROJECT TITLE:
 Arderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 16
SCALE: 1:2,500 @A1	DATE: 22.11.2018

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McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279



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 7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
 8. Final levels may vary depending on local ground conditions.

- Drawing Legend**
- Planning Application Boundary
 - Existing Road To Be Upgraded
 - Existing Floating Road To Be Upgraded
 - Proposed New Road
 - Existing Road
 - Works Area
 - Soft Levelled Area
 - Crane Pad Hardstanding Area
 - Indicative Internal Electrical Cable Trench
 - Turbine and Swept Area
 - Turbine Foundation
 - River/Stream
 - River/Stream Buffer 50m
 - Lakes
 - Lakes 50m Buffer
 - Recreation Signage
 - Indicative Cut
 - Indicative Fill

DRAWING TITLE:
**Site Layout Plan
Sheet 10 of 12**

PROJECT TITLE:
Ardderroo Wind Farm, Co. Galway

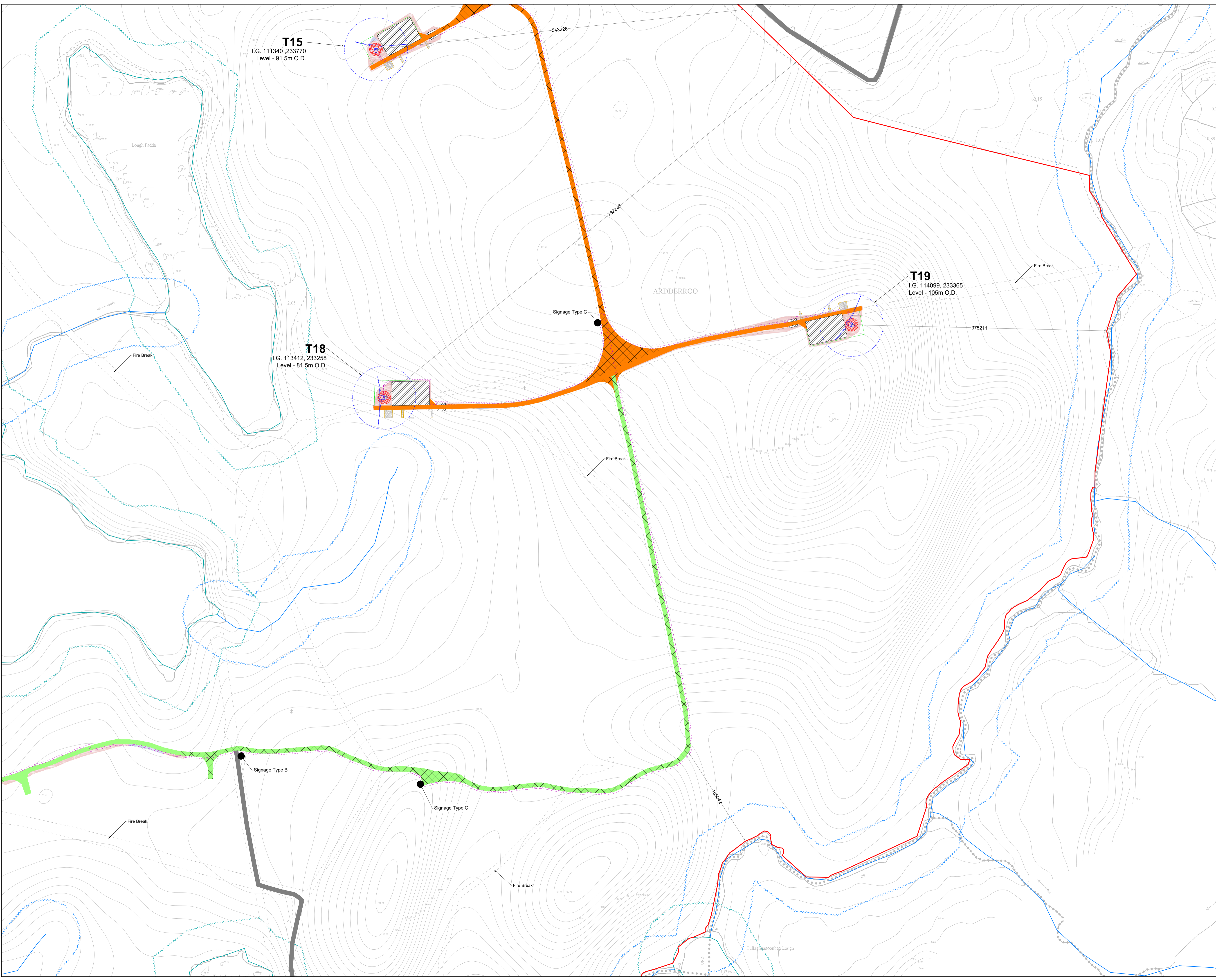
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 17
SCALE: 1:2,500 @A1	DATE: 22.11.2018

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McCarthy Keville O'Sullivan Ltd.
Planning & Environmental Consultants
Block 1,
Galway Financial Services Centre,
Moneenageisha Road,
Galway, Ireland.
email: info@mccarthkos.ie
website: www.mccarthkos.ie
Tel: +353 91 735611
Fax: +353 91 771279

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	Proposed New Road
	Proposed New Floating Road
	Existing Road
	Works Area
	Soft Levelled Area
	Crane Pad Hardstanding Area
	Indicative Internal Electrical Cable Trench
	Turbine and Swept Area
	Turbine Foundation
	River/Stream
	River/Stream Buffer 50m
	Lakes
	Lakes 50m Buffer
	Recreation Signage
	Indicative Cut
	Indicative Fill

DRAWING TITLE:
Site Layout Plan
Sheet 11 of 12

PROJECT TITLE:
 Ardderroo Wind Farm, Co. Galway

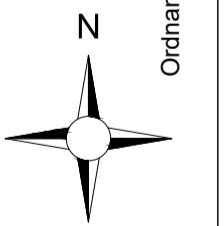
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PROJECT No.: 160815	DRAWING No.: 0815 - 18
SCALE: 1:2,500 @A1	DATE: 22.11.2018

OS SHEET No.:
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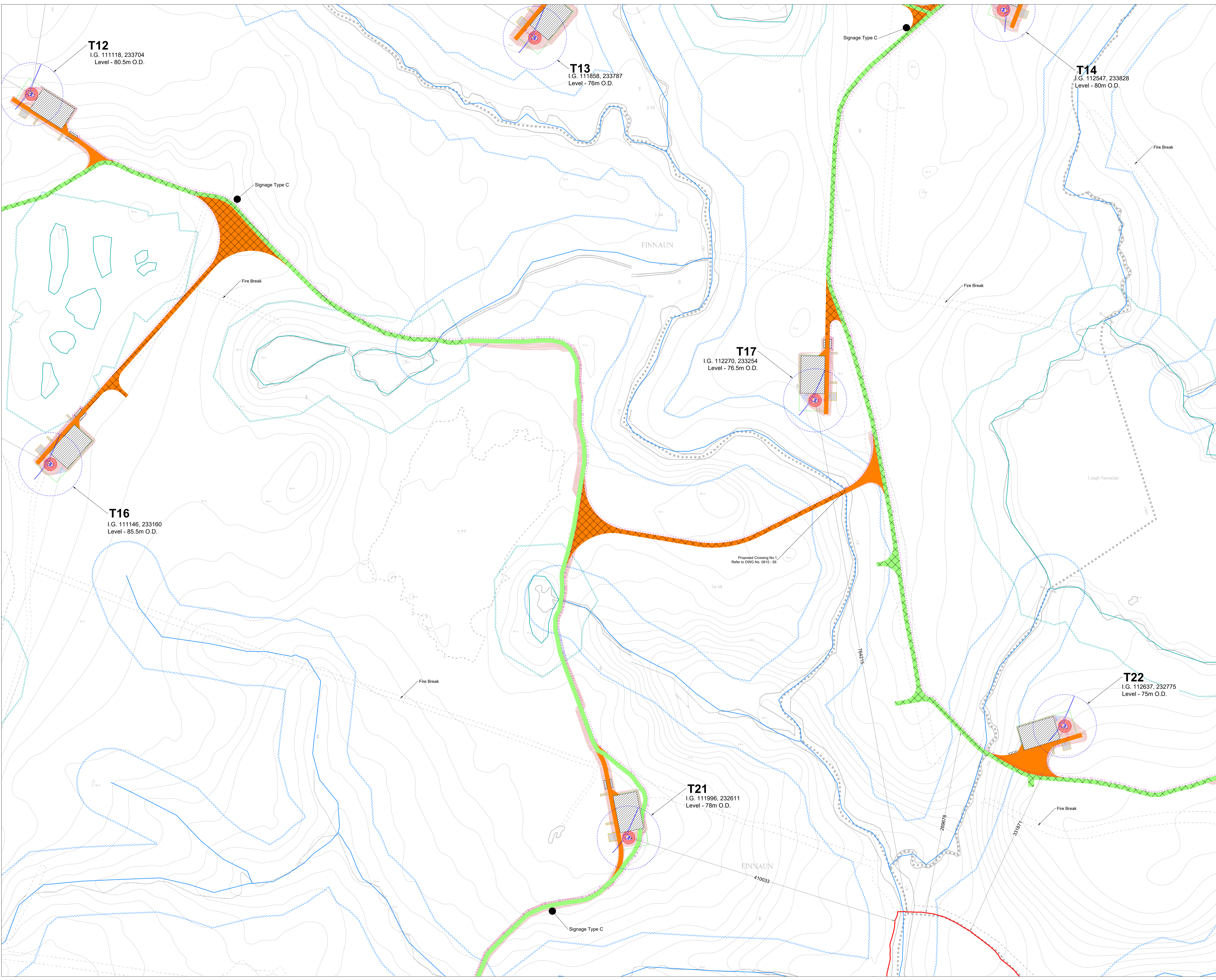
McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants

Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.

email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279



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DRAWING TITLE:
Site Layout Plan
Sheet 12 of 12

PROJECT TITLE:
 Arderroo Wind Farm, Co. Galway

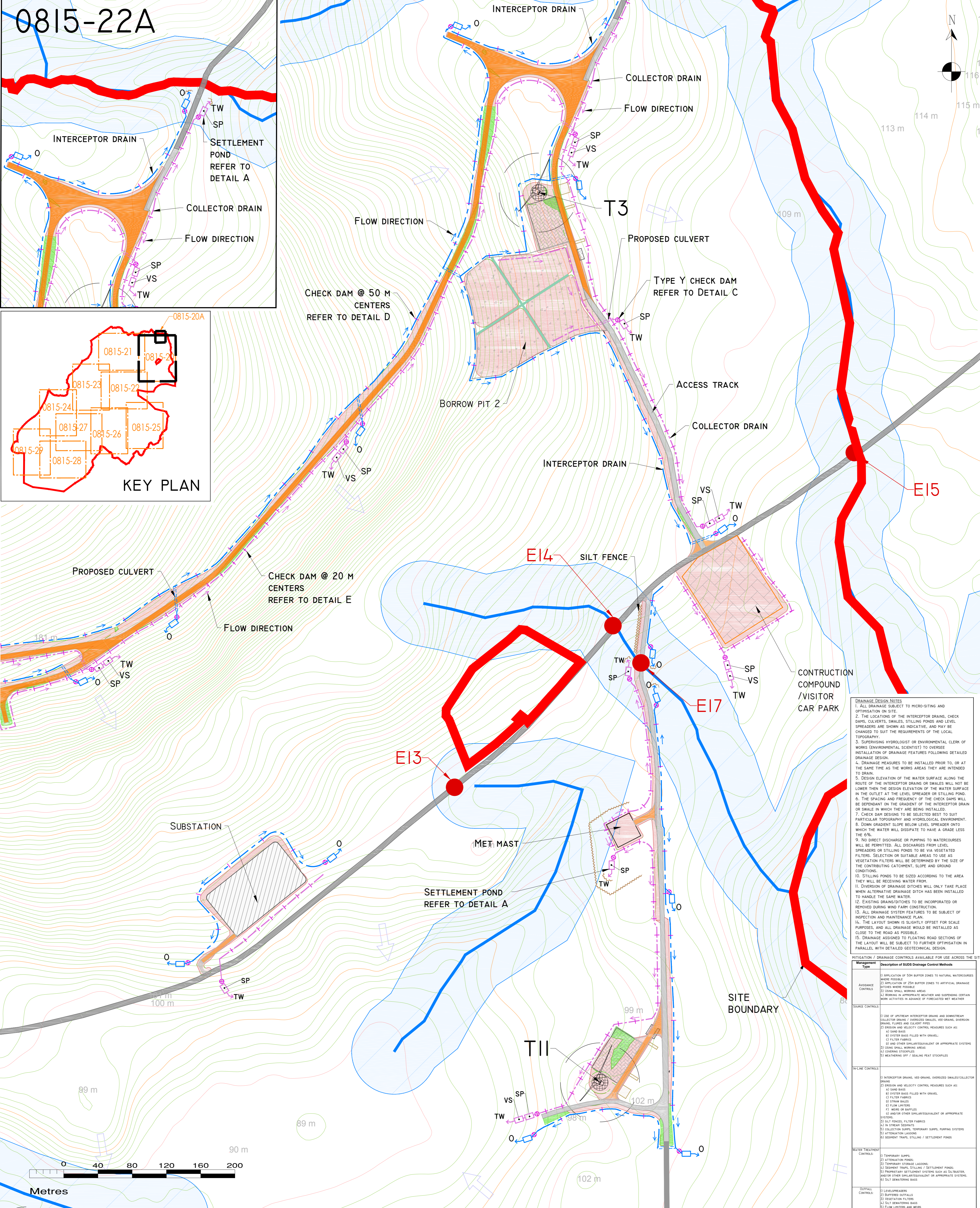
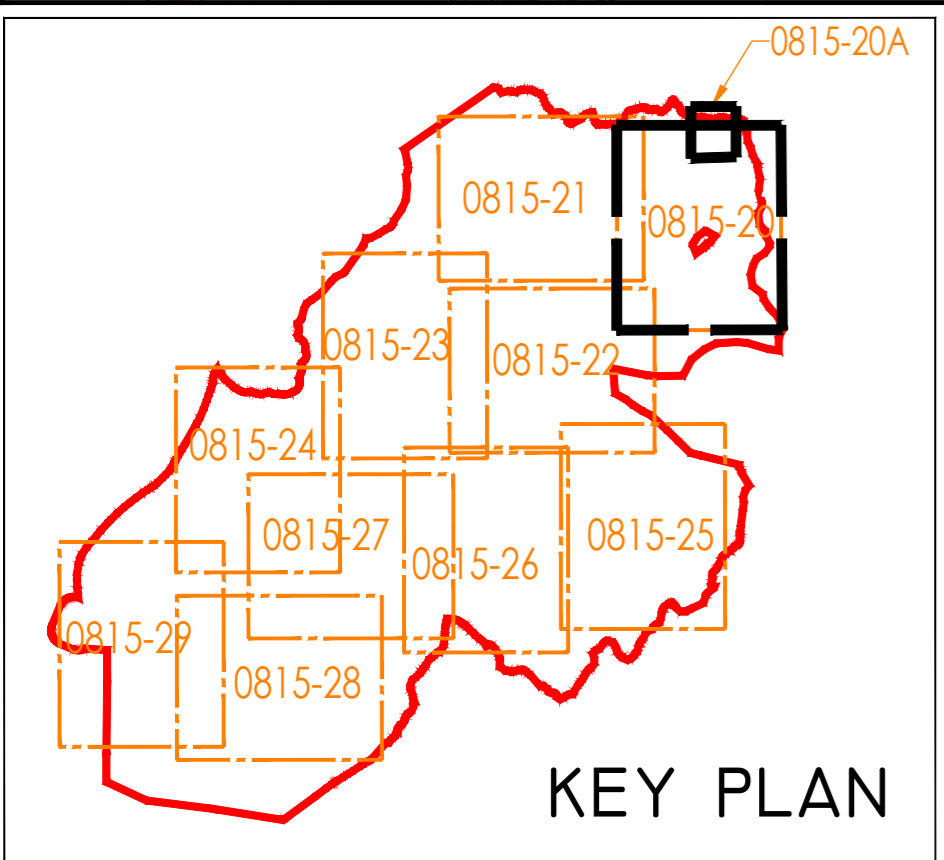
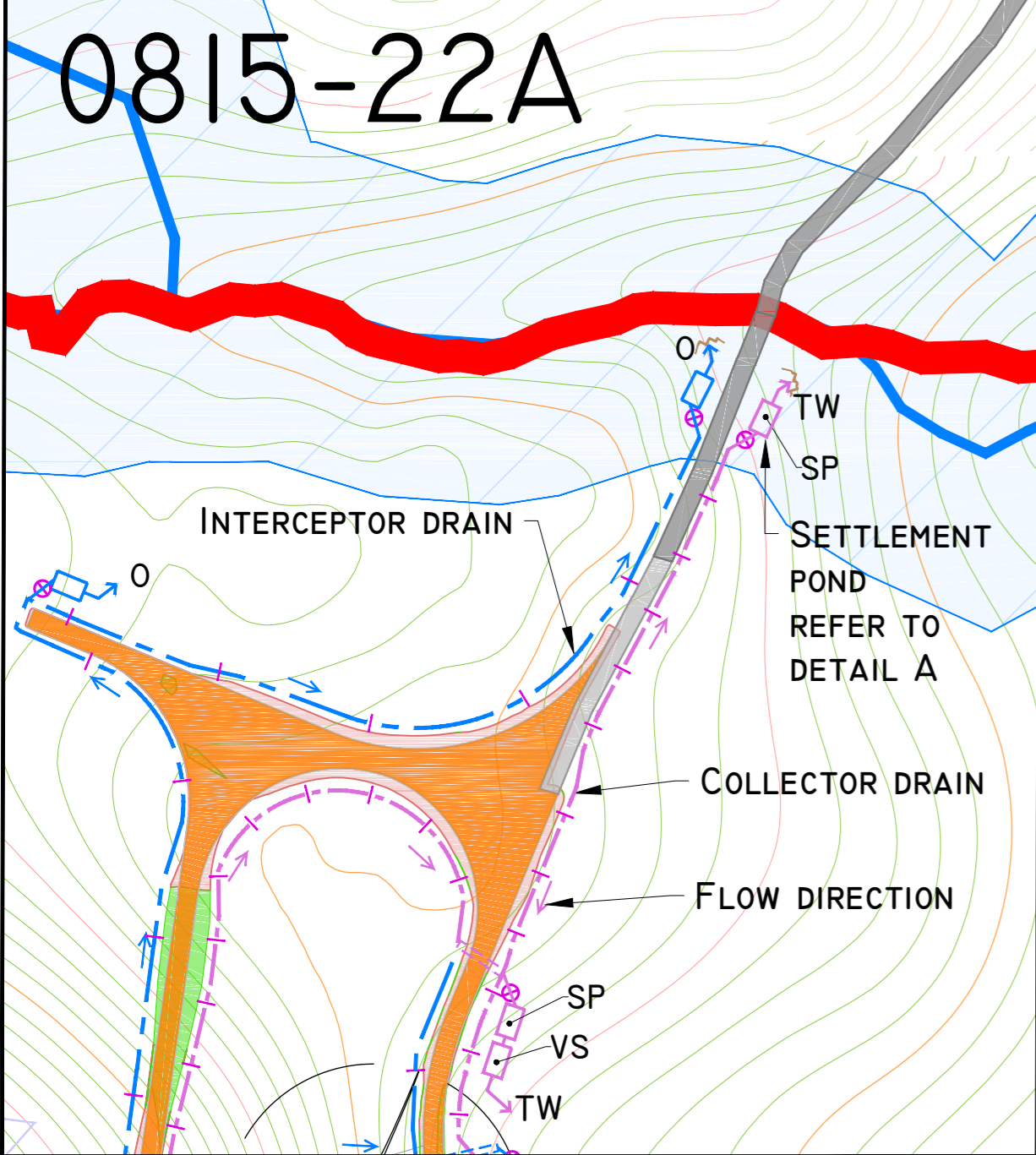
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 19
SCALE: 1:2,500 @A1	DATE: 22.11.2018

OS SHEET No.:
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McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
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 email: info@mccarthynos.ie
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0815-22A

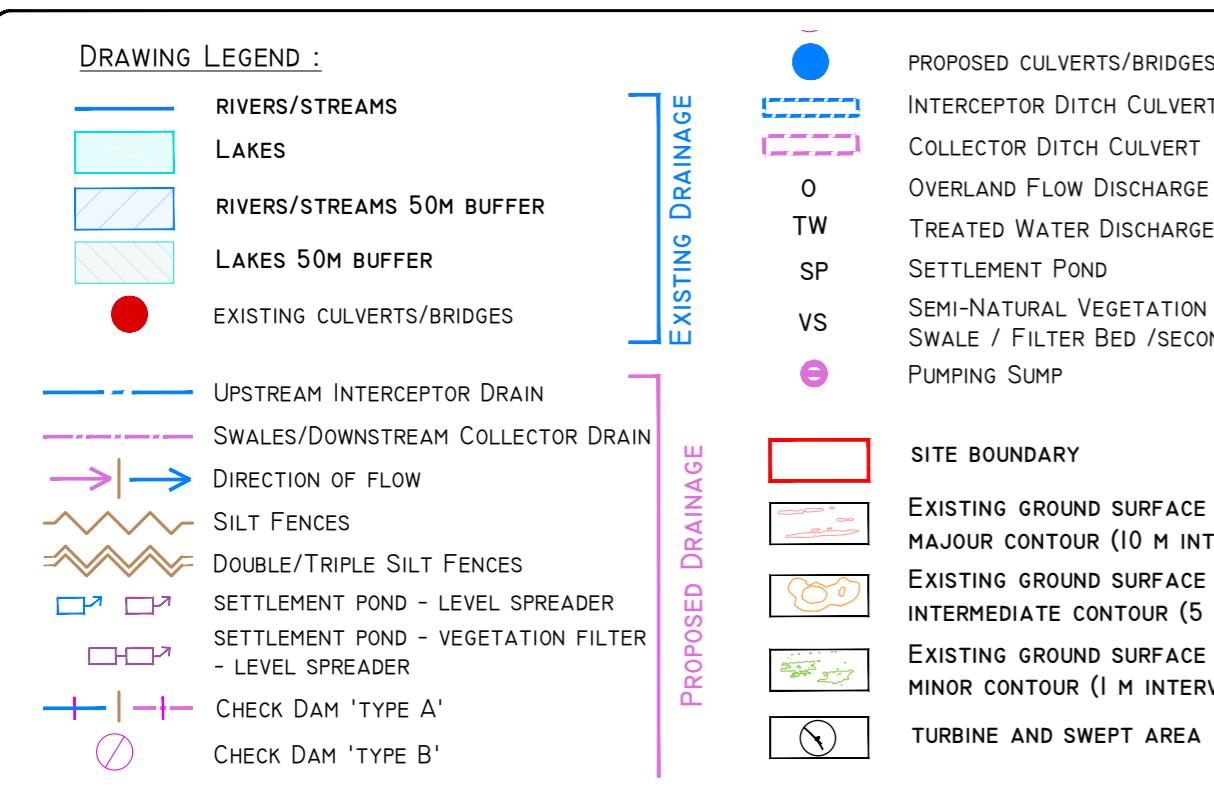


DRAINAGE DESIGN NOTES

1. ALL DRAINAGE SUBJECT TO MICRO-SITING AND OPTIMISATION ON SITE.
2. THE LOCATIONS OF THE INTERCEPTOR DRAINS, CHECK DAMS, CULVERTS, SWALES, STILLING PONDS AND LEVEL SPREADERS ARE SHOWN AS INDICATIVE, AND MAY BE CHANGED TO SUIT THE REQUIREMENTS OF THE LOCAL TOPOGRAPHY.
3. SUPERVISING HYDROLOGIST OR ENVIRONMENTAL CLERK OF WORKS (ENVIRONMENTAL SCIENTIST) TO OVERSEE INSTALLATION OF DRAINAGE FEATURES FOLLOWING DETAILED DRAINAGE DESIGN.
4. DRAINAGE MEASURES TO BE INSTALLED PRIOR TO, OR AT THE SAME TIME AS THE WORKS AREAS THEY ARE INTENDED TO DRAIN.
5. DESIGN ELEVATION OF THE WATER SURFACE ALONG THE ROUTE OF THE INTERCEPTOR DRAINS OR SWALES WILL NOT BE LOWER THAN THE DESIGN ELEVATION OF THE WATER SURFACE IN THE OUTLET AT THE LEVEL SPREADER OR STILLING POND.
6. THE SPACING AND FREQUENCY OF THE CHECK DAMS WILL BE DEPENDANT ON THE GRADIENT OF THE INTERCEPTOR DRAIN OR SWALE IN WHICH THEY ARE BEING INSTALLED.
7. CHECK DAM DESIGNS TO BE SELECTED BEST TO SUIT PARTICULAR TOPOGRAPHY AND HYDROLOGICAL ENVIRONMENT.
8. DOWN GRADIENT SLOPE BELOW LEVEL SPREADER ONTO WHICH THE WATER WILL DISPERSE TO HAVE A GRADE LESS THAN 6%.
9. NO DIRECT DISCHARGE OR PUMPING TO WATERCOURSES WILL BE PERMITTED. ALL DISCHARGES FROM LEVEL SPREADERS OR STILLING PONDS TO BE VIA VEGETATED FILTERS. SELECTION OF SUITABLE AREAS TO USE AS VEGETATED FILTERS WILL BE DETERMINED BY THE SIZE OF THE CONTRIBUTING CATCHMENT, SLOPE AND GROUND CONDITIONS.
10. STILLING PONDS TO BE SIZED ACCORDING TO THE AREA THEY WILL BE RECEIVING WATER FROM.
11. DIVERSION OF DRAINAGE DITCHES WILL ONLY TAKE PLACE WHEN ALTERNATIVE DRAINAGE DITCH HAS BEEN INSTALLED TO HANDLE THE SAME WATER.
12. EXISTING DRAINS/DITCHES TO BE INCORPORATED OR REMOVED DURING WIND FARM CONSTRUCTION.
13. ALL DRAINAGE SYSTEM FEATURES TO BE SUBJECT OF INSPECTION AND MAINTENANCE PLAN.
14. THE LAYOUT SHOWN IS SLIGHTLY OFFSET FOR SCALE PURPOSES, AND ALL DRAINAGE WOULD BE INSTALLED AS CLOSE TO THE ROAD AS POSSIBLE.
15. DRAINAGE ASSIGNED TO FLOATING ROAD SECTIONS OF THE LAYOUT WILL BE SUBJECT TO FURTHER OPTIMISATION IN PARALLEL WITH DETAILED GEOTECHNICAL DESIGN.

MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

Management Type	Description of SUDS Drainage Control Methods
AVOIDANCE CONTROLS	(1) APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE (2) DIVERSION OF 25M BUFFER ZONES TO ARTIFICIAL DRAINAGE DITCHES WHERE POSSIBLE (3) LIMIT SMALL WORKING AREAS (4) WORKING IN APPROPRIATE WEATHER AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED MET WEATHER
SOURCE CONTROLS	(1) USE OF UPSTREAM INTERCEPTOR DRAINS AND DOWNSTREAM COLLECTOR DRAINS / OVERZEE SWALES, VE-DRAINS, DIVERSION DRAINS, PUMPS AND CULVERTS (2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) OYSTER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) SAND BAGS FILLED WITH GRAVEL E) OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS (3) SILT FENCES, FILTER FABRICS (4) IN STREAM SEDIMENTS (5) COLLECTION TRAYS, TEMPORARY SUMP, PUMPING SYSTEMS (6) ATTENUATION LAGOONS (7) SEDIMENT TRAPS, SILLING / SETTLEMENT PONDS
IN-LINE CONTROLS	(1) INTERCEPTOR DRAIN, VE-DRAIN, OVERZEE SWALES/COLLECTOR DRAIN (2) ATTENUATION POND (3) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) OYSTER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) SAND BAGS E) FLOW LIMITERS F) WEBS OR BAPLES G) SAND BAGS FILLED WITH GRAVEL H) SAND BAGS FILLED WITH GRAVEL I) SAND BAGS FILLED WITH GRAVEL J) SAND BAGS FILLED WITH GRAVEL K) SAND BAGS FILLED WITH GRAVEL L) SAND BAGS FILLED WITH GRAVEL M) SAND BAGS FILLED WITH GRAVEL N) SAND BAGS FILLED WITH GRAVEL O) SAND BAGS FILLED WITH GRAVEL P) SAND BAGS FILLED WITH GRAVEL Q) SAND BAGS FILLED WITH GRAVEL R) SAND BAGS FILLED WITH GRAVEL S) SAND BAGS FILLED WITH GRAVEL T) SAND BAGS FILLED WITH GRAVEL U) SAND BAGS FILLED WITH GRAVEL V) SAND BAGS FILLED WITH GRAVEL W) SAND BAGS FILLED WITH GRAVEL X) SAND BAGS FILLED WITH GRAVEL Y) SAND BAGS FILLED WITH GRAVEL Z) SAND BAGS FILLED WITH GRAVEL
WATER TREATMENT CONTROLS	(1) TEMPORARY SUMP (2) ATTENUATION POND (3) TEMPORARY STORAGE LAGOON (4) SEDIMENT TRAP, SILLING / SETTLEMENT POND (5) PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SILTTRAP, AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS (6) SALT DENATURING BAGS
OUTFALL CONTROLS	(1) LEVELLED SPREADERS (2) BUFFERED OUTFALLS (3) VEGETATED FILTERS (4) SALT DENATURING BAGS (5) FLOW LIMITERS AND WEIRS



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HYDRO ENVIRONMENTAL SERVICES
22 Lower Main St
Dungarvan
Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client: **MCCARTHY KEVILLE O'SULLIVAN**

Job: **ARDDREROO WF, Co. GALWAY**

Title: **Drainage Layout Sheet 1 of 10**

Figure No: **0815-20**

Drawing No: **P1227-8-1118-A1-0815-20-00A**

Sheet Size: **A1** Project No.: **P1227-8**

Scale: **1:2,000 (A1)** Drawn By: **GD**

Date: **21/11/2018** Checked By: **MG**

DRAWING LEGEND :

- RIVERS/STREAMS
- LAKES
- RIVERS/STREAMS 50M BUFFER
- LAKES 50M BUFFER
- EXISTING CULVERTS/BRIDGES
- UPSTREAM INTERCEPTOR DRAIN
- SWALES/DOWNSTREAM COLLECTOR DRAIN
- DIRECTION OF FLOW
- SILT FENCES
- DOUBLE/TRIPLE SILT FENCES
- SETTLEMENT POND - LEVEL SPREADER
- SETTLEMENT POND - VEGETATION FILTER - LEVEL SPREADER
- CHECK DAM 'TYPE A'
- CHECK DAM 'TYPE B'
- PROPOSED CULVERTS/BRIDGES
- INTERCEPTOR DITCH CULVERT
- COLLECTOR DITCH CULVERT
- OVERLAND FLOW DISCHARGE
- TREATED WATER DISCHARGE
- SETTLEMENT POND
- SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
- PUMPING SUMP
- SITE BOUNDARY
- EXISTING GROUND SURFACE MAJOR CONTOUR (10 M INTERVAL)
- EXISTING GROUND SURFACE INTERMEDIATE CONTOUR (5 M INTERVAL)
- EXISTING GROUND SURFACE MINOR CONTOUR (1 M INTERVAL)
- TURBINE AND SWEEP AREA
- TURBINE FOUNDATION
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- EXISTING ROAD TO BE UPGRADED
- PROPOSED ROAD
- FLOATING ROAD
- CRANE PLATFORM
- BORROW PIT
- PROPOSED CUT AREA
- PROPOSED FILL AREA

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- LAYOUT PLANS SHOW TYPICAL TURBINE ROTOR DIAMETER AS PER TURBINE DRAWING.

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Date	Description	Chkd	Signed
Revisions			

HYDRO ENVIRONMENTAL SERVICES

22 Lower Main St
Dungarvan
Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client: **MCCARTHY KEVILLE O'SULLIVAN**

Job: **ARDERRROO WF, Co. GALWAY**

Title: **Drainage Layout Sheet 2 of 10**

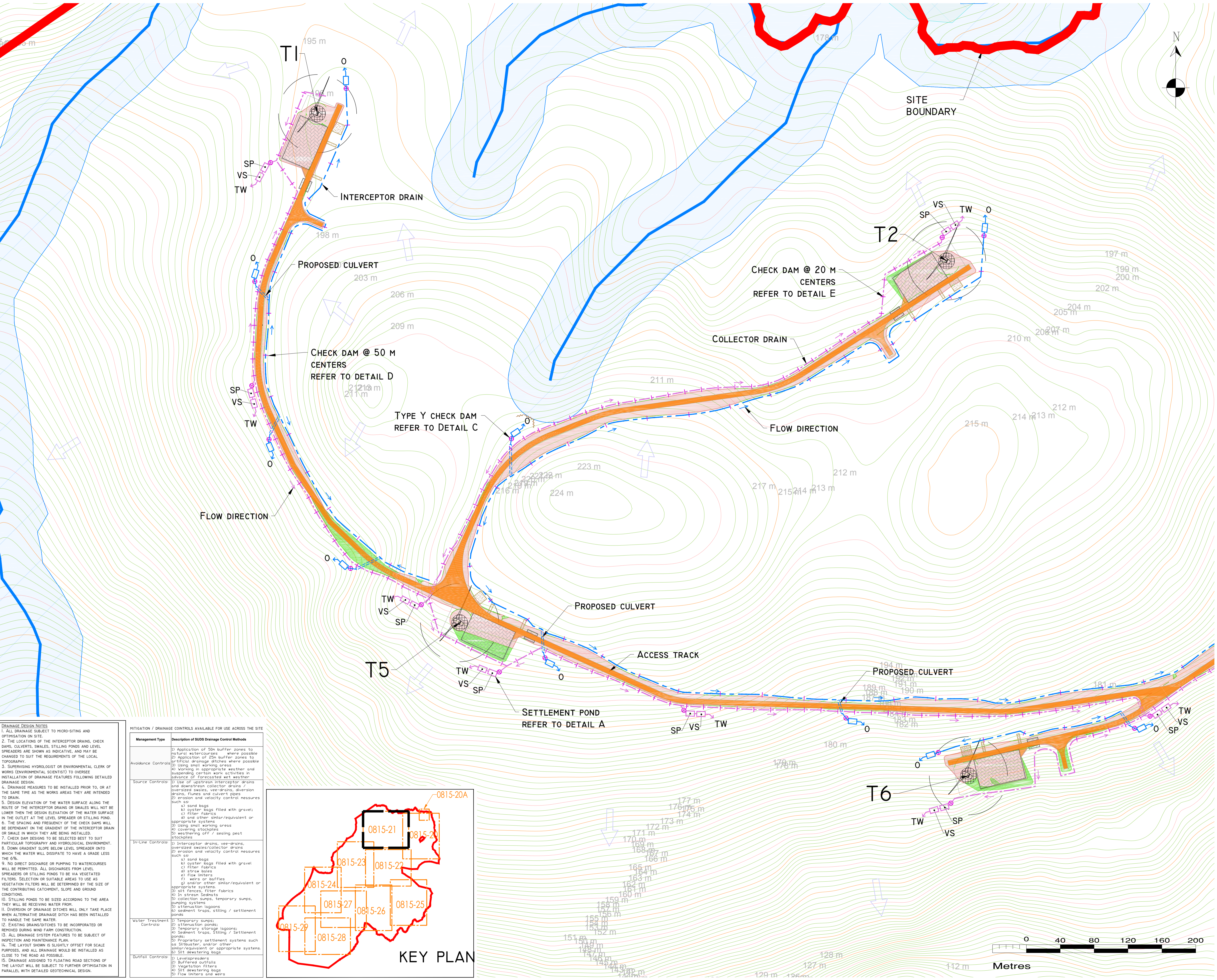
Figure No: **0815-21**

Drawing No: **P1227-8-1118-A1-0815-21-00A**

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Scale: **1:2,000 (A1)** Drawn By: **GD**

Date: **21/11/2018** Checked By: **MG**

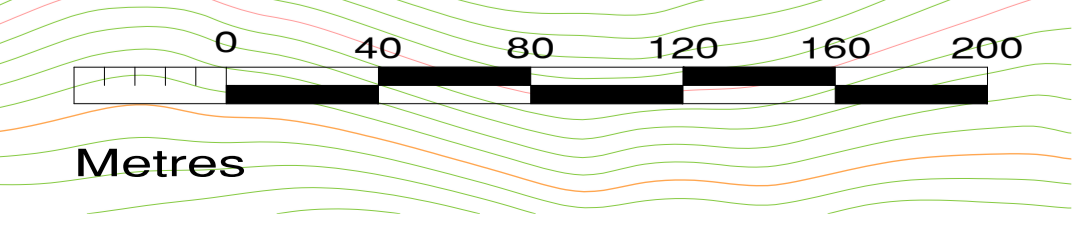
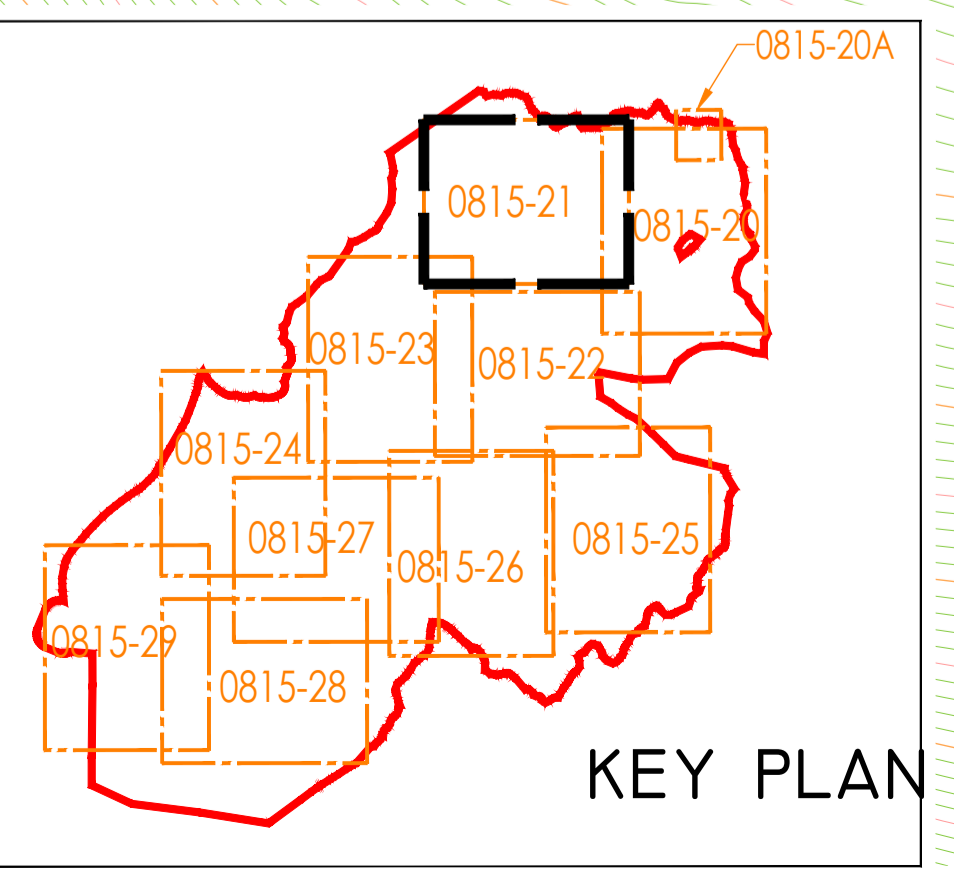


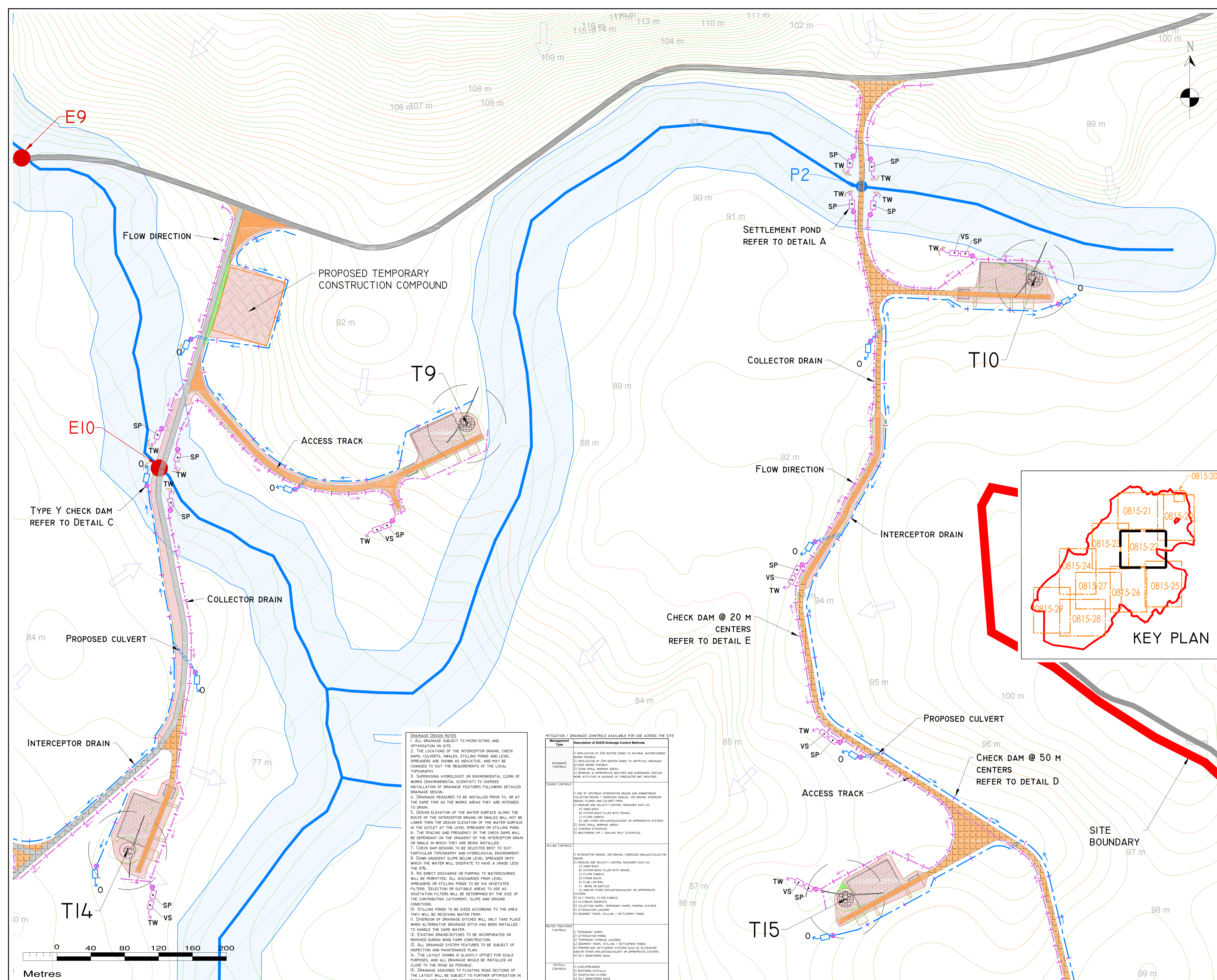
Drainage Design Notes

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MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

Management Type	Description of SUDS Drainage Control Methods
Avoidance Controls	<ol style="list-style-type: none"> Application of 50m buffer zones to natural watercourses where possible Application of 25m buffer zones to artificial drainage ditches where possible Using small working areas Working in appropriate weather and suspending certain work activities in advance of forecasted wet weather
Source Controls	<ol style="list-style-type: none"> Use of upstream interceptor drains and downstream collector drains / oversized swales, vee-drains, diversion drains, flumes and culvert pipes erosion and velocity control measures such as: <ul style="list-style-type: none"> sand bags oyster bags filled with gravel filter fabrics and other similar/equivalent or appropriate systems Using small working areas covering spoilings weathering off / sealing peat scissoles
In-Line Controls	<ol style="list-style-type: none"> Interceptor drains, vee-drains, oversized swales/collector drains erosion and velocity control measures such as: <ul style="list-style-type: none"> sand bags oyster bags filled with gravel filter fabrics straw bales flow limiters weirs or korfles and/or other similar/equivalent or appropriate systems silt fences, filter fabrics In stream Sediments collection sumps, temporary sumps, pumping systems attenuation lagoons sediment traps, stiling / settlement ponds
Water Treatment Controls	<ol style="list-style-type: none"> Temporary sumps attenuation ponds Temporary storage lagoons Sediment traps, Stiling / Settlement ponds Proprietary settlement systems such as 33 floaters, and/or other similar/equivalent or appropriate systems Silt dewatering bags
Outfall Controls	<ol style="list-style-type: none"> Levelspreaders Buffered outfalls Vegetation filters Silt dewatering bags Flow limiters and weirs



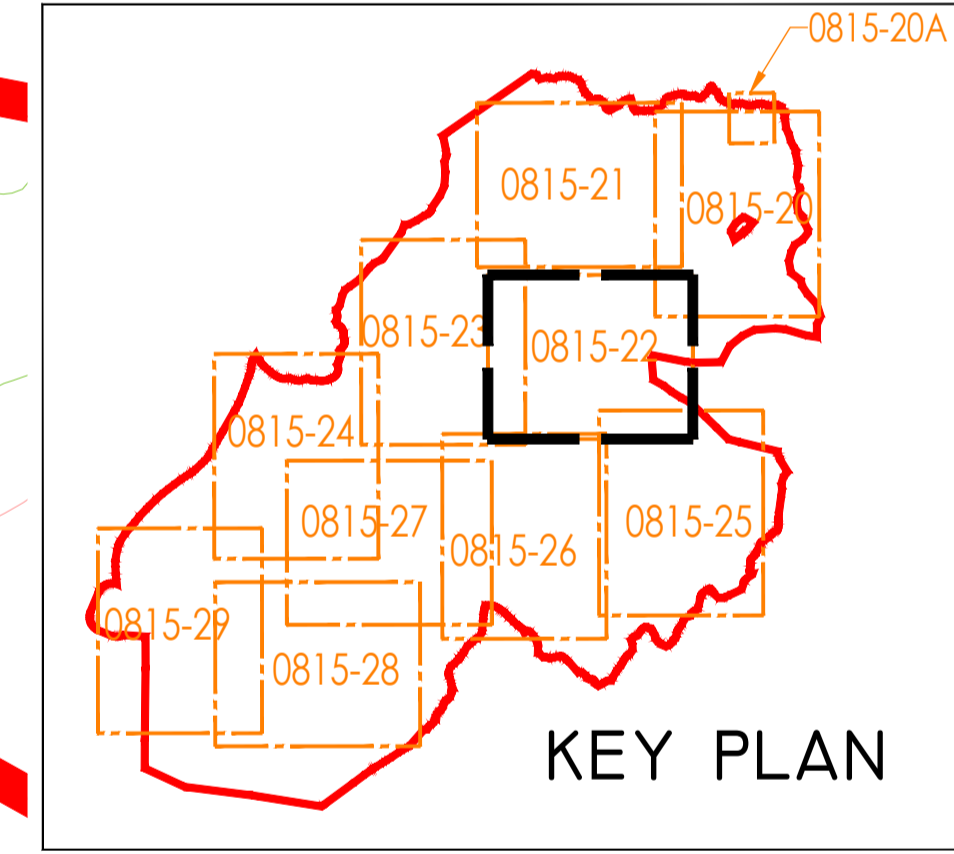


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- OVERLAND FLOW DISCHARGE
- TW TREATED WATER DISCHARGE
- SP SETTLEMENT POND
- VS SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
- PUMPING SUMP
- SITE BOUNDARY
- EXISTING GROUND SURFACE MAJOR CONTOUR (10 M INTERVAL)
- EXISTING GROUND SURFACE INTERMEDIATE CONTOUR (5 M INTERVAL)
- EXISTING GROUND SURFACE MINOR CONTOUR (1 M INTERVAL)
- TURBINE AND SWEEP AREA
- TURBINE FOUNDATION
- EXISTING ROAD
- EXISTING ROAD TO BE UPGRADED
- PROPOSED ROAD
- FLOATING ROAD
- CRANE PLATFORM
- BORROW PIT
- PROPOSED CUT AREA
- PROPOSED FILL AREA

PROJECT DESIGN DRAWING NOTES

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- LAYOUT PLANS SHOW TYPICAL TURBINE ROTOR DIAMETER AS PER TURBINE DRAWING.



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Date	Description	Chkd	Signed

HYDRO ENVIRONMENTAL SERVICES

22 Lower Main St
Dungarvan
Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client: **MCCARTHY KEVILLE O'SULLIVAN**

Job: **ARDDERROO WF, Co. GALWAY**

Title: **Drainage Layout Sheet 3 of 10**

Figure No: **0815-22**

Drawing No: **P1227-8-1118-A1-0815-22-00A**

Sheet Size: **A1** Project No.: **P1227-8**

Scale: **1:2,000 (A1)** Drawn By: **GD**

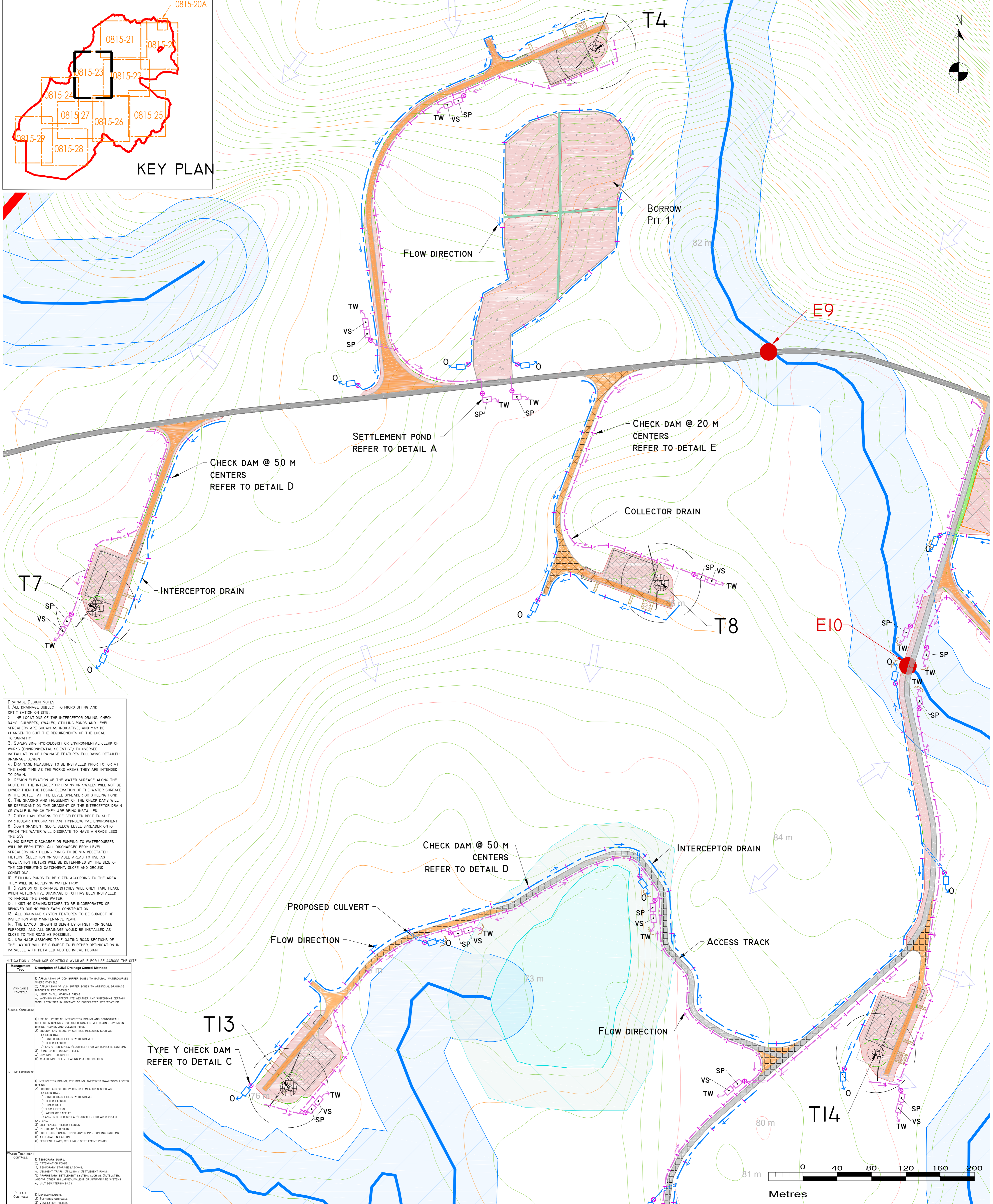
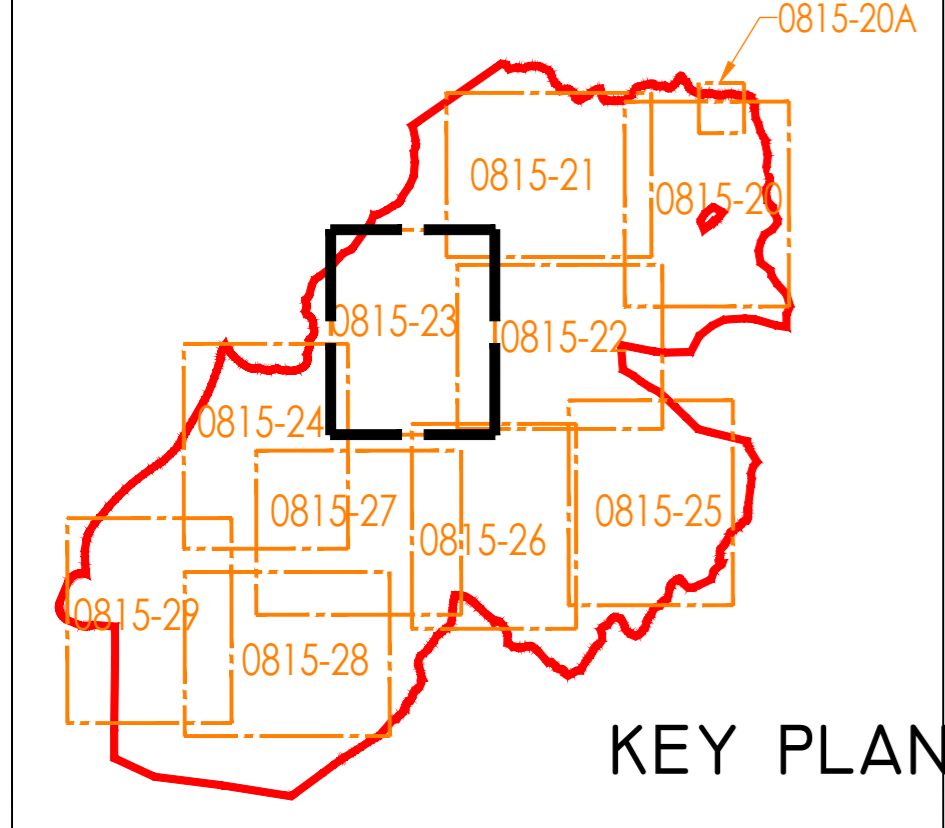
Date: **21/11/2018** Checked By: **MG**

DRAINAGE DESIGN NOTES

- ALL DRAINAGE SUBJECT TO MICRO-SITING AND OPTIMISATION ON SITE.
- THE LOCATIONS OF THE INTERCEPTOR DRAINS, CHECK DAMS, CULVERTS, SWALES, STILLING PONDS AND LEVEL SPREADERS ARE SHOWN AS INDICATIVE, AND MAY BE CHANGED TO SUIT THE REQUIREMENTS OF THE LOCAL TOPOGRAPHY.
- SUPERVISING HYDROLOGIST OR ENVIRONMENTAL CLERK OF WORKS (ENVIRONMENTAL SCIENTIST) TO OVERSEE INSTALLATION OF DRAINAGE FEATURES FOLLOWING DETAILED DRAINAGE DESIGN.
- DRAINAGE MEASURES TO BE INSTALLED PRIOR TO, OR AT THE SAME TIME AS THE WORKS AREAS THEY ARE INTENDED TO DRAIN.
- DESIGN ELEVATION OF THE WATER SURFACE ALONG THE ROUTE OF THE INTERCEPTOR DRAINS OR SWALES WILL NOT BE LOWER THAN THE DESIGN ELEVATION OF THE WATER SURFACE IN THE OUTLET AT THE LEVEL SPREADER OR STILLING POND.
- THE SPACING AND FREQUENCY OF THE CHECK DAMS WILL BE DEPENDANT ON THE GRADIENT OF THE INTERCEPTOR DRAIN OR SWALE IN WHICH THEY ARE BEING INSTALLED.
- CHECK DAM DESIGN TO BE SELECTED BEST TO SUIT PARTICULAR TOPOGRAPHY AND HYDROLOGICAL ENVIRONMENT.
- DOWN GRADIENT SLOPE BELOW LEVEL SPREADER ONTO WHICH THE WATER WILL DISSIPATE TO HAVE A GRADE LESS THE 6%.
- NO DIRECT DISCHARGE OR PUMPING TO WATERCOURSES WILL BE PERMITTED. ALL DISCHARGES FROM LEVEL SPREADERS OR STILLING PONDS TO BE VIA VEGETATED FILTERS. SELECTION OF SUITABLE AREAS TO USE AS VEGETATION FILTERS WILL BE DETERMINED BY THE SIZE OF THE CONTRIBUTING CATCHMENT, SLOPE AND GROUND CONDITIONS.
- STILLING PONDS TO BE SIZED ACCORDING TO THE AREA THEY WILL BE RECEIVING WATER FROM.
- DIVERSION OF DRAINAGE DITCHES WILL ONLY TAKE PLACE WHEN ALTERNATIVE DRAINAGE DITCH HAS BEEN INSTALLED TO HANDLE THE SAME WATER.
- EXISTING DRAINS/DITCHES TO BE INCORPORATED OR REMOVED DURING WINDY FAIR CONSTRUCTION.
- ALL DRAINAGE SYSTEM FEATURES TO BE SUBJECT OF INSPECTION AND MAINTENANCE PLAN.
- THE LAYOUT SHOWN IS SLIGHTLY OFFSET FOR SCALE PURPOSES, AND ALL DRAINAGE WOULD BE INSTALLED AS CLOSE TO THE ROAD AS POSSIBLE.
- DRAINAGE ASSIGNED TO FLOATING ROAD SECTIONS OF THE LAYOUT WILL BE SUBJECT TO FURTHER OPTIMISATION IN PARALLEL WITH DETAILED GEOTECHNICAL DESIGN.

MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

Management Type	Description of SUDS Drainage Control Methods
Avoidance Controls	1) APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE 2) APPLICATION OF 50M BUFFER ZONES TO ARTIFICIAL DRAINAGE DITCHES WHERE POSSIBLE 3) USING SMALL WORKING AREAS 4) WORKING IN APPROPRIATE WEATHER AND SCHEDULING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED WET WEATHER
SOURCE CONTROLS	1) USE OF UPSTREAM INTERCEPTOR DRAINS AND DOWNSTREAM COLLECTOR DRAINS / OVERSIZED SWALES, VEE-DRAINS, OVERFLOW DRAINS, FLUMES AND CULVERT PIPES 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) OTHER SIMILAR EQUIVALENT OR APPROPRIATE SYSTEMS 3) USING SMALL WORKING AREAS 4) COVERING STOCKPILES 5) WEATHERING OFF / SEALING HEAT STOCKPILES
IN-LINE CONTROLS	1) INTERCEPTOR DRAIN, VEE-DRAIN, OVERSIZED SWALES/COLLECTOR DRAINS 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) STRAIN BAGES e) FLOW LIMITERS f) WEIR OR BARRIERS g) AND/OR OTHER SIMILAR EQUIVALENT OR APPROPRIATE SYSTEMS 3) SILT FENCES, FILTER FABRICS 4) VEGETATION STRIPS 5) COLLECTION SUMP, TEMPORARY PUMPING SYSTEMS 6) ATTENUATION LAGOONS 7) SEDIMENT TRAPS, STILLING / SETTLEMENT POND
WATER TREATMENT CONTROLS	1) TEMPORARY SUMP 2) ATTENUATION POND 3) TEMPORARY STORAGE LAGOON 4) SEDIMENT TRAP, STILLING / SETTLEMENT POND 5) PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SILTTRAP, AND/OR OTHER SIMILAR EQUIVALENT OR APPROPRIATE SYSTEMS 6) SILT DEWATERING BAGS
OUTFALL CONTROLS	1) LEVELHEADERS 2) SUPPLIED OUTFALLS 3) VEGETATION FILTERS 4) SILT DEWATERING BAGS 5) FLOW LIMITERS AND WEIRS

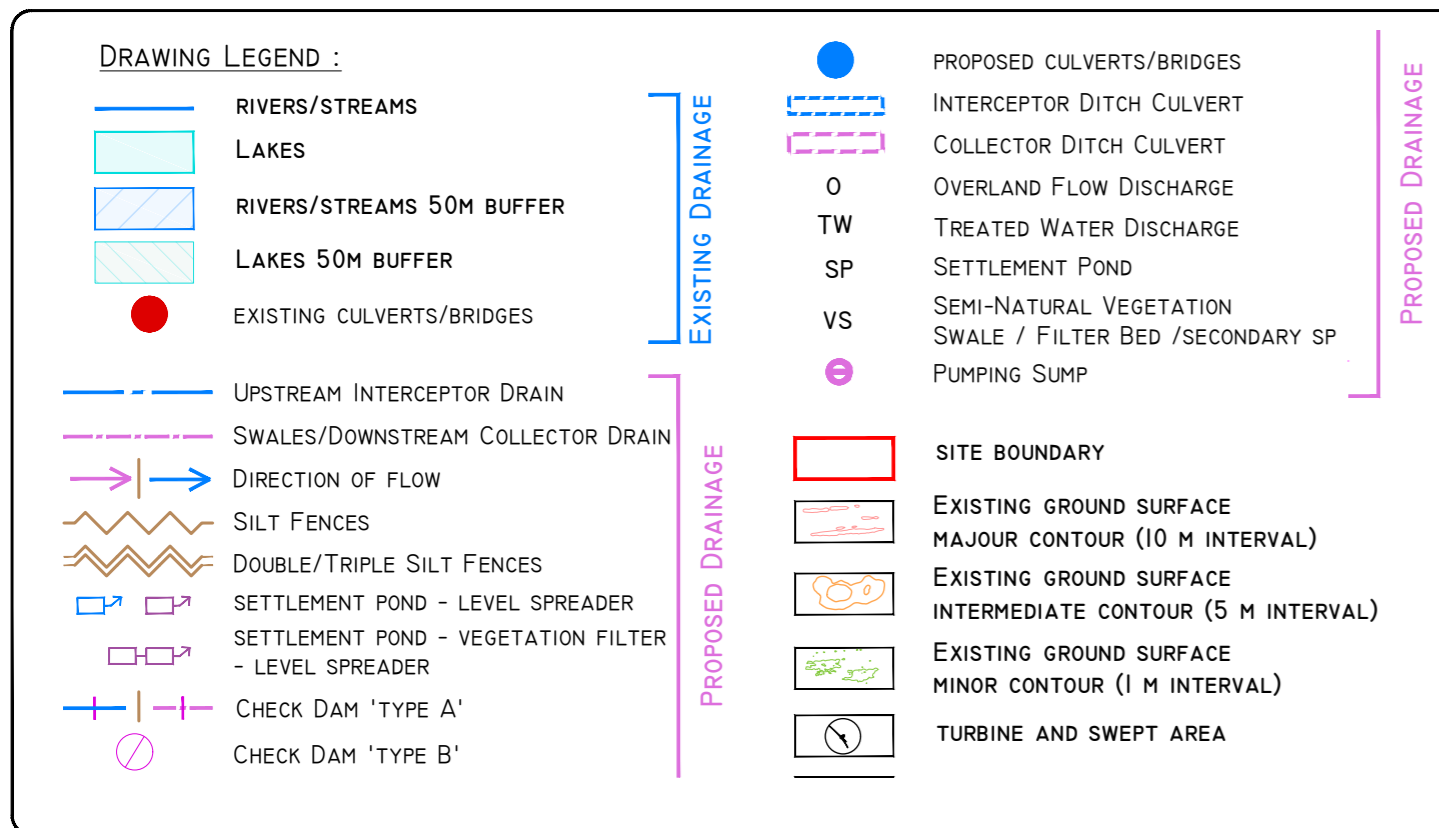


DRAINAGE DESIGN NOTES

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3. SUPERVISING HYDROLOGIST OR ENVIRONMENTAL CLERK OF WORKS (ENVIRONMENTAL SCIENTIST) TO OVERSEE INSTALLATION OF DRAINAGE FEATURES FOLLOWING DETAILED DRAINAGE DESIGN.
4. DRAINAGE MEASURES TO BE INSTALLED PRIOR TO, OR AT THE SAME TIME AS THE WORKS AREAS THEY ARE INTENDED TO DRAIN.
5. DESIGN ELEVATION OF THE WATER SURFACE ALONG THE ROUTE OF THE INTERCEPTOR DRAINS OR SWALES WILL NOT BE LOWER THAN THE DESIGN ELEVATION OF THE WATER SURFACE IN THE OUTLET AT THE LEVEL SPREADER OR STILLING POND.
6. THE SPACING AND FREQUENCY OF THE CHECK DAMS WILL BE DEPENDANT ON THE GRADIENT OF THE INTERCEPTOR DRAIN OR SWALE IN WHICH THEY ARE BEING INSTALLED.
7. CHECK DAM DESIGNS TO BE SELECTED BEST TO SUIT PARTICULAR TOPOGRAPHY AND HYDROLOGICAL ENVIRONMENT.
8. DOWN GRADIENT SLOPE BELOW LEVEL SPREADER ONTO WHICH THE WATER WILL DISSIPATE TO HAVE A GRADE LESS THE 6%.
9. NO DIRECT DISCHARGE OR PUMPING TO WATERCOURSES WILL BE PERMITTED. ALL DISCHARGES FROM LEVEL SPREADERS OR STILLING PONDS TO BE VIA VEGETATED FILTERS. SELECTION OF SUITABLE AREAS TO USE AS VEGETATION FILTERS WILL BE DETERMINED BY THE SIZE OF THE CONTRIBUTING CATCHMENT, SLOPE AND GROUND CONDITIONS.
10. STILLING PONDS TO BE SIZED ACCORDING TO THE AREA THEY WILL BE RECEIVING WATER FROM.
11. DIVERSION OF DRAINAGE DITCHES WILL ONLY TAKE PLACE WHEN ALTERNATIVE DRAINAGE DITCH HAS BEEN INSTALLED TO HANDLE THE SAME WATER.
12. EXISTING DRAINS/DITCHES TO BE INCORPORATED OR REMOVED DURING WIND FARM CONSTRUCTION.
13. ALL DRAINAGE SYSTEM FEATURES TO BE SUBJECT OF INSPECTION AND MAINTENANCE PLAN.
14. THE LAYOUT SHOWN IS SLIGHTLY OFFSET FOR SCALE PURPOSES, AND ALL DRAINAGE WOULD BE INSTALLED AS CLOSE TO THE ROAD AS POSSIBLE.
15. DRAINAGE ASSIGNED TO FLOATING ROAD SECTIONS OF THE LAYOUT WILL BE SUBJECT TO FURTHER OPTIMISATION IN PARALLEL WITH DETAILED GEOTECHNICAL DESIGN.

MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

Management Type	Description of SUDS Drainage Control Methods
AVOIDANCE CONTROLS	<ul style="list-style-type: none"> 1) APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE 2) APPLICATION OF 50M BUFFER ZONES TO ARTIFICIAL DRAINAGE DITCHES WHERE POSSIBLE 3) USING SMALL WORKING AREAS 4) WORKING IN APPROPRIATE WEATHER AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED WET WEATHER.
SOURCE CONTROLS	<ul style="list-style-type: none"> 1) USE OF UPSTREAM INTERCEPTOR DRAINS AND DOWNSTREAM COLLECTOR DRAINS / OVERSIZED SWALES, VEGETATED DIVERSION DRAINS, FILTERS AND SILENT PIPES 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: <ul style="list-style-type: none"> a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) LOG AND OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) USING SMALL WORKING AREAS 4) COVERING STOCKPILES 5) WEATHERING OFF / SEALING PEAT STOCKPILES
IN-LINE CONTROLS	<ul style="list-style-type: none"> 1) INTERCEPTOR DRAINS, VEGETATED SWALES/COLLECTOR DRAINS 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: <ul style="list-style-type: none"> a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) STRAW BALES e) FLOW LITTERS f) WEIRS OR Baffles g) LOGS OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) SILT FENCES, FILTER FABRICS 4) IN STREAM SEDIMENTS 5) COLLECTION PIPES, TEMPORARY SUMP, PUMPING SYSTEMS 6) ATTENUATION LAGOONS 7) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS
WATER TREATMENT CONTROLS	<ul style="list-style-type: none"> 1) TEMPORARY SUMPS 2) ATTENUATION PONDS 3) TEMPORARY STORAGE LAGOONS 4) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS 5) PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SILTTRAPER, AND/OR OTHER EQUIVALENTS OF APPROPRIATE SYSTEMS 6) SALT DEWATERING BAGS
OUTFALL CONTROLS	<ul style="list-style-type: none"> 1) LEVEL SPREADERS 2) BUFFERED OUTFALLS 3) VEGETATION FILTERS 4) SALT DEWATERING BAGS 5) FLOW LITTERS AND WEIRS



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Revisions

HYDRO ENVIRONMENTAL SERVICES
22 Lower Main St
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Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client: **MCCARTHY KEVILLE O'SULLIVAN**

Job: **ARDDERROO WF, CO. GALWAY**

Title: **Drainage Layout Sheet 4 of 10**

Figure No: **0815-23**

Drawing No: **P1227-8-1118-A1-0815-23-00A**

Sheet Size: **A1** Project No.: **P1227-8**

Scale: **1:2,000 (A1)** Drawn By: **GD**

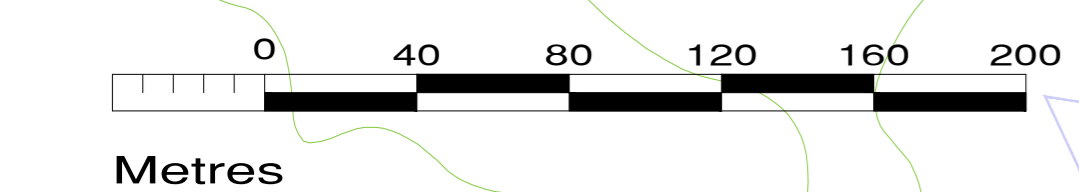
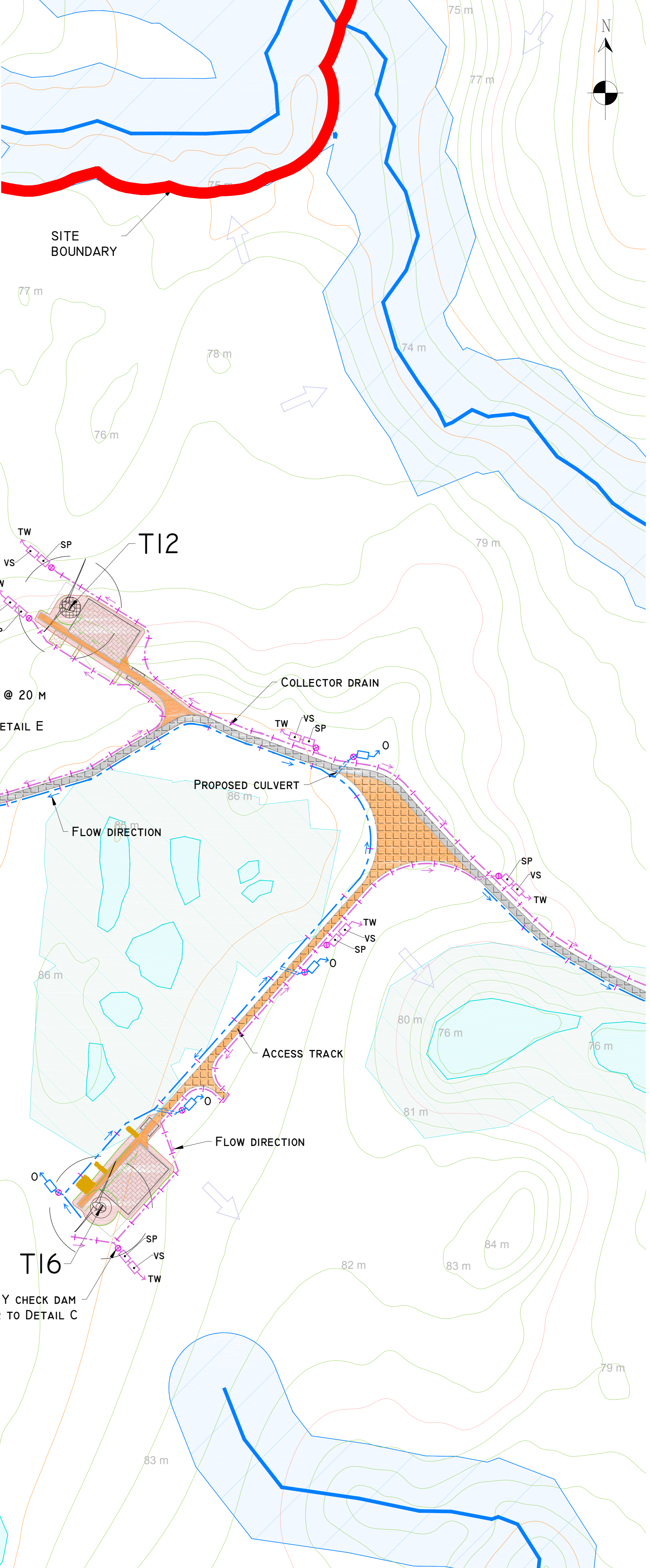
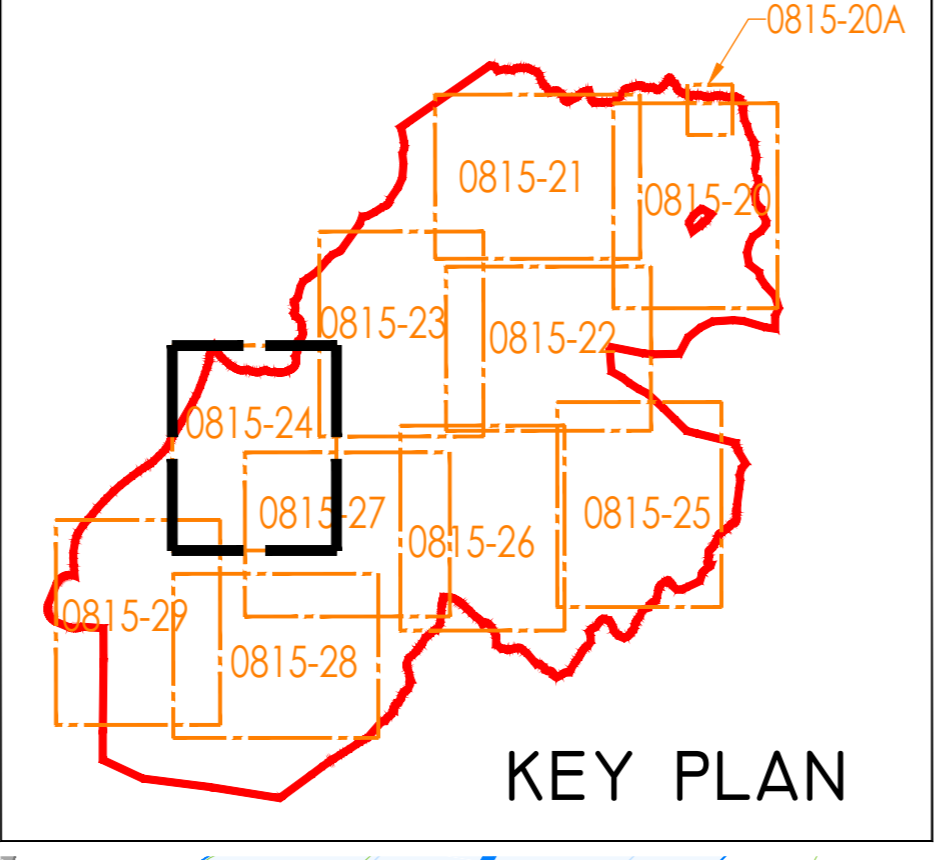
Date: **21/11/2018** Checked By: **MG**

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6. THE SPACING AND FREQUENCY OF THE CHECK DAMS WILL BE DEPENDANT ON THE GRADIENT OF THE INTERCEPTOR DRAIN OR SWALE IN WHICH THEY ARE BEING INSTALLED.
7. CHECK DAM DESIGNS TO BE SELECTED BEST TO SUIT PARTICULAR TOPOGRAPHY AND HYDROLOGICAL ENVIRONMENT.
8. DOWN GRADIENT SLOPE BELOW LEVEL SPREADER ONTO WHICH THE WATER WILL DISAPATE TO HAVE A GRADE LESS THE 6%.
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MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

Management Type	Description of SUDS Drainage Control Methods
Avoidance Controls	<ol style="list-style-type: none"> 1) APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE 2) APPLICATION OF 25M BUFFER ZONES TO ARTIFICIAL DRAINAGE SYSTEMS WHERE POSSIBLE 3) USING SPALL WORKING AREAS 4) WORKING IN APPROPRIATE WEATHER AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED WET WEATHER
Source Controls	<ol style="list-style-type: none"> 1) USE OF UPSTREAM INTERCEPTOR DRAINS AND DOWNSTREAM COLLECTOR DRAINS / OVERSIZED SWALES, VEE-DRAINS, DIVERSION DRAINS, FLUES AND COLLECTOR PIPES 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: <ol style="list-style-type: none"> a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) USING SPALL WORKING AREAS 4) COVERING STOCKPILES 5) WEATHERING OFF / SEALING PEAT STOCKPILES
In-line Controls	<ol style="list-style-type: none"> 1) INTERCEPTOR DRAINING, VEE-DRAINING, OVERSIZED SWALES/COLLECTOR DRAINS 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: <ol style="list-style-type: none"> a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) SILT FENCES, FILTER FABRICS 4) IN-TRENCH SOLES 5) COLLECTION Sumps, TEMPORARY Sumps, PUMPING SYSTEMS 6) ATTENUATION LASSING 7) SEGMENT TRAPS, STILLING / SETTLEMENT PONDS
Water Treatment Controls	<ol style="list-style-type: none"> 1) TEMPORARY Sumps 2) ATTENUATION PONDS 3) TEMPORARY STRAW LASSING 4) SEGMENT TRAPS, STILLING / SETTLEMENT PONDS 5) PRIMARY SETTLEMENT SYSTEMS SUCH AS: SILT-CATCHER, AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 6) Silt DRAINING BASINS
Outfall Controls	<ol style="list-style-type: none"> 1) LEVEL SPREADERS 2) BUFFERS OFFFALLS 3) VEGETATION FILTERS 4) Silt DRAINING BASINS 5) FLOW LIMITERS AND WEIRS



DRAWING LEGEND :

	RIVERS/STREAMS		PROPOSED CULVERTS/BRIDGES
	LAKES		INTERCEPTOR DITCH CULVERT
	RIVERS/STREAMS 50M BUFFER		COLLECTOR DITCH CULVERT
	LAKES 50M BUFFER		OVERLAND FLOW DISCHARGE
	EXISTING CULVERTS/BRIDGES		TREATED WATER DISCHARGE
	UPSTREAM INTERCEPTOR DRAIN		SETTLEMENT POND
	SWALES/DOWNSTREAM COLLECTOR DRAIN		SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
	DIRECTION OF FLOW		PUMPING SUMP
	SILT FENCES		SITE BOUNDARY
	DOUBLE/TRIPLE SILT FENCES		EXISTING GROUND SURFACE MAJOR CONTOUR (10 M INTERVAL)
	SETTLEMENT POND - LEVEL SPREADER		EXISTING GROUND SURFACE INTERMEDIATE CONTOUR (5 M INTERVAL)
	SETTLEMENT POND - VEGETATION FILTER		EXISTING GROUND SURFACE MINOR CONTOUR (1 M INTERVAL)
	LEVEL SPREADER		TURBINE AND SWEEP AREA
	CHECK DAM 'TYPE A'		TURBINE FOUNDATION
	CHECK DAM 'TYPE B'		EXISTING ROAD
			EXISTING ROAD TO BE UPGRADED
			PROPOSED ROAD
			FLOATING ROAD
			CRANE PLATFORM
			BORROW PIT
			PROPOSED CUT AREA
			PROPOSED FILL AREA

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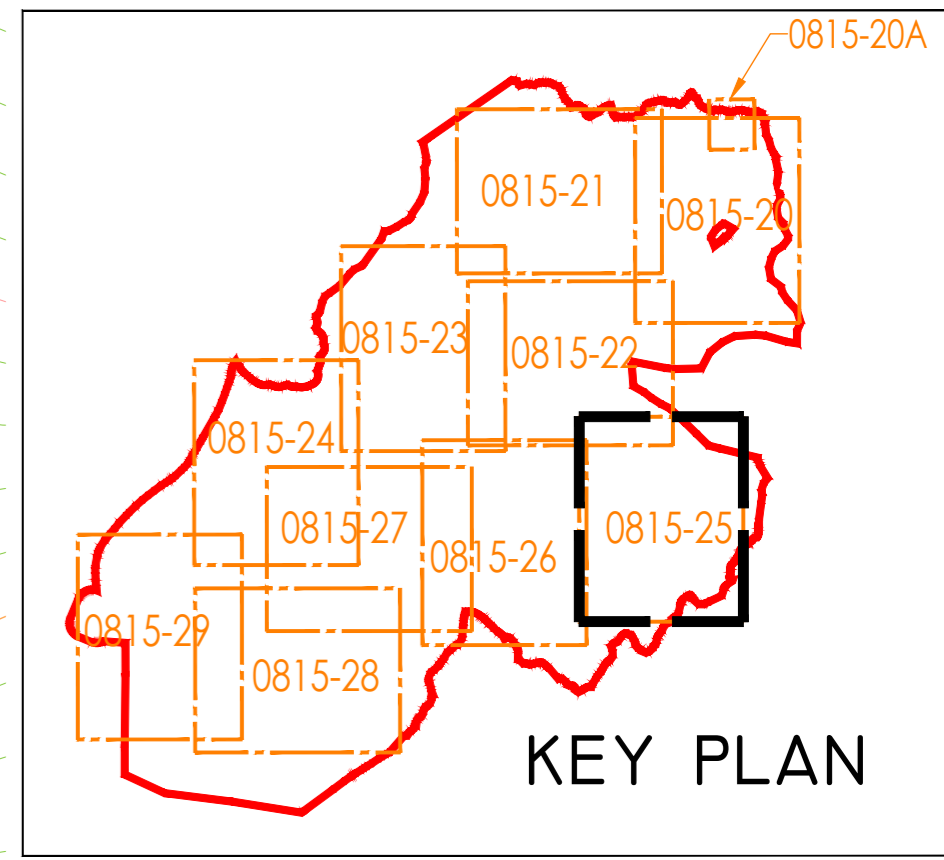
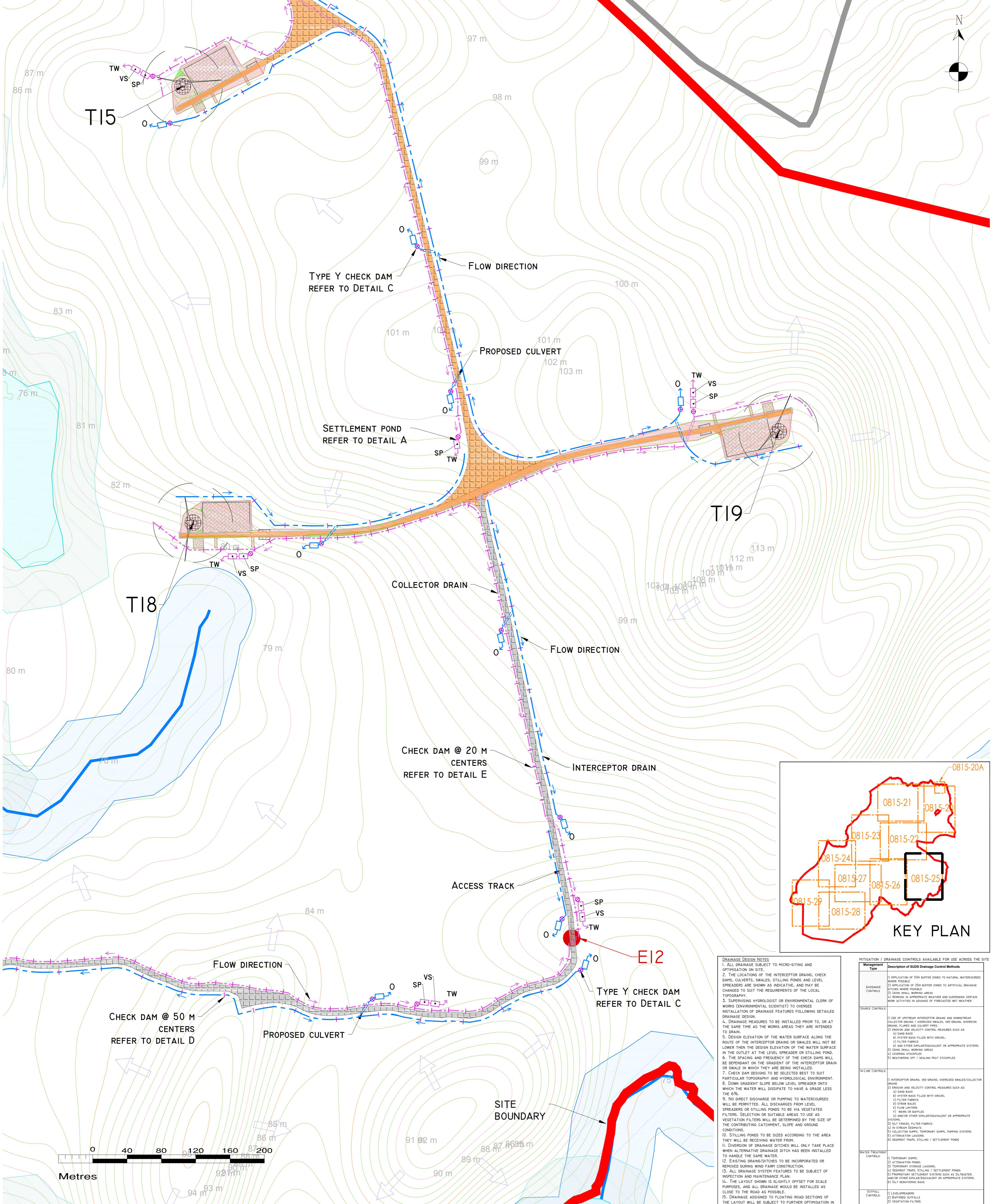
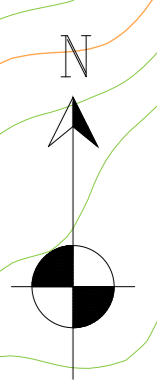
Date	Description	Chkd	Signed

HYDRO ENVIRONMENTAL SERVICES

22 Lower Main St
Dungarvan
Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
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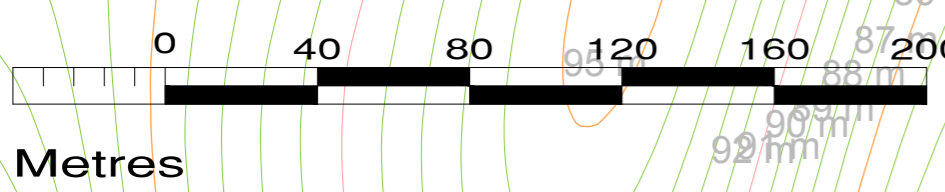
Client:	MCCARTHY KEVILLE O'SULLIVAN
Job:	ARDDERROO WF, Co. GALWAY
Title:	Drainage Layout Sheet 5 of 10
Figure No:	0815-24
Drawing No:	P1227-8-1118-A1-0815-24-00A
Sheet Size:	A1
Scale:	1:2,000 (A1)
Date:	21/11/2018
Project No.:	P1227-8
Drawn By:	GD
Checked By:	MG



DRAINAGE DESIGN NOTES

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13. ALL DRAINAGE SYSTEM FEATURES TO BE SUBJECT OF INSPECTION AND MAINTENANCE PLAN.
14. THE LAYOUT SHOWN IS SLIGHTLY OFFSET FOR SCALE PURPOSES, AND ALL DRAINAGE WOULD BE INSTALLED AS CLOSE TO THE ROAD AS POSSIBLE.
15. DRAINAGE ASSIGNED TO FLOATING ROAD SECTIONS OF THE LAYOUT WILL BE SUBJECT TO FURTHER OPTIMISATION IN PARALLEL WITH DETAILED GEOTECHNICAL DESIGN.

Management Type	Description of SUDS Drainage Control Methods
AVOIDANCE CONTROLS	1) APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE 2) APPLICATION OF 25M BUFFER ZONES TO ARTIFICIAL DRAINAGE STORES WHERE POSSIBLE 3) USING SMALL WORKING AREAS 4) WORKING IN APPROPRIATE WEATHER AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED BET WEATHER
SOURCE CONTROLS	1) USE OF UPSTREAM INTERCEPTOR DRAIN AND DOWNSTREAM COLLECTOR DRAIN / OVERLAND SWALE, VEGETATED DIVERSION DRAIN, FILTERS AND CULVERT PILES 2) SAND BAGS 3) OYSTER BAGS FILLED WITH GRAVEL 4) FILTER FABRICS 5) OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 6) VEGETATED FILTERS 7) WEED OR BARBERS 8) AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 9) SILT FENCES, FILTER FABRICS 10) IN STREAM DISCHARGE 11) COLLECTOR SWALES, TEMPORARY SUMPS, PUMPING SYSTEMS 12) ATTENUATION LAGOONS 13) SEDIMENT TRAP, STILLING / SETTLEMENT PONDS
IN-LINE CONTROLS	1) INTERCEPTOR DRAIN, VEGETATED SWALE/COLLECTOR DRAIN 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) OYSTER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) OTHER BAGS E) FLOW FILTERS F) WEED OR BARBERS G) AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) SILT FENCES, FILTER FABRICS 4) IN STREAM DISCHARGE 5) COLLECTOR SWALES, TEMPORARY SUMPS, PUMPING SYSTEMS 6) ATTENUATION LAGOONS 7) SEDIMENT TRAP, STILLING / SETTLEMENT PONDS
WATER TREATMENT CONTROLS	1) TEMPORARY SUMPS 2) ATTENUATION LAGOONS 3) TEMPORARY STORAGE LAGOONS 4) SEDIMENT TRAP, STILLING / SETTLEMENT PONDS 5) TEMPORARY SETTLEMENT SYSTEMS SUCH AS SILTTRAP, AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 6) SILT DRAINING BAGS
OFFFALL CONTROLS	1) LEVEL SPREADERS 2) BUFFERED OFFFALLS 3) VEGETATION FILTERS 4) SILT DRAINING BAGS 5) FLOW FILTERS AND WEBS



DRAWING LEGEND :	
	RIVERS/STREAMS
	LAKES
	RIVERS/STREAMS 50M BUFFER
	LAKES 50M BUFFER
	EXISTING CULVERTS/BRIDGES
	UPSTREAM INTERCEPTOR DRAIN
	SWALES/DOWNSTREAM COLLECTOR DRAIN
	DIRECTION OF FLOW
	SILT FENCES
	DOUBLE/TRIPLE SILT FENCES
	SETTLEMENT POND - LEVEL SPREADER
	SETTLEMENT POND - VEGETATION FILTER
	LEVEL SPREADER
	CHECK DAM 'TYPE A'
	CHECK DAM 'TYPE B'
	PROPOSED CULVERTS/BRIDGES
	INTERCEPTOR DITCH CULVERT
	COLLECTOR DITCH CULVERT
	OVERLAND FLOW DISCHARGE
	TREATED WATER DISCHARGE
	SETTLEMENT POND
	SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
	PUMPING PUMP
	SITE BOUNDARY
	EXISTING GROUND SURFACE MAJOR CONTOUR (10 M INTERVAL)
	EXISTING GROUND SURFACE INTERMEDIATE CONTOUR (5 M INTERVAL)
	EXISTING GROUND SURFACE MINOR CONTOUR (1 M INTERVAL)
	TURBINE AND SWEEP AREA
	TURBINE FOUNDATION
	EXISTING ROAD
	EXISTING ROAD TO BE UPGRADED
	PROPOSED ROAD
	FLOATING ROAD
	CRANE PLATFORM
	BORROW PIT
	PROPOSED CUT AREA
	PROPOSED FILL AREA

PROJECT DESIGN DRAWING NOTES

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6. THE USE OF OR RELIANCE UPON THIS DRAWING SHALL BE DEEMED TO BE ACCEPTANCE OF THESE CONDITIONS OF USE UNLESS OTHERWISE AGREED IN WRITING. SUCH WRITTEN AGREEMENT TO BE SOUGHT FROM AND ISSUED BY THE COPYRIGHT HOLDER TO THE USER OR RELIANCE UPON THIS DRAWING.
7. LAYOUT PLANS SHOW TYPICAL TURBINE ROTOR DIAMETER AS PER TURBINE DRAWING.

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Date	Description	Chkd	Signed

Revisions

HYDRO ENVIRONMENTAL SERVICES
22 Lower Main St
Dungarvan
Co. Waterford
Ireland

tel: +353 (0) 58-44127
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client: **MCCARTHY KEVILLE O'SULLIVAN**

Job: **ARDDERROO WF, Co. GALWAY**

Title: **Drainage Layout Sheet 6 of 10**

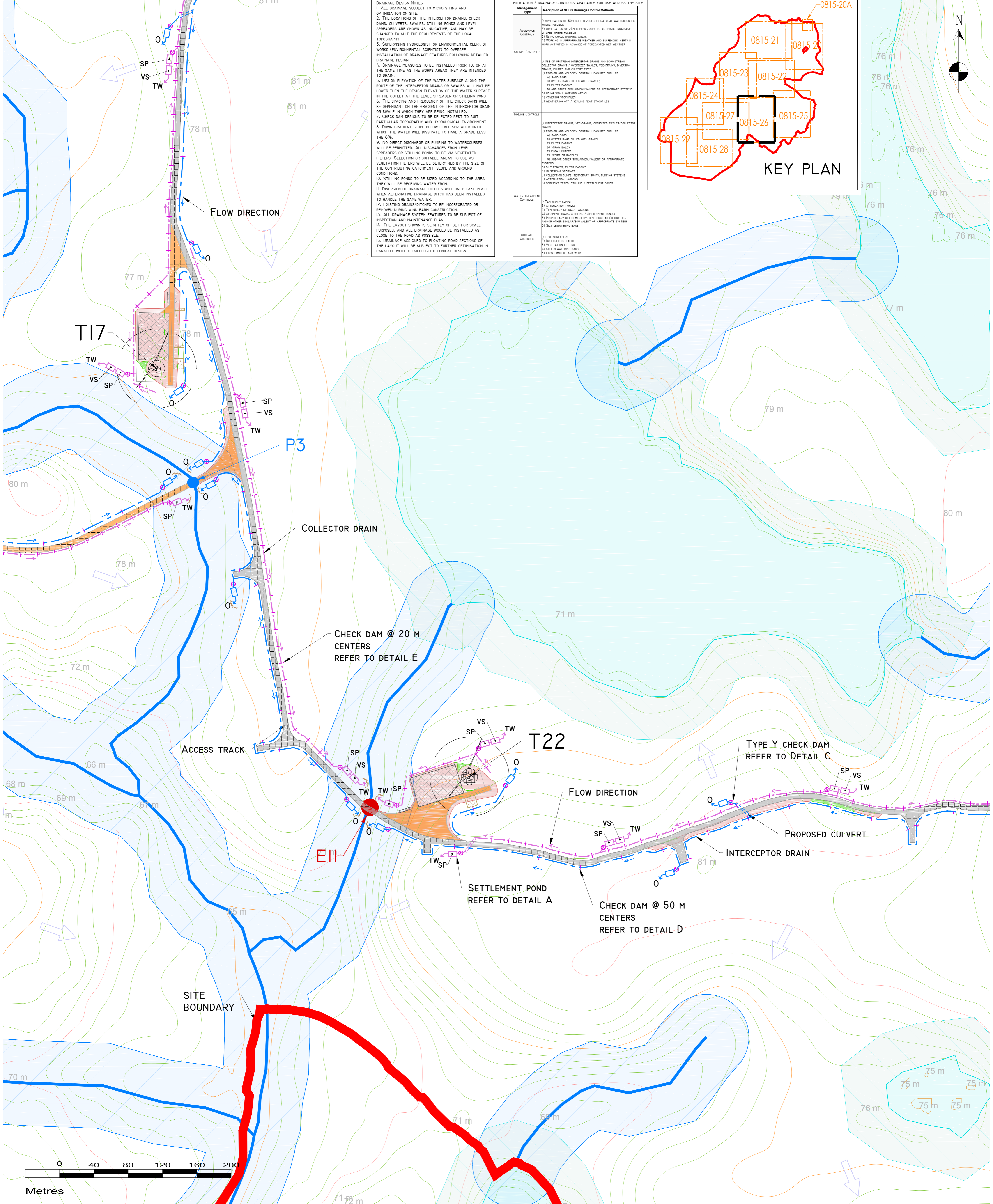
Figure No: **0815-25**

Drawing No: **P1227-8-118-A1-0815-25-00A**

Sheet Size: **A1** Project No.: **P1227-8**

Scale: **1:2,000 (A1)** Drawn by: **GD**

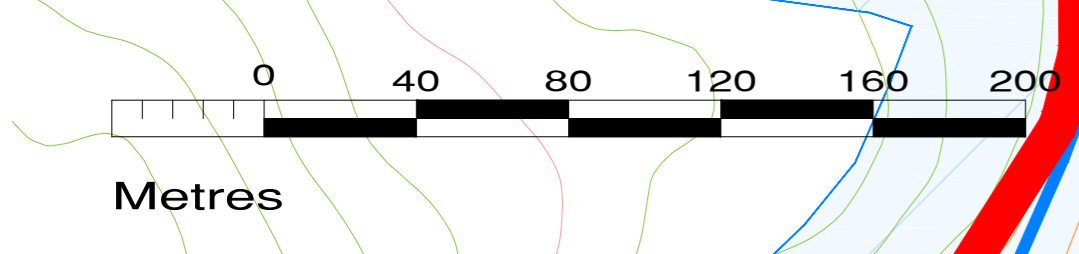
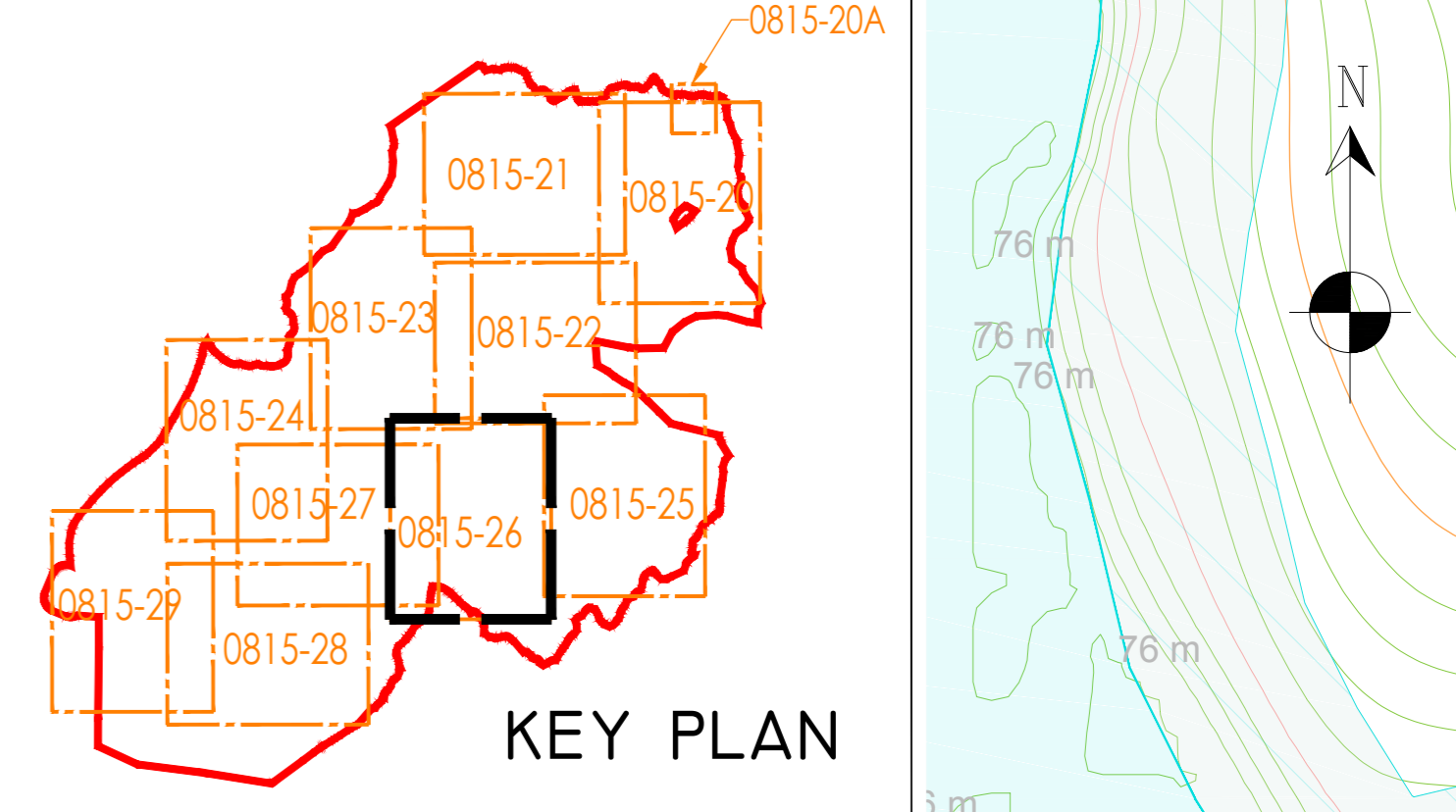
Date: **21/11/2018** Checked by: **MG**



DRAINAGE DESIGN NOTES

1. ALL DRAINAGE SUBJECT TO MICRO-SITING AND OPTIMISATION ON SITE.
2. THE LOCATIONS OF THE INTERCEPTOR DRAINS, CHECK DAMS, CULVERTS, SWALES, STILLING PONDS AND LEVEL SPREADERS ARE SHOWN AS INDICATIVE, AND MAY BE CHANGED TO SUIT THE REQUIREMENTS OF THE LOCAL TOPOGRAPHY.
3. SUPERVISING HYDROLOGIST OR ENVIRONMENTAL CLERK OF WORKS (ENVIRONMENTAL SCIENTIST) TO OVERSEE INSTALLATION OF DRAINAGE FEATURES FOLLOWING DETAILED DRAINAGE DESIGN.
4. DRAINAGE MEASURES TO BE INSTALLED PRIOR TO, OR AT THE SAME TIME AS THE WORKS AREAS THEY ARE INTENDED TO DRAIN.
5. DESIGN ELEVATION OF THE WATER SURFACE ALONG THE ROUTE OF THE INTERCEPTOR DRAINS OR SWALES WILL NOT BE LOWER THAN THE DESIGN ELEVATION OF THE WATER SURFACE IN THE OUTLET AT THE LEVEL SPREADER OR STILLING POND.
6. THE SPACING AND FREQUENCY OF THE CHECK DAMS WILL BE DEPENDANT ON THE GRADIENT OF THE INTERCEPTOR DRAIN OR SWALE IN WHICH THEY ARE BEING INSTALLED.
7. CHECK DAM DESIGNS TO BE SELECTED BEST TO SUIT PARTICULAR TOPOGRAPHY AND HYDROLOGICAL ENVIRONMENT.
8. DOWN GRADIENT SLOPE BELOW LEVEL SPREADER ONTO WHICH THE WATER WILL DISAPATE TO HAVE A GRADE LESS THAN 5%.
9. NO DIRECT DISCHARGE OR PUMPING TO WATERCOURSES WILL BE PERMITTED. ALL DISCHARGES FROM LEVEL SPREADERS OR STILLING PONDS TO BE VIA VEGETATED FILTERS. SELECTION OF SUITABLE AREAS TO USE AS VEGETATION FILTERS WILL BE DETERMINED BY THE SIZE OF THE CONTRIBUTING CATCHMENT, SLOPE AND GROUND CONDITIONS.
10. STILLING PONDS TO BE SIZED ACCORDING TO THE AREA THEY WILL BE RECEIVING WATER FROM.
11. DIVERSION OF DRAINAGE DITCHES WILL ONLY TAKE PLACE WHEN ALTERNATIVE DRAINAGE DITCH HAS BEEN INSTALLED TO HANDLE THE SAME WATER.
12. EXISTING DRAINS/DITCHES TO BE INCORPORATED OR REMOVED DURING WIND FARM CONSTRUCTION.
13. ALL DRAINAGE SYSTEM FEATURES TO BE SUBJECT OF INSPECTION AND MAINTENANCE PLAN.
14. THE LAYOUT SHOWN IS SLIGHTLY OFFSET FOR SCALE PURPOSES, AND ALL DRAINAGE WOULD BE INSTALLED AS CLOSE TO THE ROAD AS POSSIBLE.
15. DRAINAGE ASSIGNED TO FLOATING ROAD SECTIONS OF THE LAYOUT WILL BE SUBJECT TO FURTHER OPTIMISATION IN PARALLEL WITH DETAILED GEOTECHNICAL DESIGN.

Management Type	Description of SUDS Drainage Control Methods
AVOIDANCE CONTROLS	1) APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE 2) APPLICATION OF 25M BUFFER ZONES TO ARTIFICIAL DRAINAGE 3) URBAN SMALL WORKING AREAS 4) WORKING IN UNFOUNDED WEATHER AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED MET WEATHER
SOURCE CONTROLS	1) USE OF UPSTREAM INTERCEPTOR DRAIN AND DOWNSTREAM COLLECTOR DRAIN / OVERSIZED SWALES, VEGETATION, DIVERSION DRAINS, FILTERS AND COLLECTOR PIPES 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) SILT FENCES FILLED WITH GRAVEL C) OTHER SPILLAGE/EQUIVALENT OR APPROPRIATE SYSTEMS 3) URBAN SMALL WORKING AREAS 4) COVERING STOCKPILES 5) WEATHERING OFF / SEALING PEAT STOCKPILES
IN-LINE CONTROLS	1) INTERCEPTOR DRAIN, VEGETATION, OVERSIZED SWALES/COLLECTOR DRAIN 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) SILT FENCES FILLED WITH GRAVEL C) OTHER SPILLAGE/EQUIVALENT OR APPROPRIATE SYSTEMS 3) FILTER FABRICS 4) STRAIN BASKETS 5) FLOW LIMITERS 6) WEED OR BARRIERS 7) AND/OR OTHER SPILLAGE/EQUIVALENT OR APPROPRIATE SYSTEMS 8) SILT FENCES, FILTER FABRICS 9) IN STREAM STRUCTURES 10) COLLECTION SUPPS, TEMPORARY SUPPL, PUMPING SYSTEMS 11) ATTENUATION LEADING 12) SEGMENT TRAPS, STILLING / SETTLEMENT PONDS
WATER TREATMENT CONTROLS	1) TEMPORARY SUPPL 2) ATTENUATION PONDS 3) TEMPORARY STORAGE LEASONS 4) SEGMENT TRAPS, STILLING / SETTLEMENT PONDS 5) PRIMARY SETTLEMENT SYSTEMS SUCH AS SILENTERS, AND/OR OTHER SPILLAGE/EQUIVALENT OR APPROPRIATE SYSTEMS. 6) SALT DRAINAGE BASINS
OUTFALL CONTROLS	1) LEVEL SPREADERS 2) BARRIERS OFFFALLS 3) VEGETATION FILTERS 4) SALT DRAINAGE BASINS 5) FLOW LIMITERS AND WEIRS



DRAWING LEGEND :

	RIVERS/STREAMS		PROPOSED CULVERTS/BRIDGES
	LAKES		INTERCEPTOR DITCH CULVERT
	RIVERS/STREAMS 50M BUFFER		COLLECTOR DITCH CULVERT
	LAKES 50M BUFFER		OVERLAND FLOW DISCHARGE
	EXISTING CULVERTS/BRIDGES		TREATED WATER DISCHARGE
	UPSTREAM INTERCEPTOR DRAIN		SETTLEMENT POND
	SWALES/DOWNSTREAM COLLECTOR DRAIN		SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
	DIRECTION OF FLOW		PUMPING SUMP
	SILT FENCES		SITE BOUNDARY
	DOUBLE/TRIPLE SILT FENCES		EXISTING GROUND SURFACE MAJOR CONTOUR (10 M INTERVAL)
	SETTLEMENT POND - LEVEL SPREADER		EXISTING GROUND SURFACE INTERMEDIATE CONTOUR (5 M INTERVAL)
	SETTLEMENT POND - VEGETATION FILTER		EXISTING GROUND SURFACE MINOR CONTOUR (1 M INTERVAL)
	LEVEL SPREADER		TURBINE AND SWEEP AREA
	CHECK DAM 'TYPE A'		PROPOSED FILL AREA
	CHECK DAM 'TYPE B'		

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7. LAYOUT PLANS SHOW TYPICAL TURBINE ROTOR DIAMETER AS PER TURBINE DRAWING.

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Date	Description	Chkd	Signed

HYDRO ENVIRONMENTAL SERVICES
22 Lower Main St
Dungarvan
Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client: **MCCARTHY KEVILLE O'SULLIVAN**

Job: **ARDDERROO WF, CO. GALWAY**

Title: **DRAINAGE LAYOUT SHEET 7 OF 10**

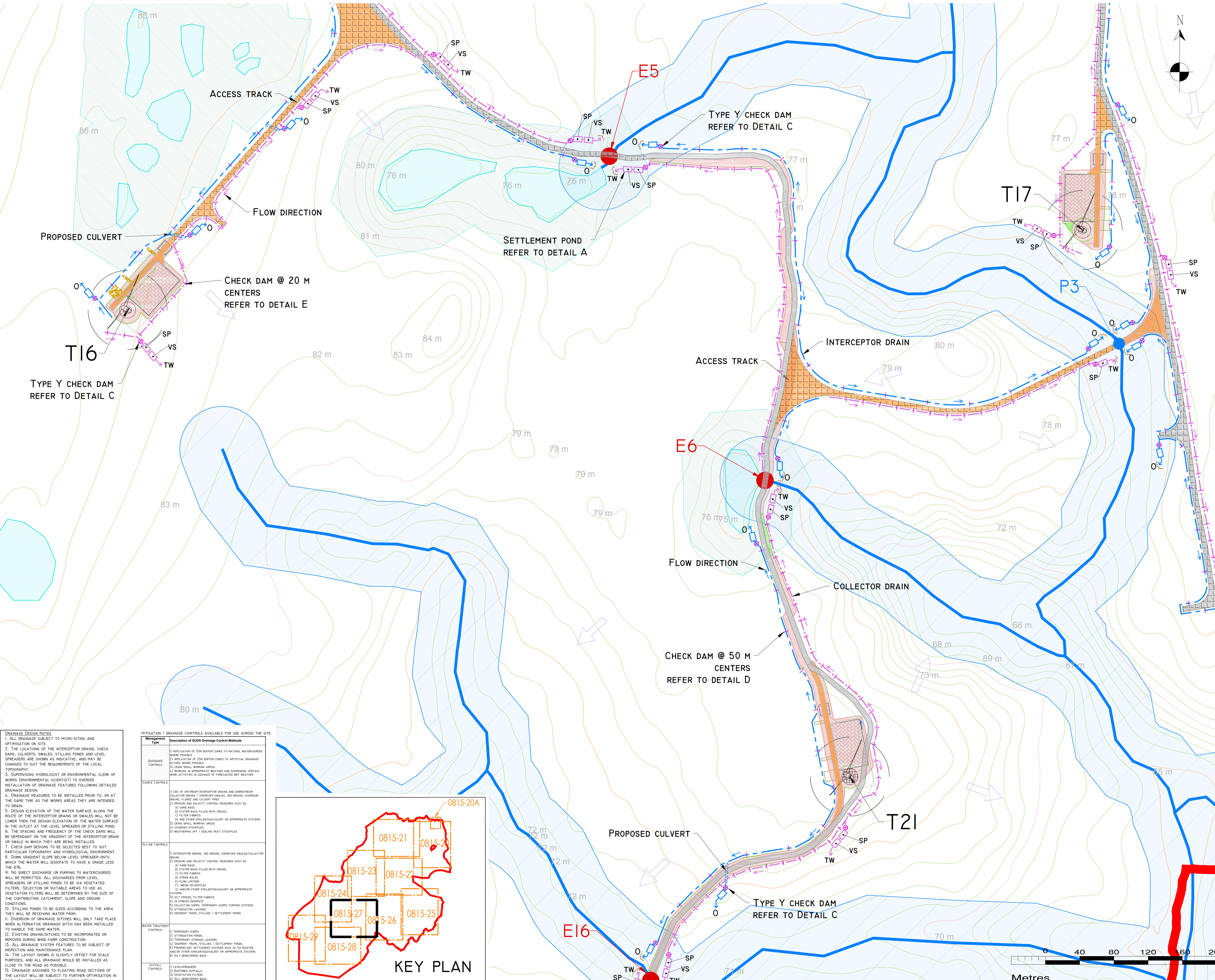
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Drawing No: P1227-8-1118-A1-0815-26-00A

Sheet Size: A1 Project No.: P1227-8

Scale: 1:2,000 (A1) Drawn By: GD

Date: 21/11/2018 Checked By: MG



DRAWING LEGEND :

- RIVERS/STREAMS
- LAKES
- RIVERS/STREAMS 50M BUFFER
- LAKES 50M BUFFER
- EXISTING CULVERTS/BRIDGES
- UPSTREAM INTERCEPTOR DRAIN
- SWALES/DOWNSTREAM COLLECTOR DRAIN
- DIRECTION OF FLOW
- SILT FENCES
- DOUBLE/TRIPLE SILT FENCES
- SETTLEMENT POND - LEVEL SPREADER
- SETTLEMENT POND - VEGETATION FILTER - LEVEL SPREADER
- CHECK DAM 'TYPE A'
- CHECK DAM 'TYPE B'
- PROPOSED CULVERTS/BRIDGES
- INTERCEPTOR DITCH CULVERT
- COLLECTOR DITCH CULVERT
- OVERLAND FLOW DISCHARGE
- TREATED WATER DISCHARGE
- SETTLEMENT POND
- SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
- PUMPING SUMP
- SITE BOUNDARY
- EXISTING GROUND SURFACE MAJOR CONTOUR (10 M INTERVAL)
- EXISTING GROUND SURFACE INTERMEDIATE CONTOUR (5 M INTERVAL)
- EXISTING GROUND SURFACE MINOR CONTOUR (1 M INTERVAL)
- TURBINE AND SWEEP AREA
- TURBINE FOUNDATION
- EXISTING ROAD
- EXISTING ROAD TO BE UPGRADED
- PROPOSED ROAD
- FLOATING PLATFORM
- CRANE PLATFORM
- BORROW PIT
- PROPOSED CUT AREA
- PROPOSED FILL AREA

PROJECT DESIGN DRAWING NOTES

1. ALL DRAINAGE SUBJECT TO MICRO-SITING AND OPTIMISATION ON SITE.
2. THE LOCATIONS OF THE INTERCEPTOR DRAINS, CHECK DAMS, CULVERTS, SWALES, STILLING PONDS AND LEVEL SPREADERS ARE SHOWN AS INDICATIVE, AND MAY BE CHANGED TO SUIT THE REQUIREMENTS OF THE LOCAL TOPOGRAPHY.
3. SUPERVISING HYDROLOGIST OR ENVIRONMENTAL CLERK OF WORKS (ENVIRONMENTAL SCIENTIST) TO OVERSEE. INSTALLATION OF DRAINAGE FEATURES FOLLOWING DETAILED DRAINAGE DESIGN.
4. DRAINAGE MEASURES TO BE INSTALLED PRIOR TO, OR AT THE SAME TIME AS THE WORKS ARE BEING INTENDED TO DRAIN.
5. DESIGN ELEVATION OF THE WATER SURFACE ALONG THE ROUTE OF THE INTERCEPTOR DRAIN OR SWALES WILL NOT BE LOWER THAN THE DESIGN ELEVATION OF THE WATER SURFACE IN THE OUTLET AT THE LEVEL SPREADER OR STILLING POND.
6. THE SPACING AND FREQUENCY OF THE CHECK DAMS WILL BE DEPENDANT ON THE GRADIENT OF THE INTERCEPTOR DRAIN OR SWALE IN WHICH THEY ARE BEING INSTALLED.
7. CHECK DAM DESIGNS TO BE SELECTED BEST TO SUIT PARTICULAR TOPOGRAPHY AND HYDROLOGICAL ENVIRONMENT.
8. DOWN GRADIENT SLOPE BELOW LEVEL SPREADER ONTO WHICH THE WATER WILL DISSIPATE TO HAVE A GRADE LESS THAN 6%.
9. NO DIRECT DISCHARGE OR PUMPING TO WATERCOURSES WILL BE PERMITTED. ALL DISCHARGES FROM LEVEL SPREADERS OR STILLING PONDS TO BE VIA VEGETATED FILTERS. SELECTION OF SUITABLE AREAS TO USE AS VEGETATED FILTERS WILL BE DETERMINED BY THE SIZE OF THE CONTRIBUTING CATCHMENT, SLOPE AND GROUND CONDITIONS.
10. STILLING PONDS TO BE SIZED ACCORDING TO THE AREA THEY WILL BE RECEIVING WATER FROM.
11. DIVERSION OF DRAINAGE DITCHES WILL ONLY TAKE PLACE WHEN ALTERNATIVE DRAINAGE DITCH HAS BEEN INSTALLED TO HANDLE THE SAME WATER.
12. EXISTING DRAINS/DITCHES TO BE INCORPORATED OR REMOVED DURING WIND FARM CONSTRUCTION.
13. ALL DRAINAGE SYSTEM FEATURES TO BE SUBJECT OF INSPECTION AND MAINTENANCE PLAN.
14. THE LAYOUT SHOWN IS SLIGHTLY OFFSET FOR SCALE PURPOSES, AND ALL DRAINAGE WOULD BE INSTALLED AS CLOSE TO THE ROAD AS POSSIBLE.
15. DRAINAGE ASSIGNED TO FLOATING ROAD SECTIONS OF THE LAYOUT WILL BE SUBJECT TO FURTHER OPTIMISATION IN PARALLEL WITH DETAILED GEOTECHNICAL DESIGN.

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HYDRO ENVIRONMENTAL SERVICES

22 Lower Main St
Dungarvan
Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client: **MCCARTHY KEVILLE O'SULLIVAN**

Job: **ARDDERROO WF, Co. GALWAY**

Title: **Drainage Layout Sheet 8 of 10**

Figure No: **0815-27**

Drawing No: **P1227-8-1118-A1-0815-27-00A**

Sheet Size: **A1** Project No.: **P1227-8**

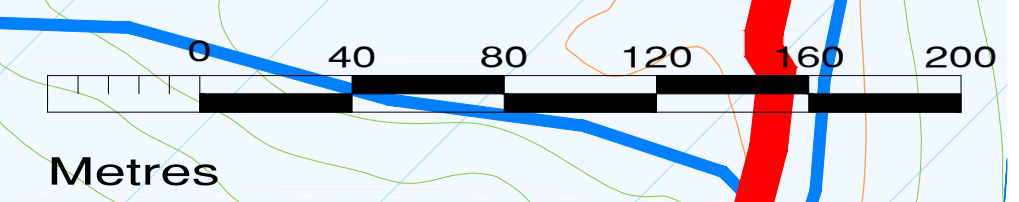
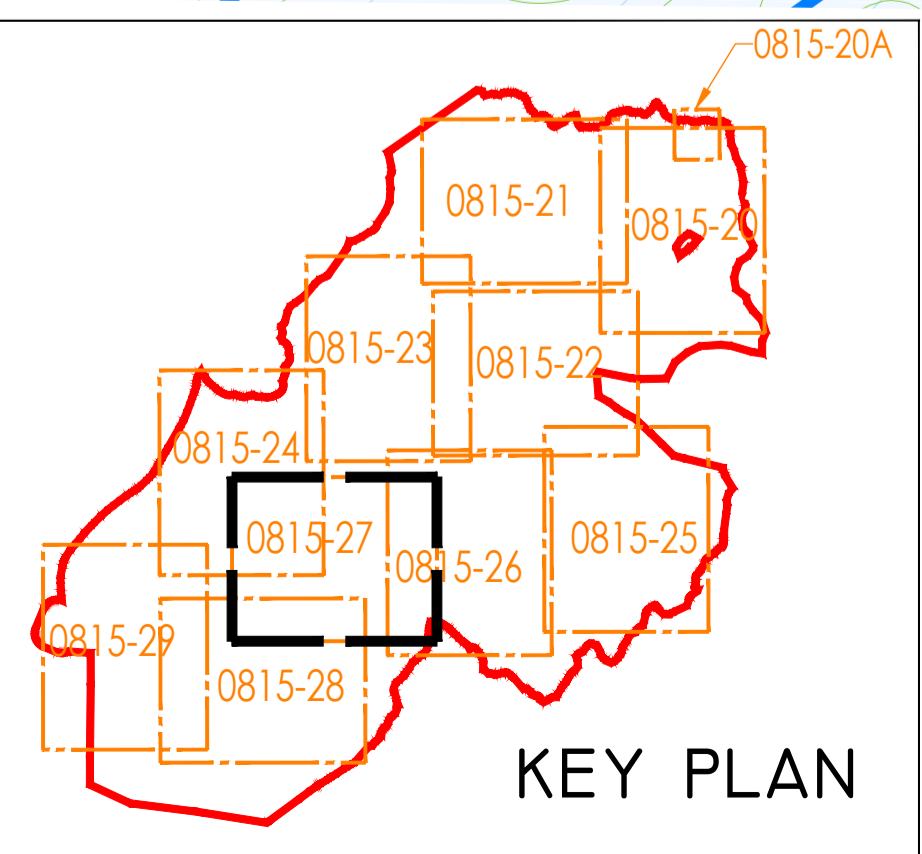
Scale: **1:2,000 (A1)** Drawn By: **GD**
Date: **21/11/2018** Checked By: **MG**

DRAINAGE DESIGN NOTES

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4. DRAINAGE MEASURES TO BE INSTALLED PRIOR TO, OR AT THE SAME TIME AS THE WORKS ARE BEING INTENDED TO DRAIN.
5. DESIGN ELEVATION OF THE WATER SURFACE ALONG THE ROUTE OF THE INTERCEPTOR DRAIN OR SWALES WILL NOT BE LOWER THAN THE DESIGN ELEVATION OF THE WATER SURFACE IN THE OUTLET AT THE LEVEL SPREADER OR STILLING POND.
6. THE SPACING AND FREQUENCY OF THE CHECK DAMS WILL BE DEPENDANT ON THE GRADIENT OF THE INTERCEPTOR DRAIN OR SWALE IN WHICH THEY ARE BEING INSTALLED.
7. CHECK DAM DESIGNS TO BE SELECTED BEST TO SUIT PARTICULAR TOPOGRAPHY AND HYDROLOGICAL ENVIRONMENT.
8. DOWN GRADIENT SLOPE BELOW LEVEL SPREADER ONTO WHICH THE WATER WILL DISSIPATE TO HAVE A GRADE LESS THAN 6%.
9. NO DIRECT DISCHARGE OR PUMPING TO WATERCOURSES WILL BE PERMITTED. ALL DISCHARGES FROM LEVEL SPREADERS OR STILLING PONDS TO BE VIA VEGETATED FILTERS. SELECTION OF SUITABLE AREAS TO USE AS VEGETATED FILTERS WILL BE DETERMINED BY THE SIZE OF THE CONTRIBUTING CATCHMENT, SLOPE AND GROUND CONDITIONS.
10. STILLING PONDS TO BE SIZED ACCORDING TO THE AREA THEY WILL BE RECEIVING WATER FROM.
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MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

Management Type	Description of SUDS Drainage Control Methods
AVOIDANCE CONTROLS	1) APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE. 2) APPLICATION OF 25M BUFFER ZONES TO ARTIFICIAL DRAINAGE SYSTEMS WHERE POSSIBLE. 3) USING SMALL WORKING AREAS. 4) WORKING IN APPROPRIATE WEATHER AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED MET WEATHER.
SOURCE CONTROLS	1) USE OF UPSTREAM INTERCEPTOR DRAINS AND DOWNSTREAM COLLECTOR DRAINS / OVERSIZED SWALES, VEGETATED DRAINS, FLUES AND CULVERT PIPES. 2) EMISSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) DRYER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) AND OTHER SPILLAGE/EQUIVALENT OR APPROPRIATE SYSTEMS 3) USING SMALL WORKING AREAS 4) COVERING STOOPLES 5) WEATHERING OFF / SEALING FEET STOOPLES
IN-LINE CONTROLS	1) INTERCEPTOR DRAIN, VEGETATED, OVERSIZED SWALES/COLLECTOR DRAIN 2) EMISSION AND VELOCITY CONTROL MEASURES SUCH AS: A) SAND BAGS B) DRYER BAGS FILLED WITH GRAVEL C) FILTER FABRICS D) OTHER BAGS E) FLOW LIFTERS F) MESH OR BAPLES G) AND/OR OTHER SPILLAGE/EQUIVALENT OR APPROPRIATE SYSTEMS 3) SILT FENCES, FILTER FABRICS 4) IN STREAM SWALES 5) COLLECTION Sumps, TEMPORARY Sumps, PUMPING SYSTEMS 6) ATTENUATION LAGOONS 7) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS
WATER TREATMENT CONTROLS	1) TEMPORARY Sumps 2) ATTENUATION PONDS 3) TEMPORARY STORAGE LAGOONS 4) SEDIMENT TRAPS, STILLING / SETTLEMENT PONDS 5) PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SALTROSTER, AND/OR OTHER SPILLAGE/EQUIVALENT OR APPROPRIATE SYSTEMS 6) SILT DEWATERING BAGS
OUTFALL CONTROLS	1) LEVEL SPREADERS 2) BUFFERED OUTFALLS 3) VEGETATED FILTERS 4) SILT DEWATERING BAGS 5) FLOW LIFTERS AND MESH

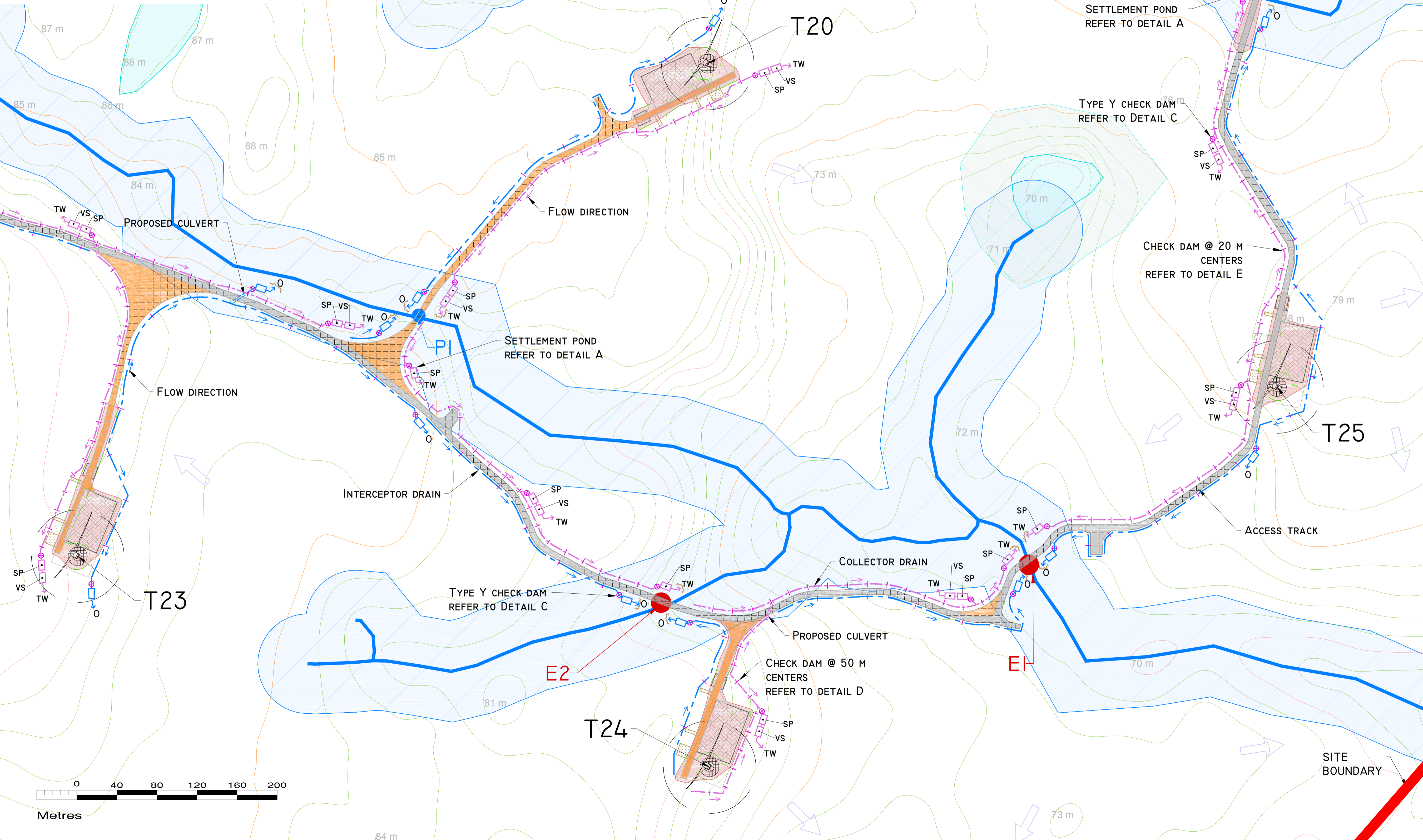
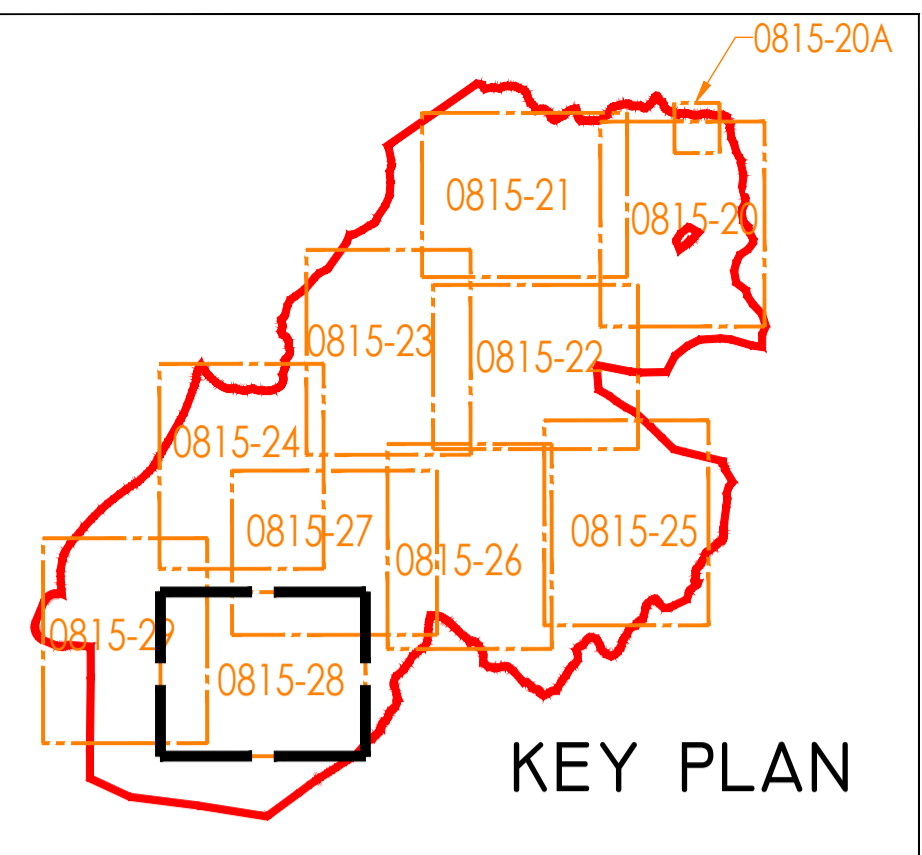


DRAINAGE DESIGN NOTES

1. ALL DRAINAGE SUBJECT TO MICRO-SITING AND OPTIMISATION ON SITE.
2. THE LOCATIONS OF THE INTERCEPTOR DRAINS, CHECK DAMS, CULVERTS, SWALES, STILLING PONDS AND LEVEL SPREADERS ARE SHOWN AS INDICATIVE, AND MAY BE CHANGED TO SUIT THE REQUIREMENTS OF THE LOCAL TOPOGRAPHY.
3. SUPERVISING HYDROLOGIST OR ENVIRONMENTAL CLERK OF WORKS (ENVIRONMENTAL SCIENTIST) TO OVERSEE INSTALLATION OF DRAINAGE FEATURES FOLLOWING DETAILED DRAINAGE DESIGN.
4. DRAINAGE MEASURES TO BE INSTALLED PRIOR TO, OR AT THE SAME TIME AS THE WORKS AREAS THEY ARE INTENDED TO DRAIN.
5. DESIGN ELEVATION OF THE WATER SURFACE ALONG THE ROUTE OF THE INTERCEPTOR DRAINS OR SWALES WILL NOT BE LOWER THAN THE DESIGN ELEVATION OF THE WATER SURFACE IN THE OUTLET AT THE LEVEL SPREADER OR STILLING POND.
6. THE SPACING AND FREQUENCY OF THE CHECK DAMS WILL BE DEPENDANT ON THE GRADIENT OF THE INTERCEPTOR DRAIN OR SWALE IN WHICH THEY ARE BEING INSTALLED.
7. CHECK DAM DESIGNS TO BE SELECTED BEST TO SUIT PARTICULAR TOPOGRAPHY AND HYDROLOGICAL ENVIRONMENT.
8. DOWN GRADIENT SLOPE BELOW LEVEL SPREADER ONTO WHICH THE WATER WILL DISAPATE TO HAVE A GRADE LESS THAN 6%.
9. NO DIRECT DISCHARGE OR PUMPING TO WATERCOURSES WILL BE PERMITTED. ALL DISCHARGES FROM LEVEL SPREADERS OR STILLING PONDS TO BE VIA VEGETATED FILTERS. SELECTION OF SUITABLE AREAS TO USE AS VEGETATION FILTERS WILL BE DETERMINED BY THE SIZE OF THE CONTRIBUTING CATCHMENT, SLOPE AND GRADING CONDITIONS.
10. STILLING PONDS TO BE SIZED ACCORDING TO THE AREA THEY WILL BE RECEIVING WATER FROM.
11. DIVERSION OF DRAINAGE DITCHES WILL ONLY TAKE PLACE WHEN ALTERNATIVE DRAINAGE DITCH HAS BEEN INSTALLED TO HANDLE THE SAME WATER.
12. EXISTING DRAINS/DITCHES TO BE INCORPORATED OR REMOVED DURING WIND FARM CONSTRUCTION.
13. ALL DRAINAGE SYSTEM FEATURES TO BE SUBJECT OF INSPECTION AND MAINTENANCE PLAN.
14. THE LAYOUT SHOWN IS SLIGHTLY OFFSET FOR SCALE PURPOSES, AND ALL DRAINAGE WOULD BE INSTALLED AS CLOSE TO THE ROAD AS POSSIBLE.
15. DRAINAGE ASSIGNED TO FLOATING ROAD SECTIONS OF THE LAYOUT WILL BE SUBJECT TO FURTHER OPTIMISATION IN PARALLEL WITH DETAILED GEOTECHNICAL DESIGN.

MITIGATION / DRAINAGE CONTROLS AVAILABLE FOR USE ACROSS THE SITE

Management Type	Description of SUDS Drainage Control Methods
AVANCE CONTROL	1) APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE 2) APPLICATION OF 25M BUFFER ZONES TO ARTIFICIAL DRAINAGE FEATURES WHERE POSSIBLE 3) USING SMALL WORKING AREAS 4) WORKING IN APPROPRIATE WEATHER AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED MET WEATHER
SOURCE CONTROL	1) USE OF UPSTREAM INTERCEPTOR DRAINS AND DIAMETERED COLLECTOR DRAINS / OVERHEAD SWALES, VEE-DRAINS, DIVERSION DRAINS, FLORES AND CULVERT PIPES 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) AND OTHER SPLAIN/VALVE OR APPROPRIATE SYSTEMS 3) USING SMALL WORKING AREAS 4) COVERING STOOPLES 5) WEATHERING OFF / SEALING PEAT STOOPLES
IN-LINE CONTROL	1) INTERCEPTOR DRAINS, VEE-DRAINS, OVERHEAD SWALES/COLLECTOR DRAINS 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) FLOW LAYERS e) WEIRS OR BARRIERS f) AND/OR OTHER SPLAIN/VALVE OR APPROPRIATE SYSTEMS 3) SILT FENCES, FILTER FABRICS 4) IN STREAM SEDIMATE 5) COLLECTION Sumps, TEMPORARY Sumps, PUMPING SYSTEMS 6) ATTENUATION LAGOONS 7) SEPERENT TRAPS, STILLING / SETTLEMENT PONDS
WATER TREATMENT CONTROL	1) TEMPORARY Sumps 2) ATTENUATION PONDS 3) TEMPORARY STORAGE LAGOONS 4) SEPERENT TRAPS, STILLING / SETTLEMENT PONDS 5) PROPERLY SIZED SETTLEMENT SYSTEMS SUCH AS SILTTRAP, AND/OR OTHER SPLAIN/VALVE OR APPROPRIATE SYSTEMS 6) SILT DENATURING BAGS
OUTFALL CONTROL	1) LEVEL SPREADERS 2) BUFFERED OUTFALLS 3) VEGETATION FILTERS 4) SILT DENATURING BAGS 5) FLOW LAYERS AND WEIRS



DRAWING LEGEND :

- RIVERS/STREAMS
- LAKES
- RIVERS/STREAMS 50M BUFFER
- LAKES 50M BUFFER
- EXISTING CULVERTS/BRIDGES
- UPSTREAM INTERCEPTOR DRAIN
- SWALES/DOWNSTREAM COLLECTOR DRAIN
- DIRECTION OF FLOW
- SILT FENCES
- DOUBLE/TRIPLE SILT FENCES
- SETTLEMENT POND - LEVEL SPREADER
- SETTLEMENT POND - VEGETATION FILTER - LEVEL SPREADER
- CHECK DAM 'TYPE A'
- CHECK DAM 'TYPE B'
- PROPOSED CULVERTS/BRIDGES
- INTERCEPTOR DITCH CULVERT
- COLLECTOR DITCH CULVERT
- OVERLAND FLOW DISCHARGE
- TREATED WATER DISCHARGE
- SETTLEMENT POND
- SEMI-NATURAL VEGETATION SWALE / FILTER BED /SECONDARY SP
- PUMPING SUMP

EXISTING DRAINAGE

- SITE BOUNDARY
- EXISTING GROUND SURFACE MAJOR CONTOUR (10 M INTERVAL)
- EXISTING GROUND SURFACE INTERMEDIATE CONTOUR (5 M INTERVAL)
- EXISTING GROUND SURFACE MINOR CONTOUR (1 M INTERVAL)
- TURBINE AND SWEEP AREA
- TURBINE FOUNDATION
- EXISTING ROAD
- EXISTING ROAD TO BE UPGRADED
- PROPOSED ROAD
- FLOATING ROAD
- CRANE PLATFORM
- BORROW PIT
- PROPOSED CUT AREA
- PROPOSED FILL AREA

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7. LAYOUT PLANS SHOW TYPICAL TURBINE ROTOR DIAMETER AS PER TURBINE DRAWING.

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Date	Description	Chkd	Signed
Revisions			

HYDRO ENVIRONMENTAL SERVICES

22 Lower Main St
Dungarvan
Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client: **MCCARTHY KEVILLE O'SULLIVAN**

Job: **ARDDERROO WF, Co. GALWAY**

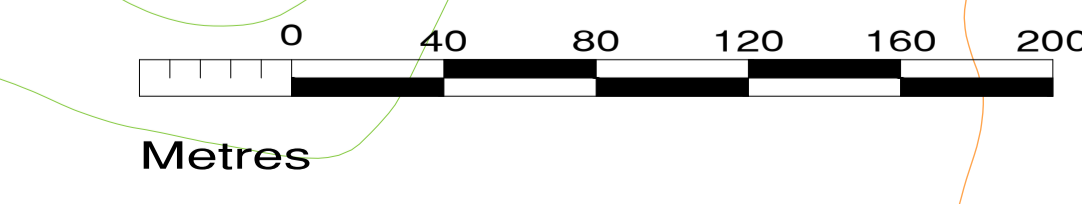
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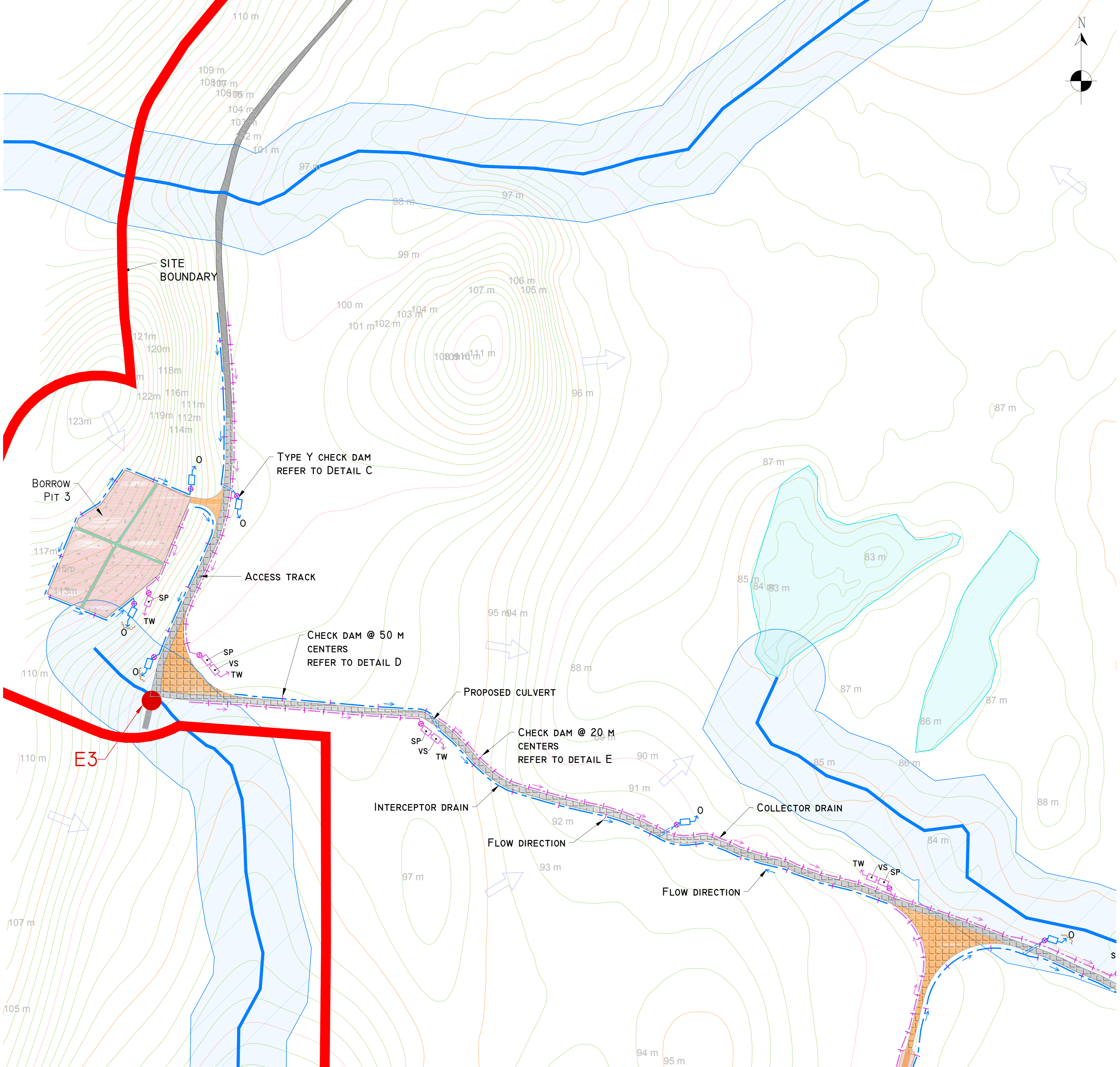
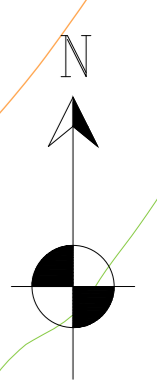
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Drawing No: **P1227-8-1118-A1-0815-28-00A**

Sheet Size: **A1** Project No.: **P1227-8**

Scale: **1:2,000 (A1)** Drawn By: **GD**
Date: **21/11/2018** Checked By: **MG**

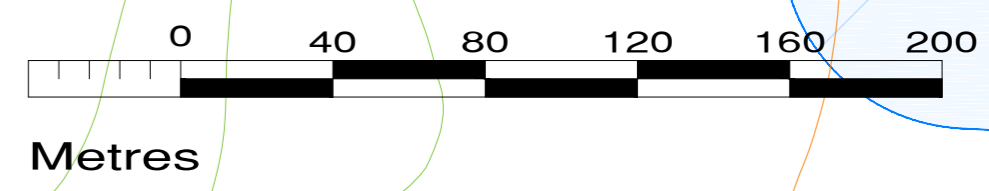
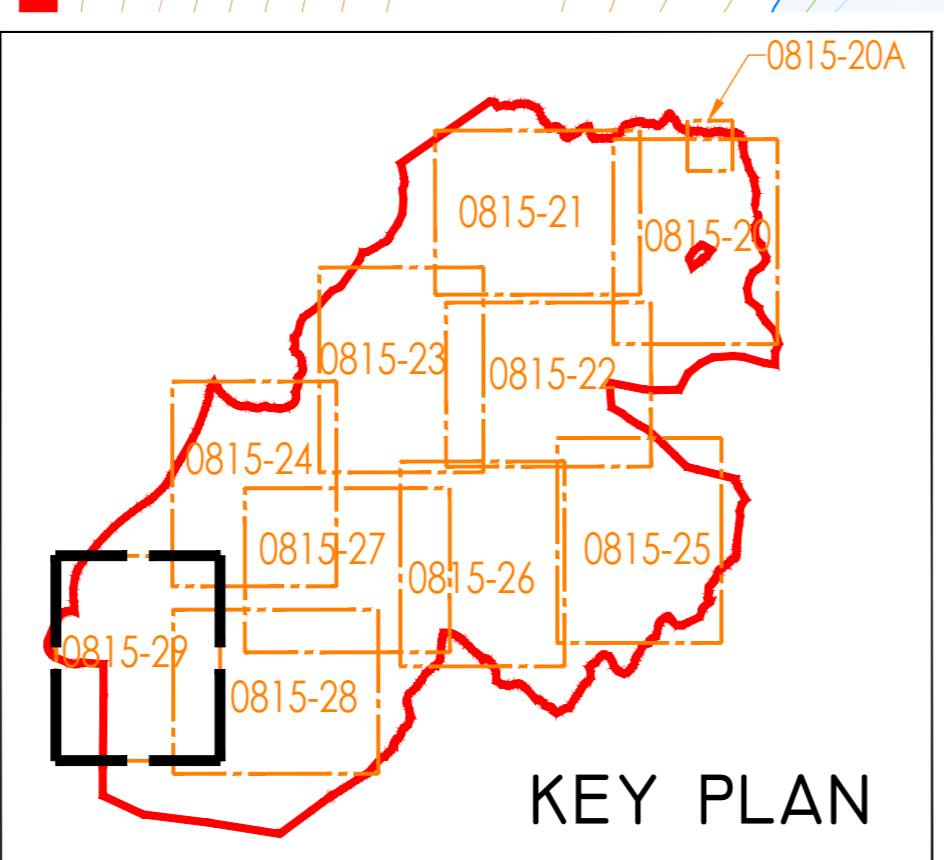




DRAINAGE DESIGN NOTES

1. ALL DRAINAGE SUBJECT TO MICRO-SITING AND OPTIMIZATION ON SITE.
2. THE LOCATIONS OF THE INTERCEPTOR DRAINS, CHECK DAMS, CULVERTS, SWALES, STILLING PONDS AND LEVEL SPREADERS ARE SHOWN AS INDICATIVE, AND MAY BE CHANGED TO SUIT THE REQUIREMENTS OF THE LOCAL TOPOGRAPHY.
3. SUPERVISING HYDROLOGIST OR ENVIRONMENTAL CLERK OF WORKS (ENVIRONMENTAL SCIENTIST) TO OVERSEE INSTALLATION OF DRAINAGE FEATURES FOLLOWING DETAILED DRAINAGE DESIGN.
4. DRAINAGE MEASURES TO BE INSTALLED PRIOR TO, OR AT THE SAME TIME AS THE WORKS AREAS THEY ARE INTENDED TO DRAIN.
5. DESIGN ELEVATION OF THE WATER SURFACE ALONG THE ROUTE OF THE INTERCEPTOR DRAINS OR SWALES WILL NOT BE LOWER THAN THE DESIGN ELEVATION OF THE WATER SURFACE IN THE OUTLET AT THE LEVEL SPREADER OR STILLING POND.
6. THE SPACING AND FREQUENCY OF THE CHECK DAMS WILL BE DEPENDANT ON THE GRADIENT OF THE INTERCEPTOR DRAIN OR SWALE IN WHICH THEY ARE BEING INSTALLED.
7. CHECK DAM DESIGNS TO BE SELECTED BEST TO SUIT PARTICULAR TOPOGRAPHY AND HYDROLOGICAL ENVIRONMENT.
8. DOWN GRADIENT SLOPE BELOW LEVEL SPREADER ONTO WHICH THE WATER WILL DISSIPATE TO HAVE A GRADE LESS THAN THE 6%.
9. NO DIRECT DISCHARGE OR PUMPING TO WATERCOURSES WILL BE PERMITTED. ALL DISCHARGES FROM LEVEL SPREADERS OR STILLING PONDS TO BE VIA VEGETATED FILTERS. SELECTION OR SUITABLE AREAS TO USE AS VEGETATION FILTERS WILL BE DETERMINED BY THE SIZE OF THE CONTRIBUTING CATCHMENT, SLOPE AND GROUND CONDITIONS.
10. STILLING PONDS TO BE SIZED ACCORDING TO THE AREA THEY WILL BE RECEIVING WATER FROM.
11. DIVERSION OF DRAINAGE DITCHES WILL ONLY TAKE PLACE WHEN ALTERNATIVE DRAINAGE DITCH HAS BEEN INSTALLED TO HANDLE THE SAME WATER.
12. EXISTING DRAINS/DITCHES TO BE INCORPORATED OR REMOVED DURING WIND FARM CONSTRUCTION.
13. ALL DRAINAGE SYSTEM FEATURES TO BE SUBJECT OF INSPECTION AND MAINTENANCE PLAN.
14. THE LAYOUT SHOWN IS SLIGHTLY OFFSET FOR SCALE PURPOSES, AND ALL DRAINAGE SHOULD BE INSTALLED AS CLOSE TO THE ROAD AS POSSIBLE.
15. DRAINAGE ASSIGNED TO FLOATING ROAD SECTIONS OF THE LAYOUT WILL BE SUBJECT TO FURTHER OPTIMISATION IN PARALLEL WITH DETAILED GEOTECHNICAL DESIGN.

Management Type	Description of SUDS Drainage Control Methods
AVANCE CONTROL	1) APPLICATION OF 50M BUFFER ZONES TO NATURAL WATERCOURSES WHERE POSSIBLE 2) APPLICATION OF 25M BUFFER ZONES TO ARTIFICIAL DRAINAGE SYSTEMS WHERE POSSIBLE 3) USING SMALL WORKING AREAS 4) WORKING IN APPROPRIATE WEATHER AND SUSPENDING CERTAIN WORK ACTIVITIES IN ADVANCE OF FORECASTED MET WEATHER
SOURCE CONTROL	1) USE OF UPSTREAM INTERCEPTOR DRAINS AND DOWNSTREAM COLLECTOR DRAINS / OVERSIZED SWALES, VEGETATED OVERLAND FLOWERS AND GULLY PIPES 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) STRAW BALES e) FLOW LAYERS f) MESH OR BIFFLES g) LAND OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) USING SMALL WORKING AREAS 4) WEATHERING OFF / SEALING PEAT STOOPLES
IN-LINE CONTROL	1) INTERCEPTOR DRAINS, VEGETATED, OVERSIZED SWALES/COLLECTOR DRAINS 2) EROSION AND VELOCITY CONTROL MEASURES SUCH AS: a) SAND BAGS b) OYSTER BAGS FILLED WITH GRAVEL c) FILTER FABRICS d) STRAW BALES e) FLOW LAYERS f) MESH OR BIFFLES g) LAND OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 3) IN-STREAM SIGMATS 4) COLLECTION PUMPS, TEMPORARY SUPPLS, PUMPING SYSTEMS 5) SEGMENTED PANS, STILLING / SETTLEMENT PONDS
WATER TREATMENT CONTROL	1) TEMPORARY SUPPLS 2) ATTENUATION PONDS 3) TEMPORARY STORAGE LAGOONS 4) SEGMENTED PANS, STILLING / SETTLEMENT PONDS 5) PROPRIETARY SETTLEMENT SYSTEMS SUCH AS SILTTRAP, AND/OR OTHER SIMILAR/EQUIVALENT OR APPROPRIATE SYSTEMS 6) SILT DEWATERING BASIS
OUTFALL CONTROL	1) LEVELSPREADERS 2) BUFFERED OUTFALLS 3) VEGETATION FILTERS 4) SILT DEWATERING BASIS 5) FLOW LAYERS AND WEIRS



DRAWING LEGEND :	
	RIVERS/STREAMS
	LAKES
	RIVERS/STREAMS 50M BUFFER
	LAKES 50M BUFFER
	EXISTING CULVERTS/BRIDGES
	UPSTREAM INTERCEPTOR DRAIN
	SWALES/DOWNSTREAM COLLECTOR DRAIN
	DIRECTION OF FLOW
	SILT FENCES
	DOUBLE/TRIPLE SILT FENCES
	SETTLEMENT POND - LEVEL SPREADER
	SETTLEMENT POND - VEGETATION FILTER - LEVEL SPREADER
	CHECK DAM 'TYPE A'
	CHECK DAM 'TYPE B'
	PROPOSED CULVERTS/BRIDGES
	INTERCEPTOR DITCH CULVERT
	COLLECTOR DITCH CULVERT
	OVERLAND FLOW DISCHARGE
	TREATED WATER DISCHARGE
	SETTLEMENT POND
	SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP
	PUMPING SUMP
	SITE BOUNDARY
	EXISTING GROUND SURFACE MAJOR CONTOUR (10 M INTERVAL)
	EXISTING GROUND SURFACE INTERMEDIATE CONTOUR (5 M INTERVAL)
	EXISTING GROUND SURFACE MINOR CONTOUR (1 M INTERVAL)
	TURBINE AND SWEEP AREA
	TURBINE FOUNDATION
	EXISTING ROAD
	EXISTING ROAD TO BE UPGRADED
	PROPOSED ROAD
	FLOATING ROAD
	CRANE PLATFORM
	BORROW PIT
	PROPOSED CUT AREA
	PROPOSED FILL AREA

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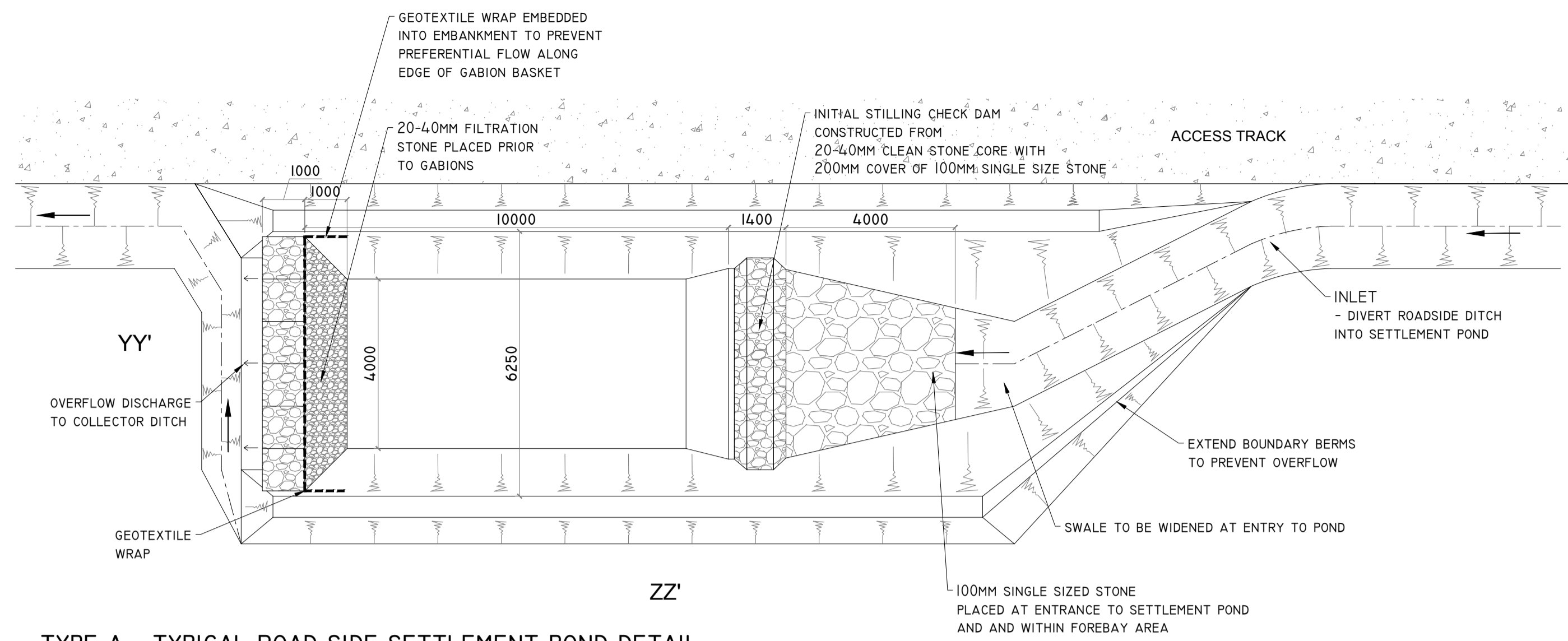
Date Description Chkd Signed

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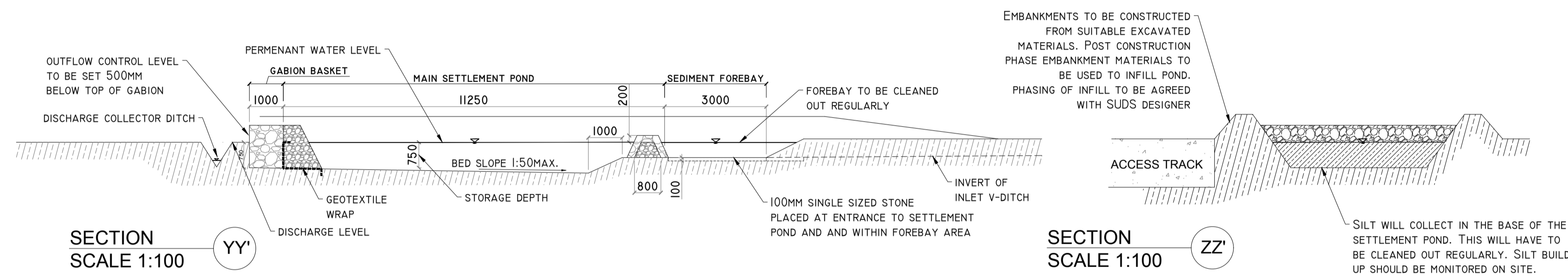
tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client:	MCCARTHY KEVILLE O'SULLIVAN
Job:	ARDDERROO WF, Co. GALWAY
Title:	Drainage Layout Sheet 10 of 10
Figure No:	0815-29
Drawing No:	P1227-8-1118-A1-0815-29-00A
Sheet Size:	A1
Scale:	1:2,000 (A1)
Date:	21/11/2018
Project No.:	P1227-8
Drawn By:	GD
Checked By:	MG



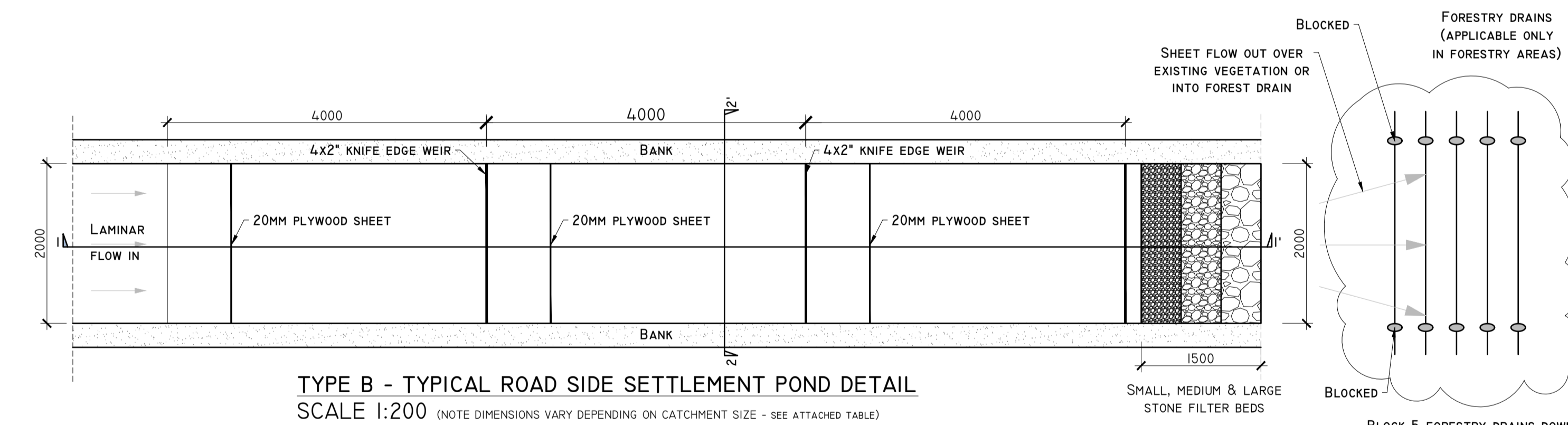
DETAIL A1

TYPE A - TYPICAL ROAD SIDE SETTLEMENT POND DETAIL
SCALE 1:200 (NOTE DIMENSIONS VARY DEPENDING ON CATCHMENT SIZE - SEE ATTACHED TABLE)

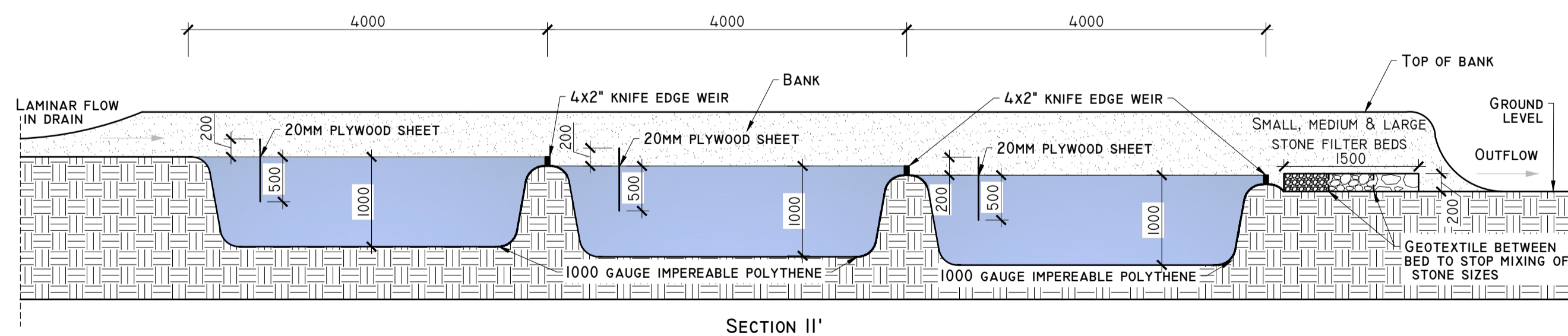


SECTION YY'
SCALE 1:100

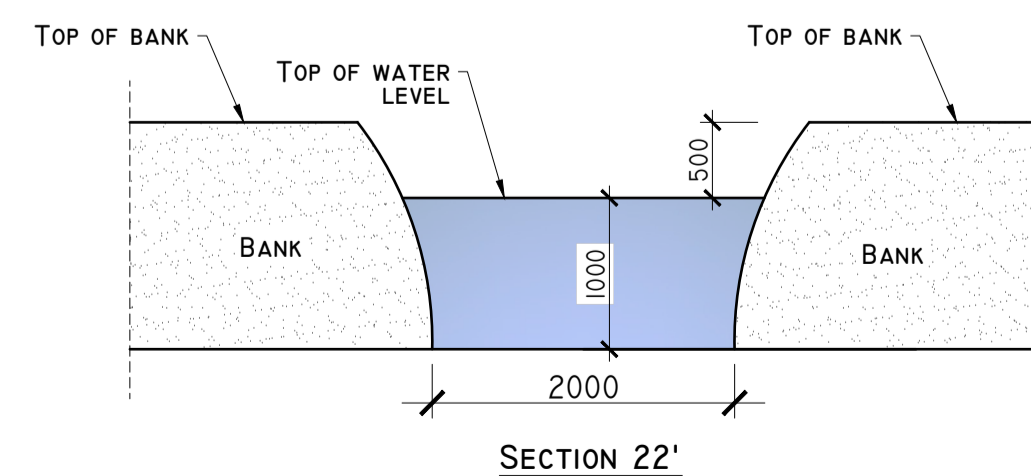
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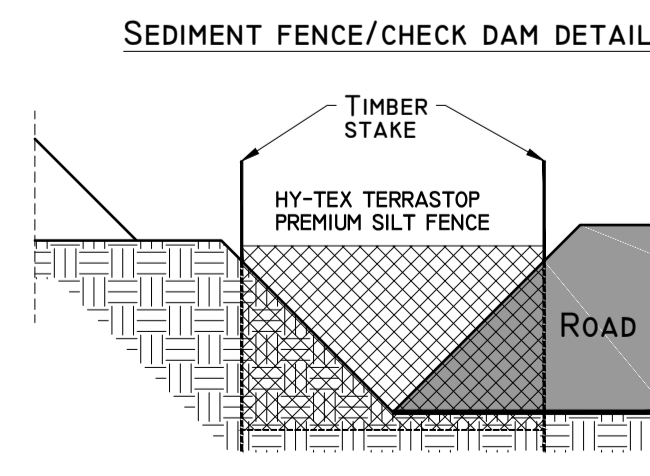
TYPE B - TYPICAL ROAD SIDE SETTLEMENT POND DETAIL
SCALE 1:200 (NOTE DIMENSIONS VARY DEPENDING ON CATCHMENT SIZE - SEE ATTACHED TABLE)



SECTION II'



SECTION 22'



DETAIL A2

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HYDRO ENVIRONMENTAL SERVICES
22 Lower Main St
Dungannon
Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
web: www.hydroenvironmental.ie

Client:
MCCARTHY KEVILLE O'SULLIVAN

Job:
ARDDERROO WF, Co. GALWAY

Title:
Drainage Details 1

Figure No: **0815-30**

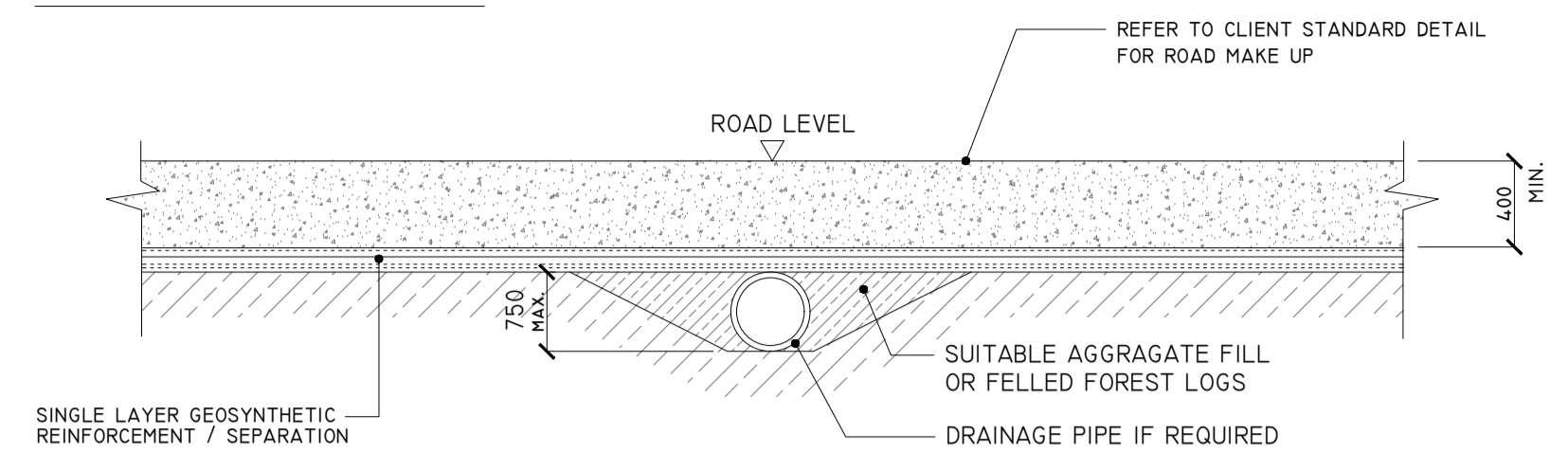
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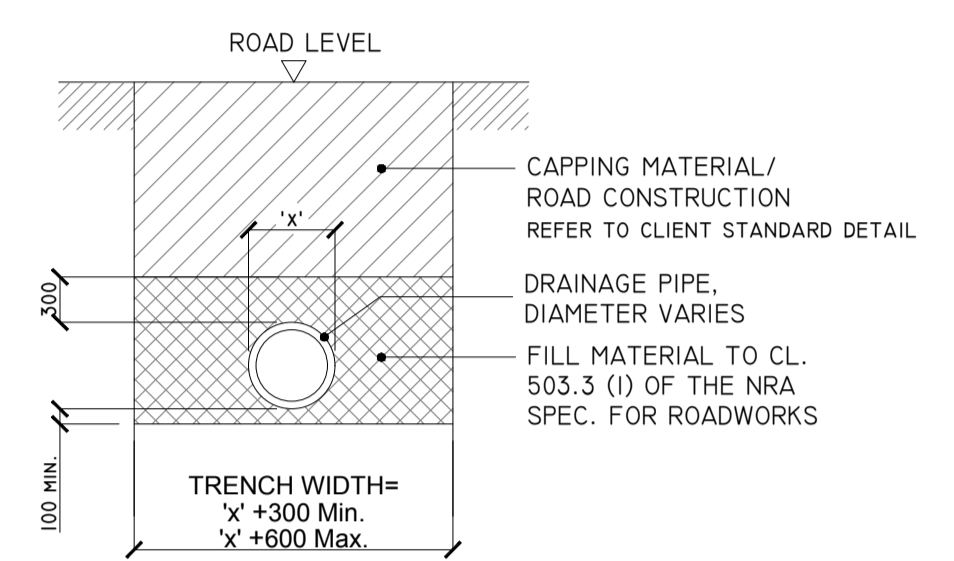
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Date: **21/11/2018** Checked By: **M.G.**

DETAIL B

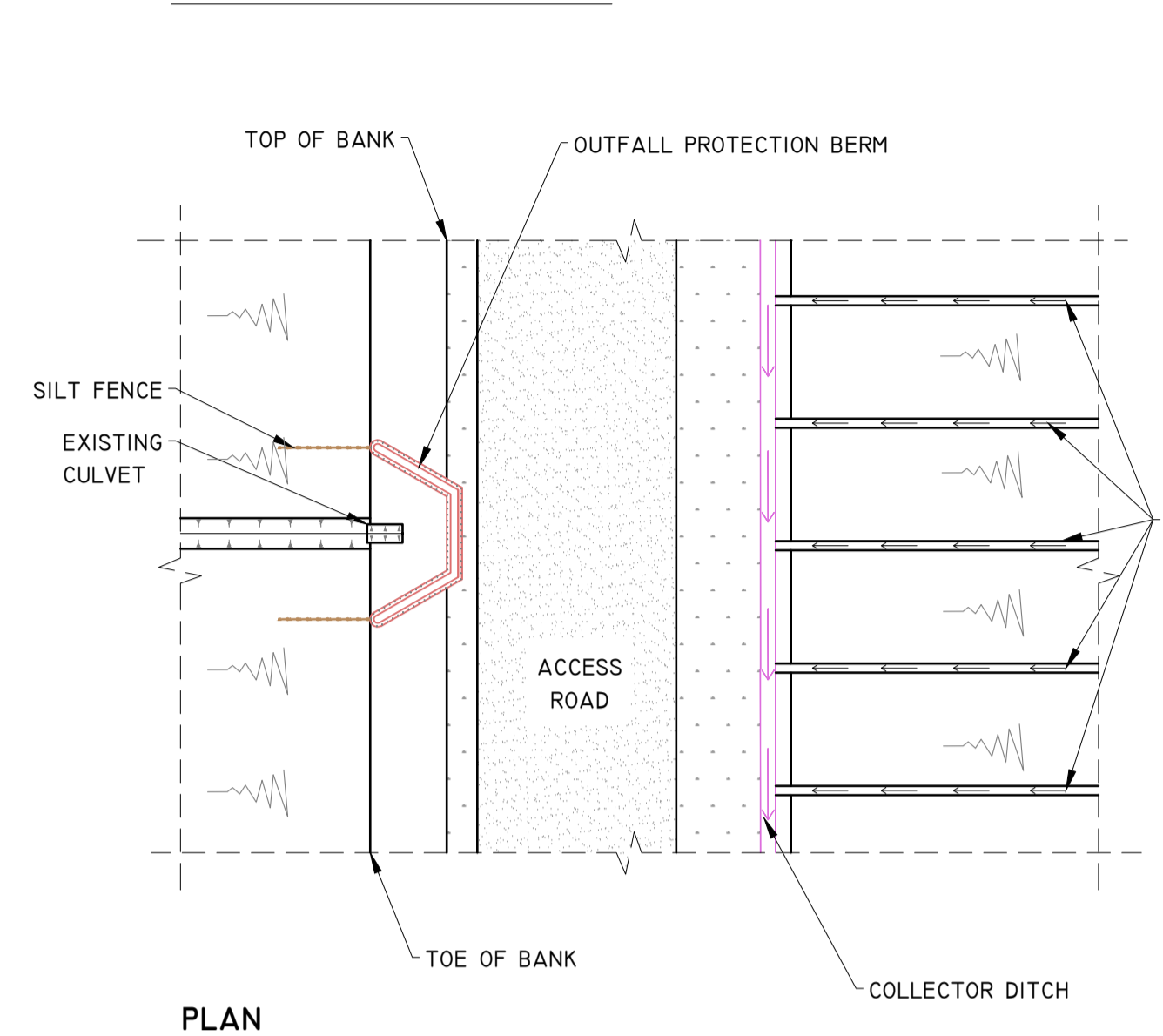


'TYPE A' CULVERT - DRAINAGE CROSSING BENEATH FLOATING ROAD
SCALE 1:100

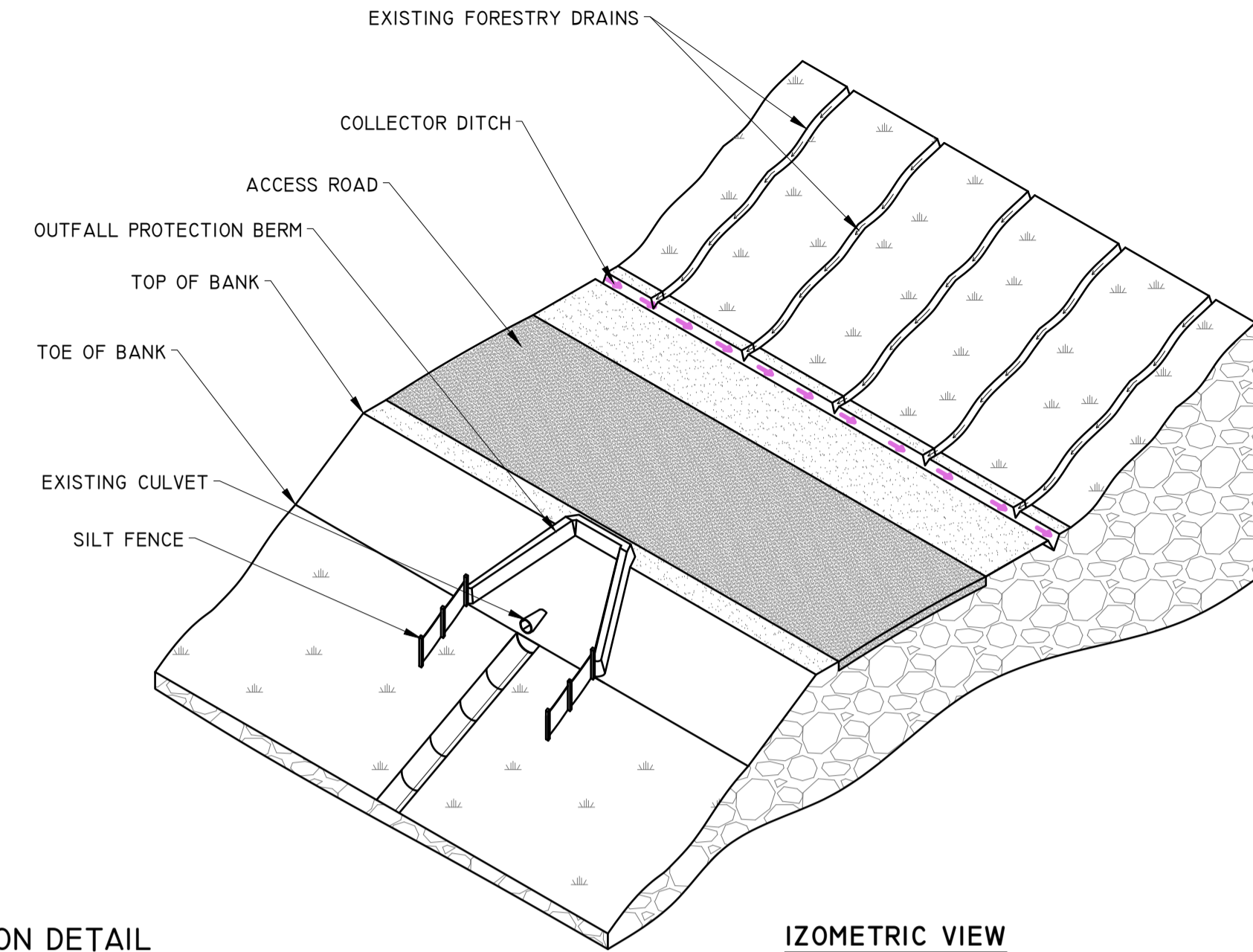


'TYPE B' CULVERT - DRAINAGE CROSSING BENEATH EXCAVATED ROAD
SCALE 1:50

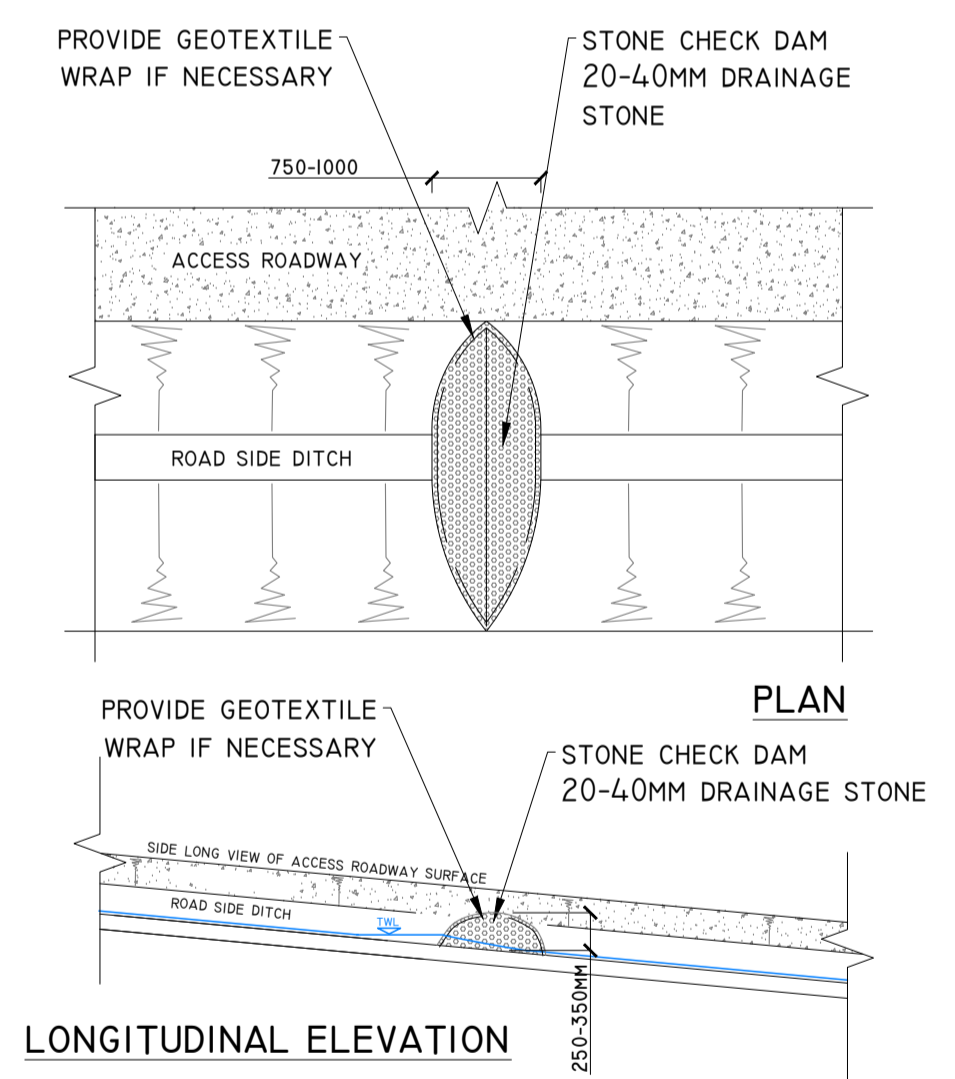
DETAIL BI



CULVERT - OUTFALL PROTECTION DETAIL
SCHEMATIC - NOT TO SCALE

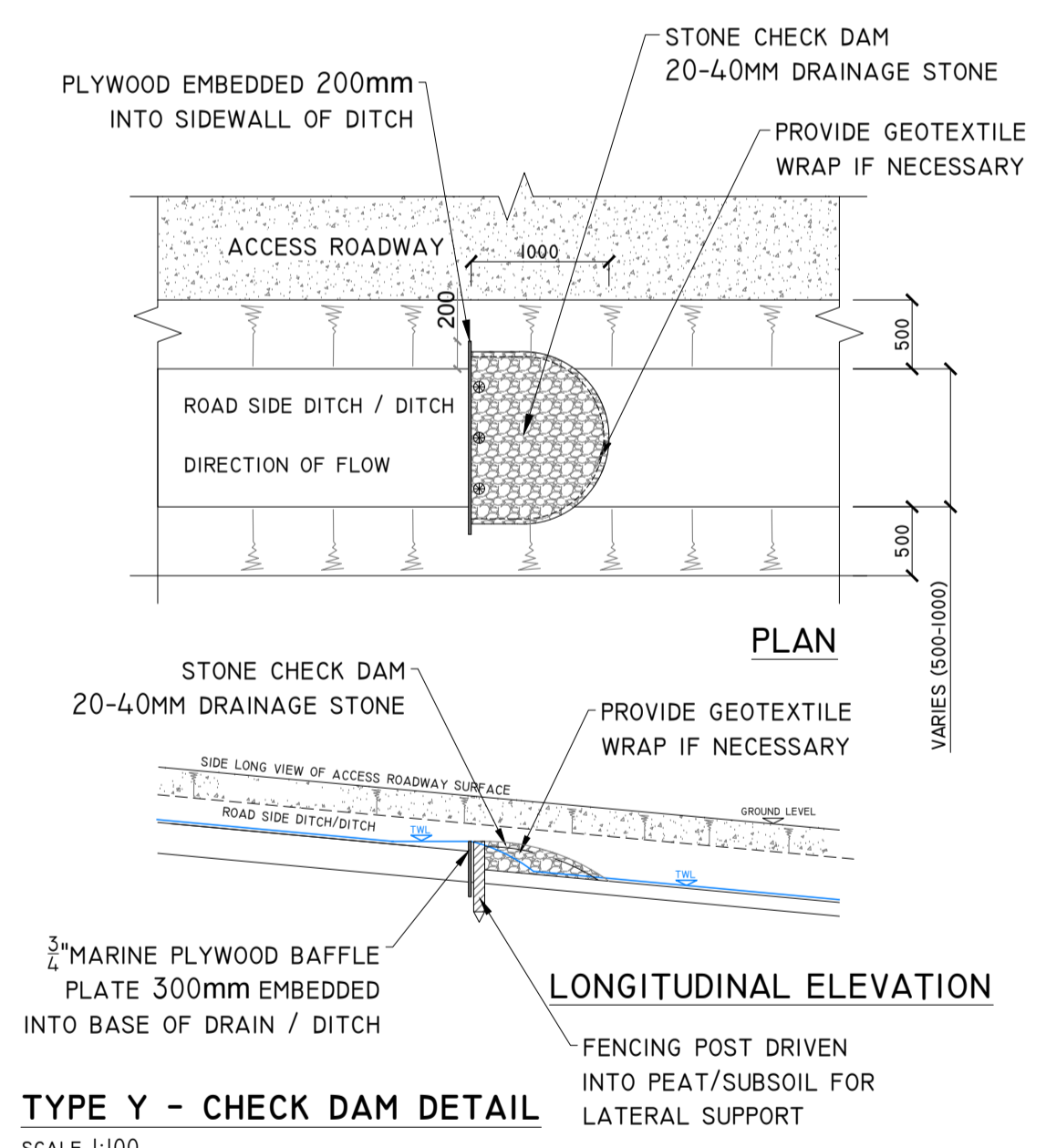


DETAIL C

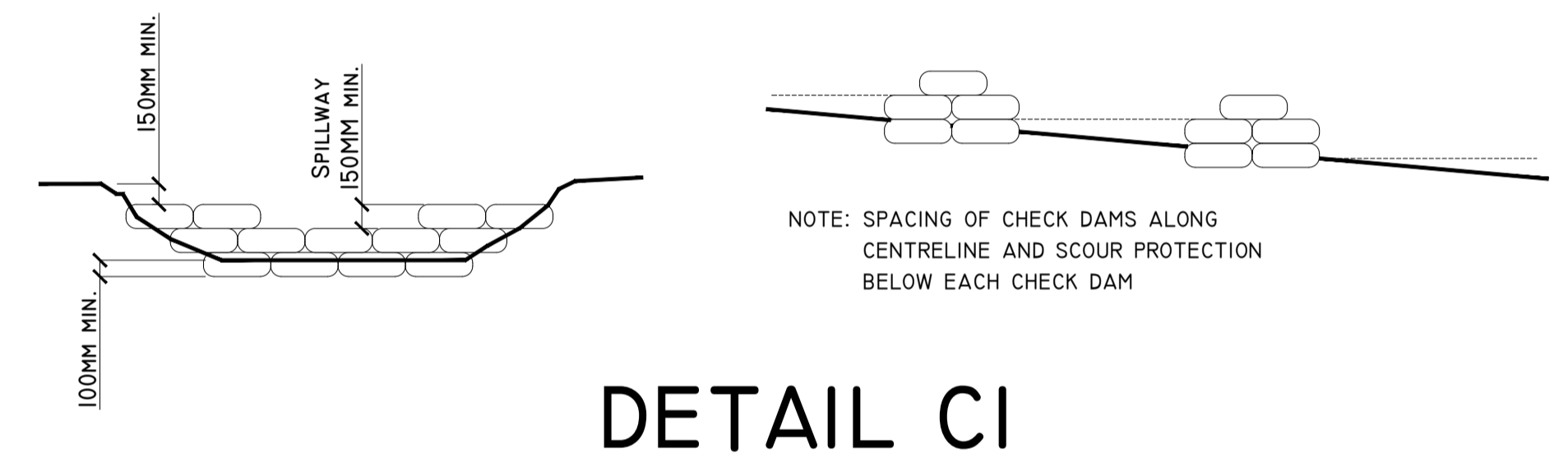


TYPE X - CHECK DAM DETAIL
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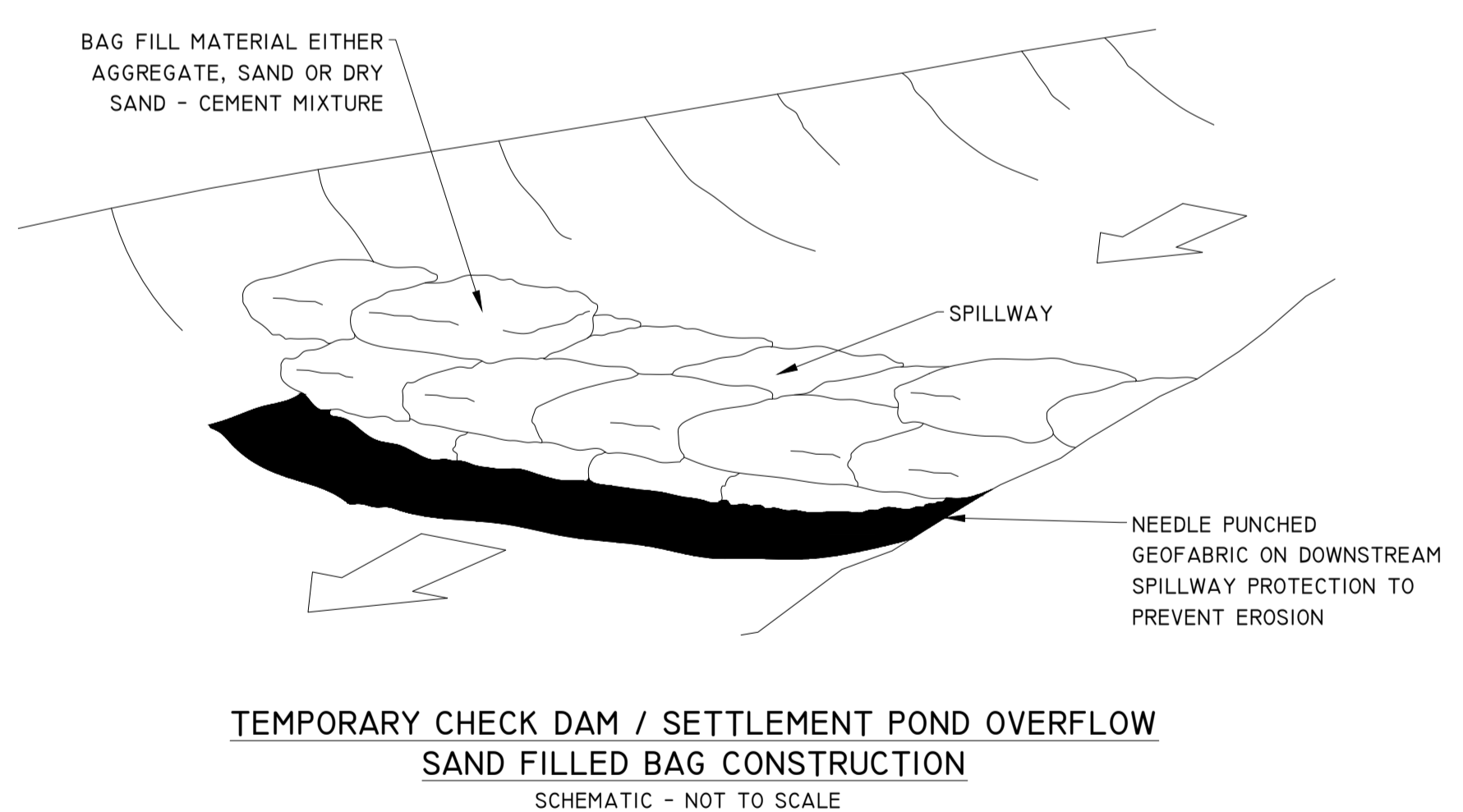
DETAIL D



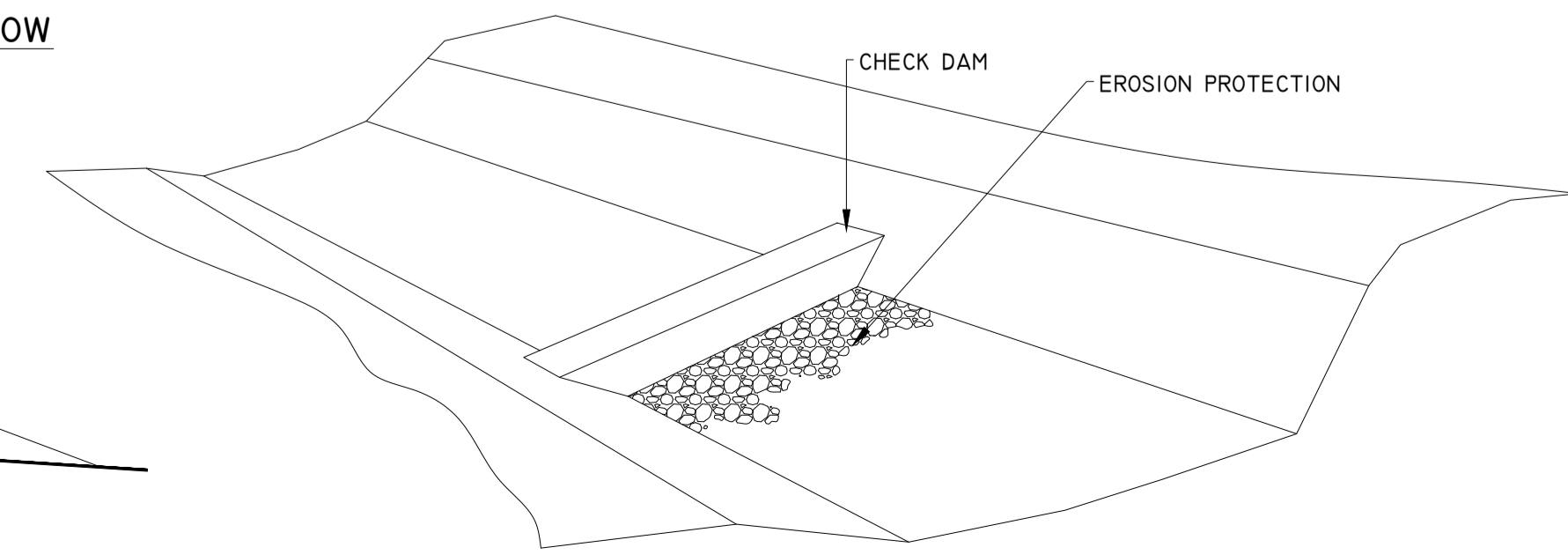
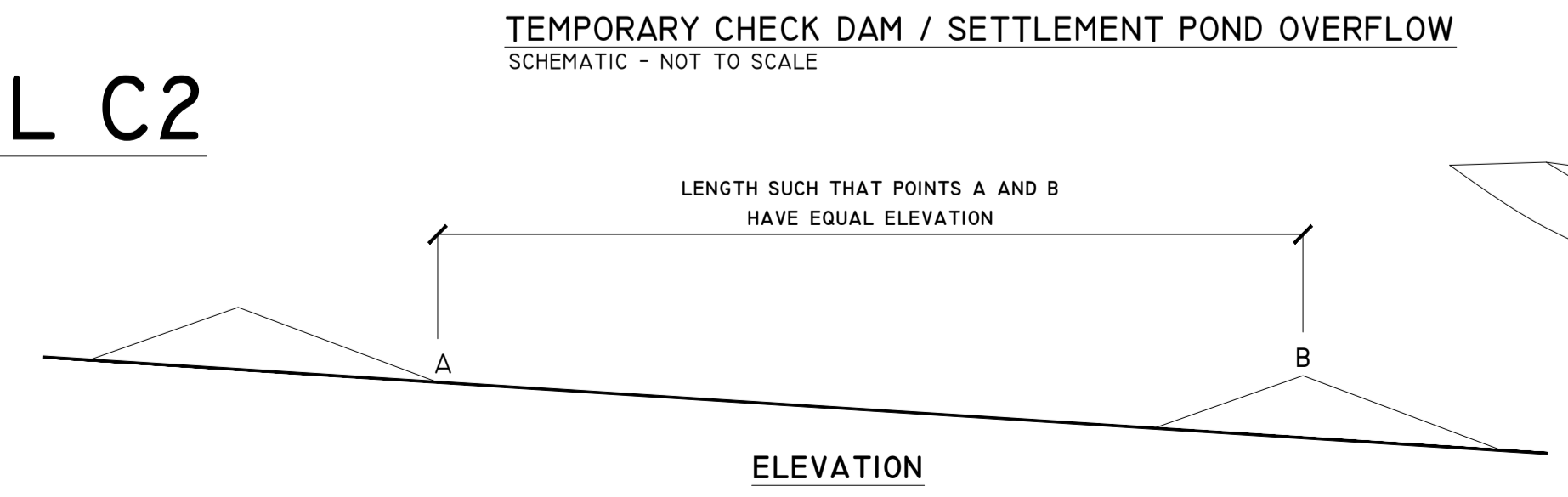
TYPE Y - CHECK DAM DETAIL
SCALE 1:100



DETAIL CI



DETAIL C2



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7. LAYOUT PLANS SHOW TYPICAL TURBINE ROTOR DIAMETER AS PER TURBINE DRAWING.

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Date	Description	Chkd	Signed

HYDRO ENVIRONMENTAL SERVICES
22 Lower Main St
Dungarvan
Co. Waterford
Ireland

tel: +353 (0) 58-44122
tel: +353 (0) 58-44244
email: info@hydroenvironmental.ie
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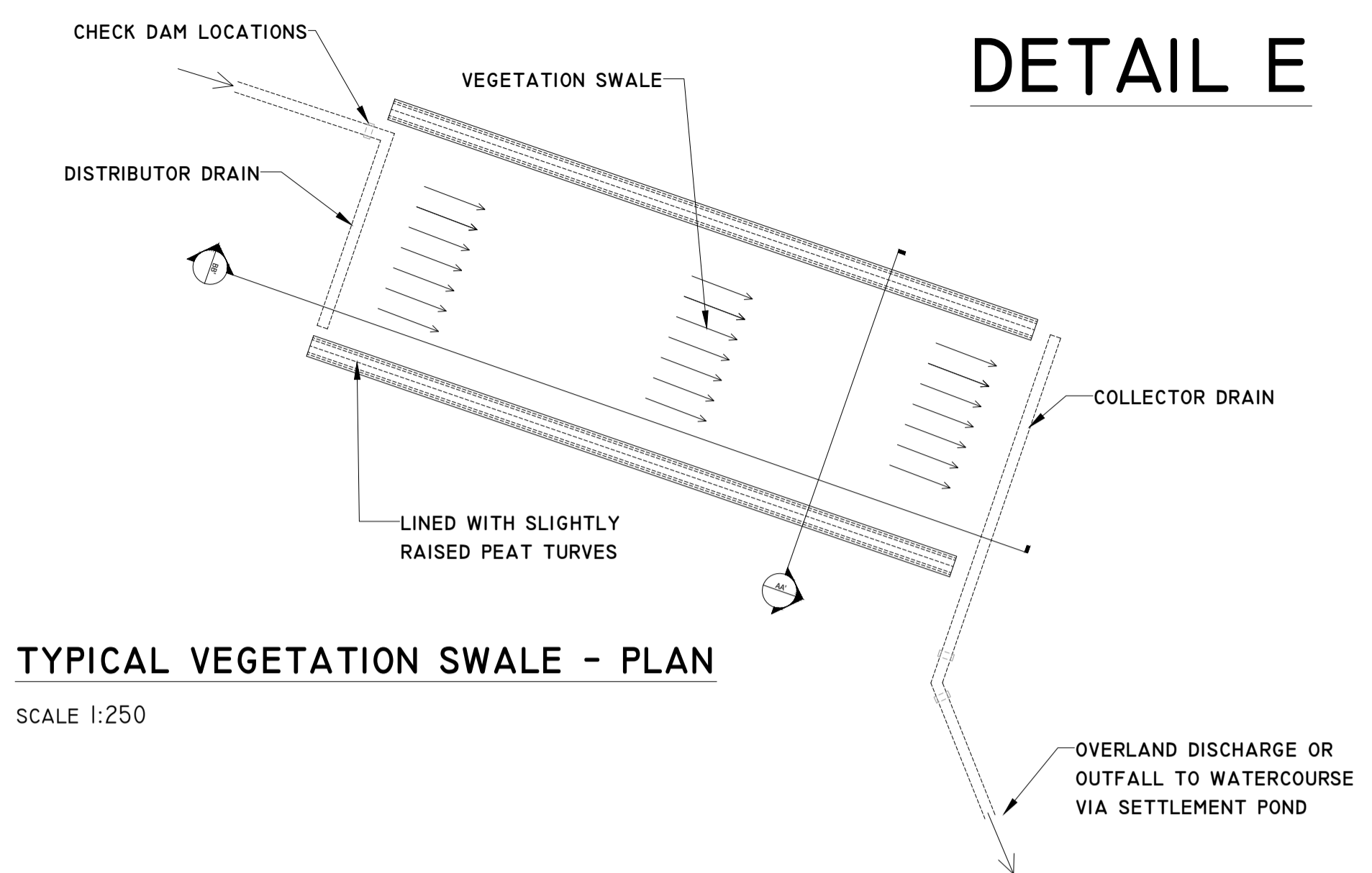
Client:
MCCARTHY KEVILLE O'SULLIVAN

Job:
ARDDERROO WF, CO. GALWAY

Title:
Drainage Details 2

Figure No: **0815-31**

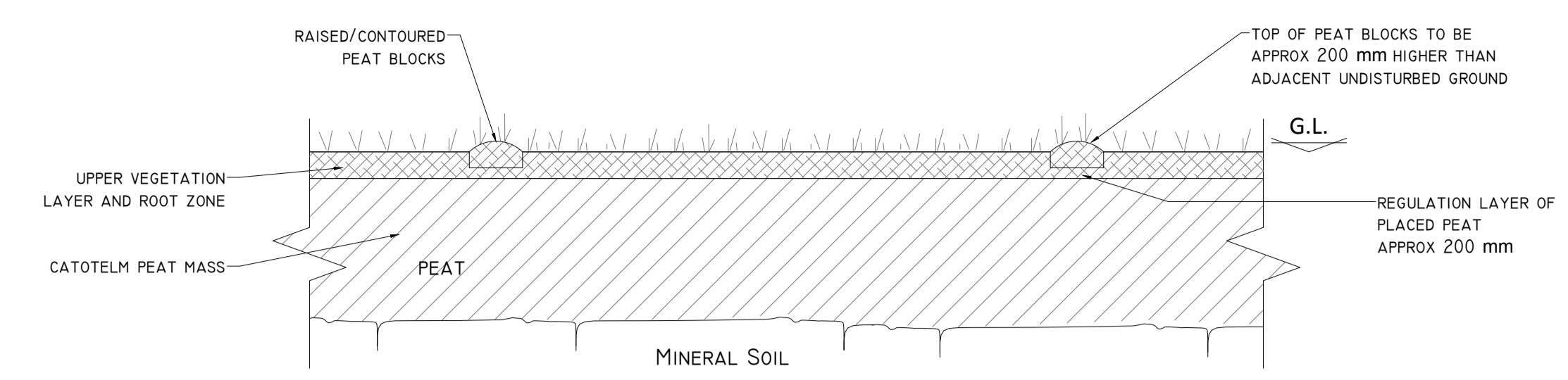
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Date: 21/11/2018	



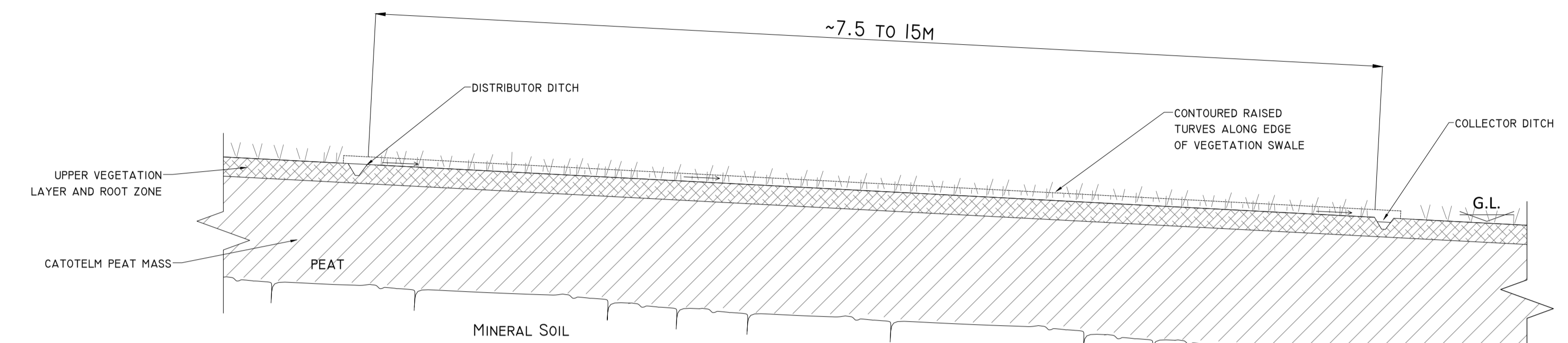
TYPICAL VEGETATION SWALE - PLAN

SCALE 1:250

DETAIL E

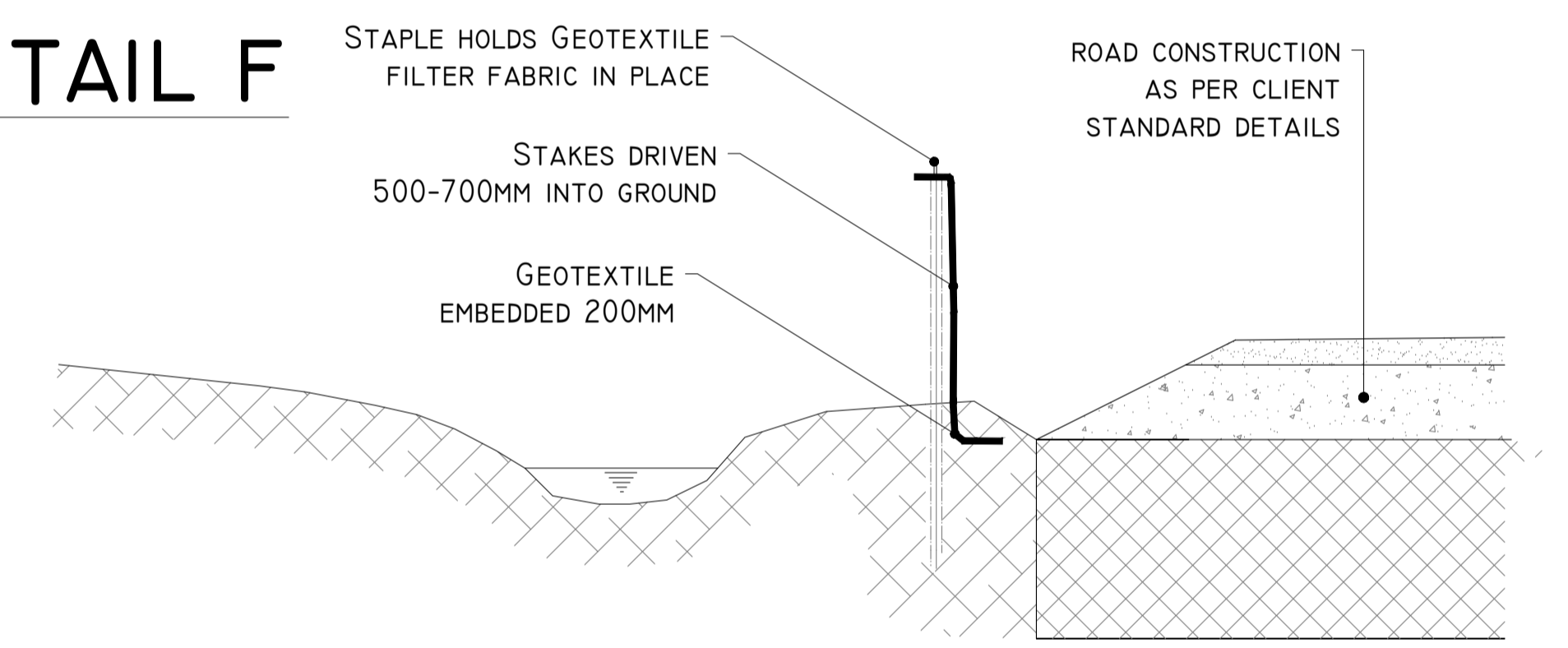


SECTION AA'
SCALE 1:200



SECTION BB'
SCALE 1:100

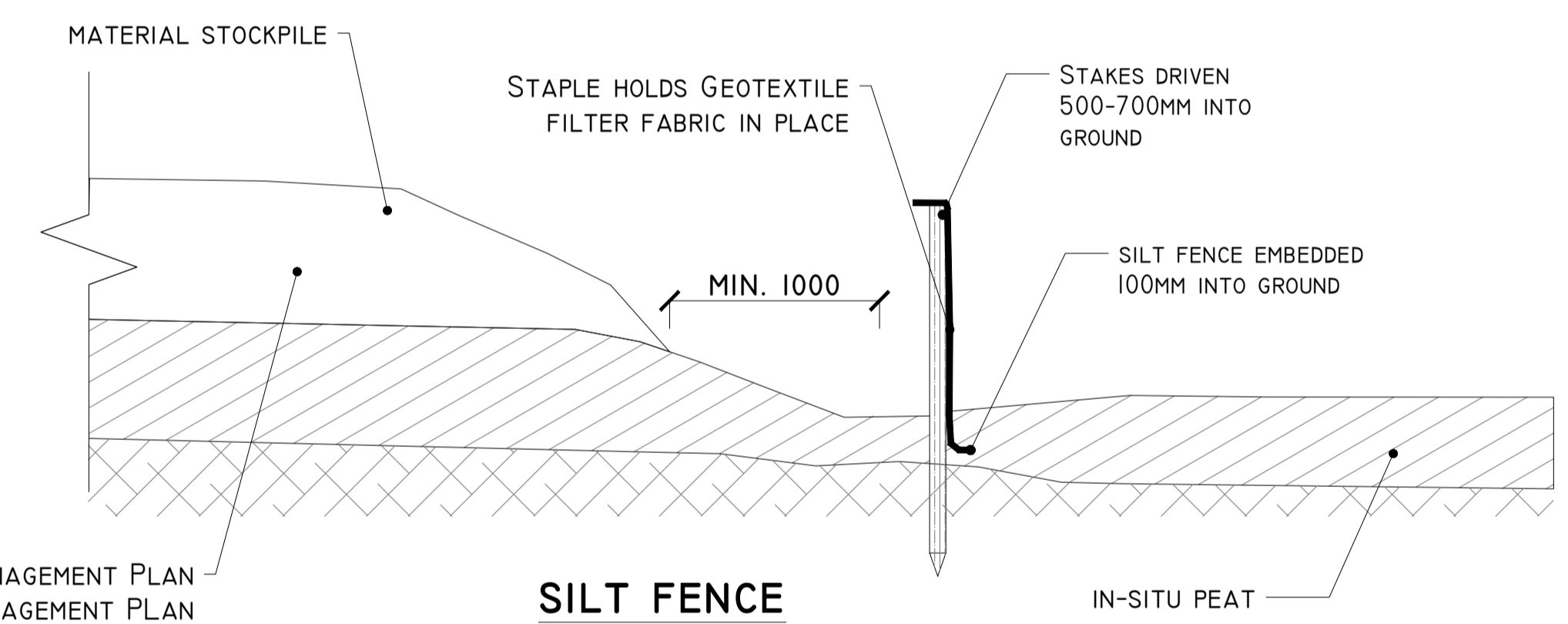
DETAIL F



SILT FENCE FOR WATERCOURSE PROTECTION

SCALE 1:25

DETAIL G-I

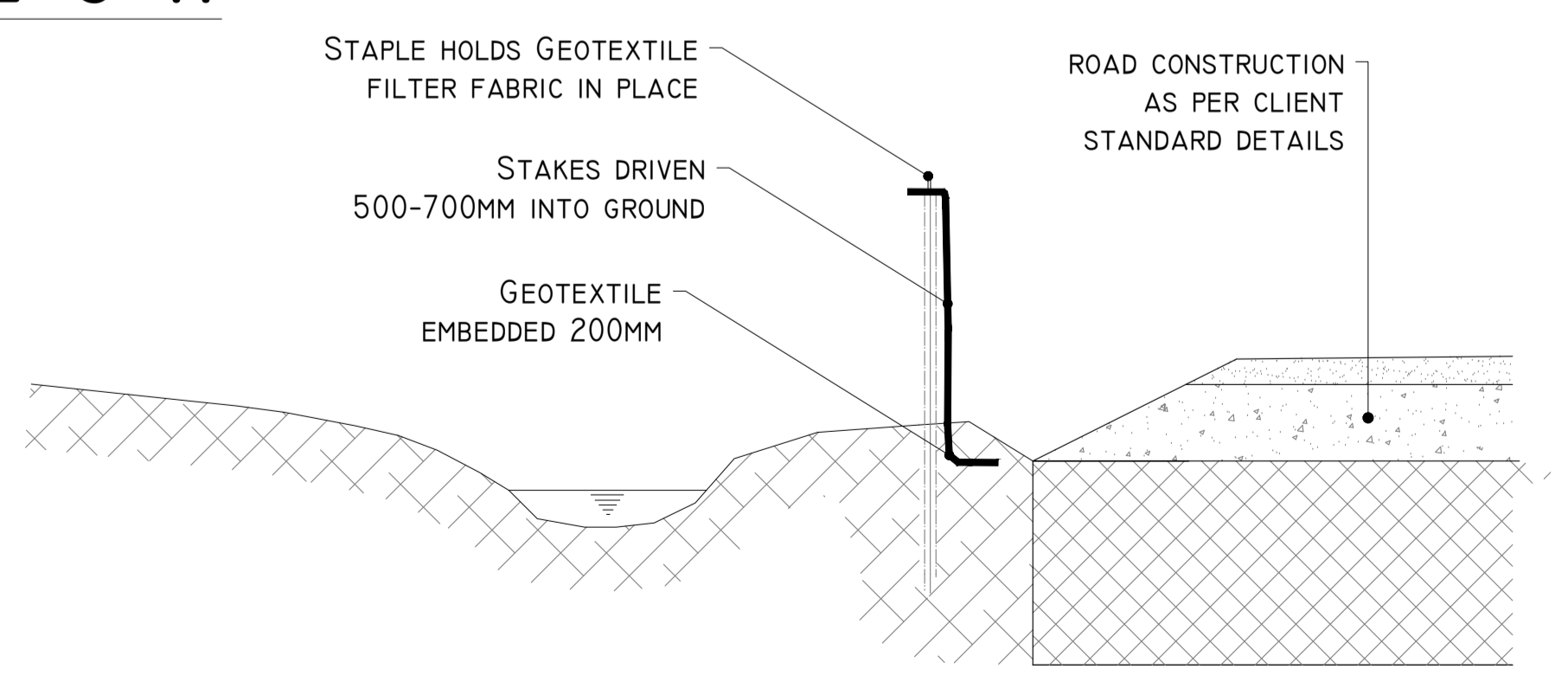


REFER TO HABITAT MANAGEMENT PLAN AND PEAT MANAGEMENT PLAN FOR STOCKPILE MANAGEMENT NOTES

SILT FENCE

SCALE 1:25

DETAIL G-II



SILT FENCE FOR WATERCOURSE PROTECTION

SCALE 1:25

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 7. LAYOUT PLANS SHOW TYPICAL TURBINE ROTOR DIAMETER AS PER TURBINE DRAWING.

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Date	Description	Chkd	Signed
Revisions			

HYDRO ENVIRONMENTAL SERVICES
 22 Lower Main St
 Dúngharbhán
 Co. Waterford
 Ireland

tel: +353 (0) 58-44122
 tel: +353 (0) 58-44244
 email: info@hydroenvironmental.ie
 web: www.hydroenvironmental.ie

Client: **MCCARTHY KEVILLE O'SULLIVAN**

Job: **ARDDERROO WF, Co. GALWAY**

Title: **Drainage Details 3**

Figure No: **0815-32**

Drawing No: **P1227-8-1118-A1-0815-32-00A**

Sheet Size: **A1** Project No.: **P1227-8**

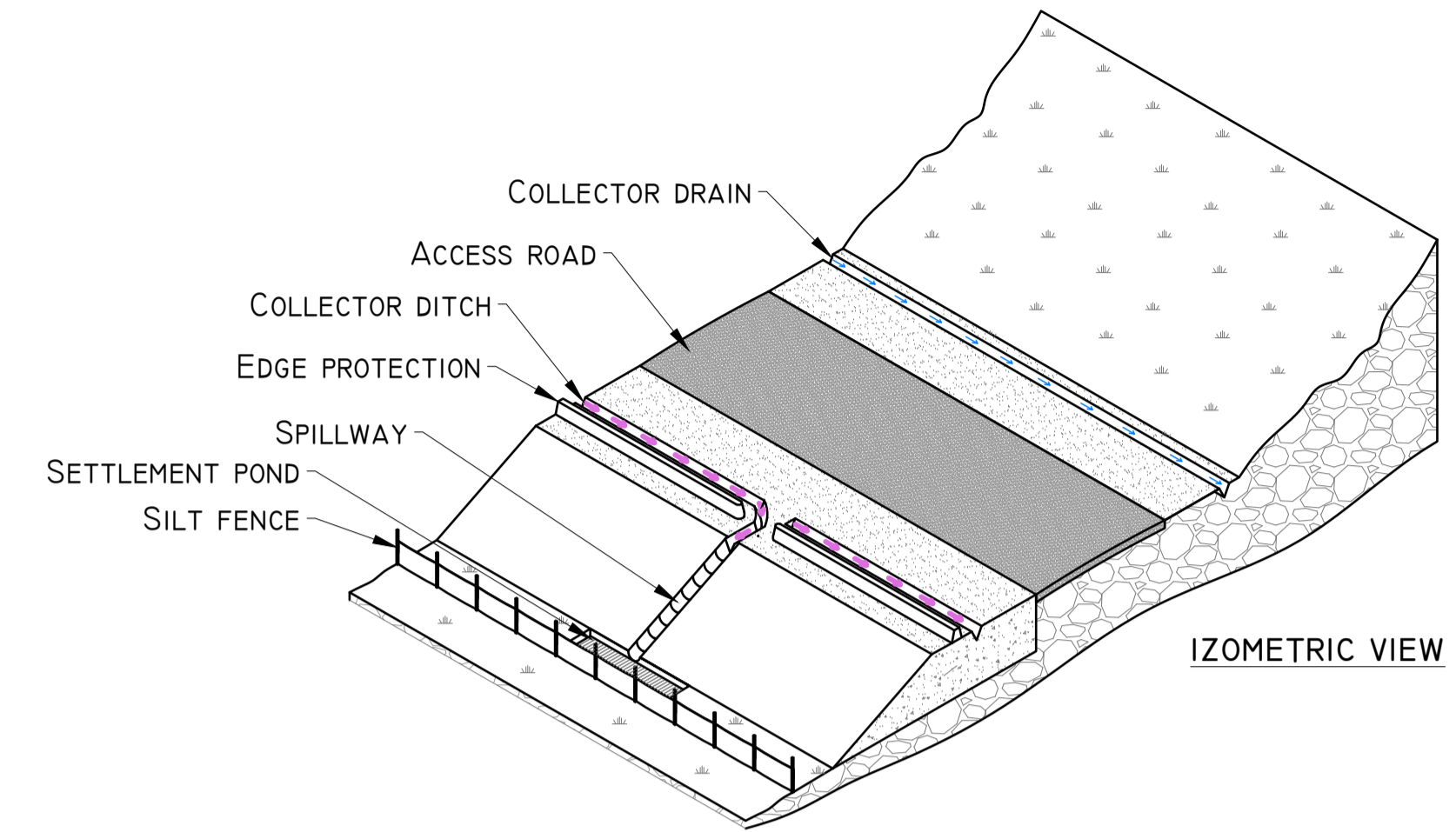
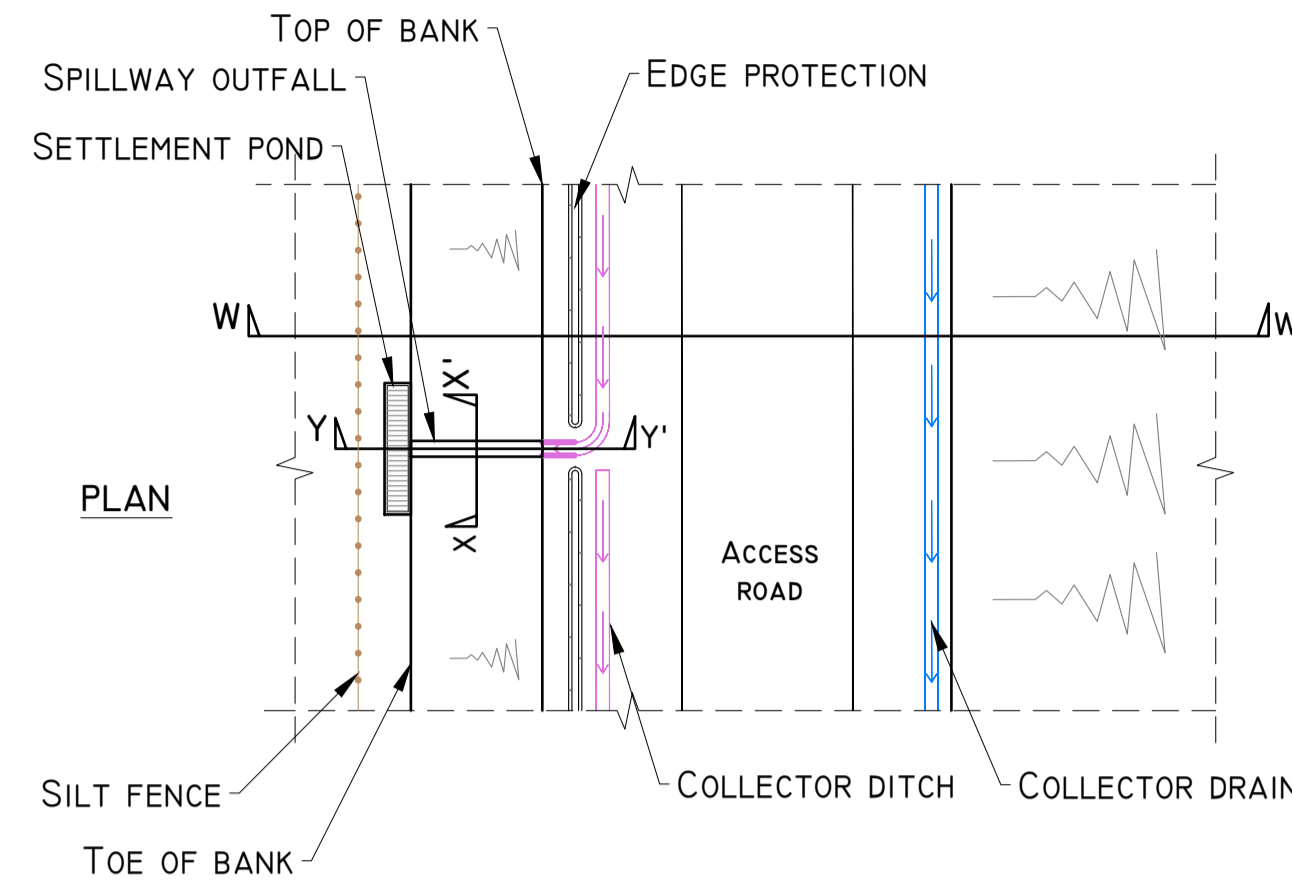
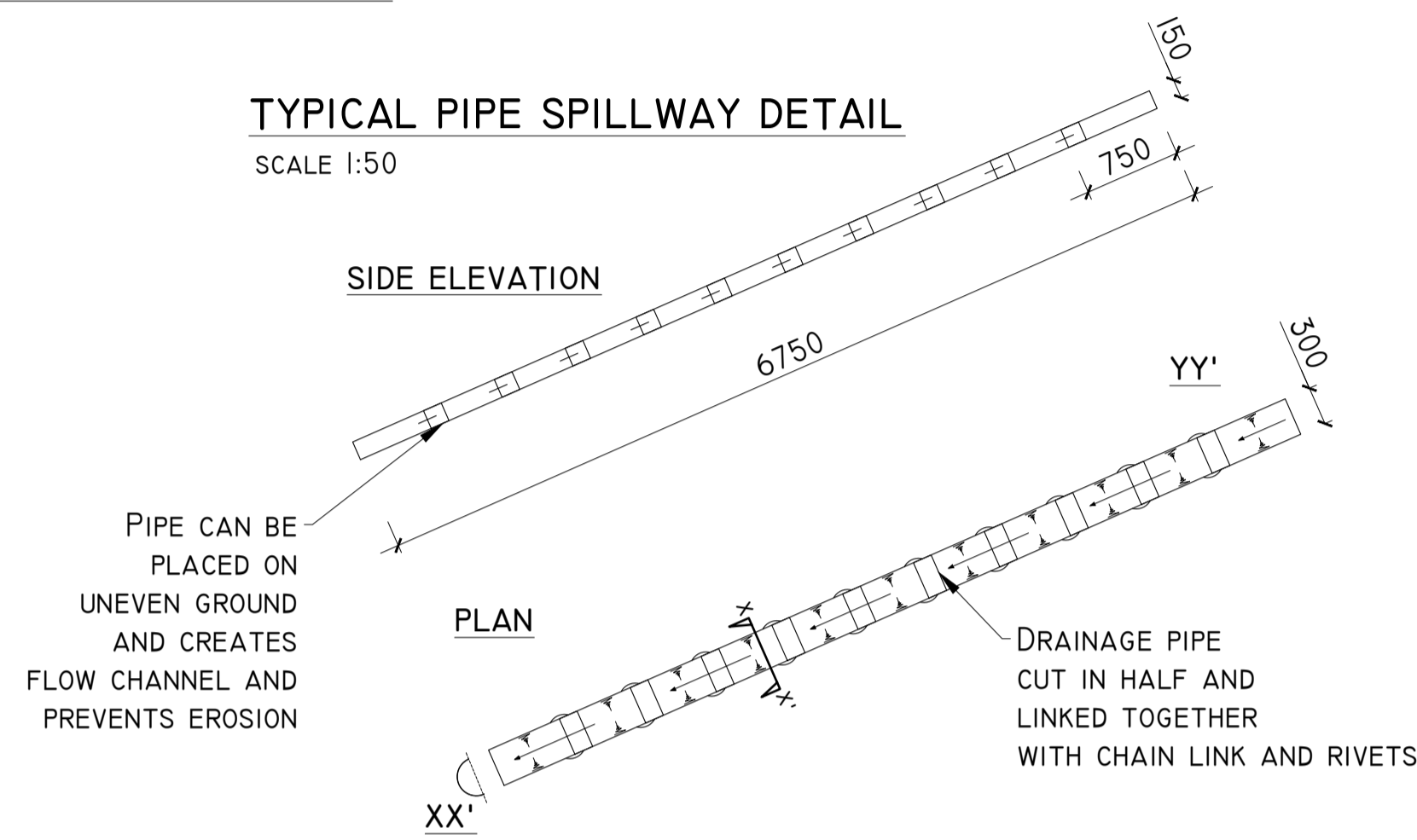
Scale: **as shown (A1)** Drawn By: **MG/GD**

Date: **21/11/2018** Checked By: **M.G.**

DETAIL H

TYPICAL PIPE SPILLWAY DETAIL

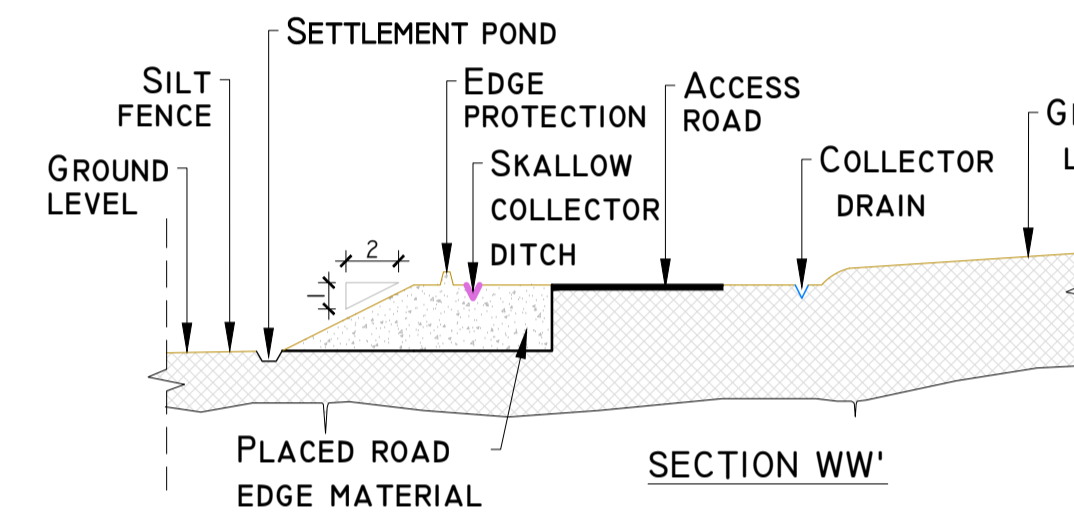
SCALE 1:50



SPILLWAY OUTFALL PLAN

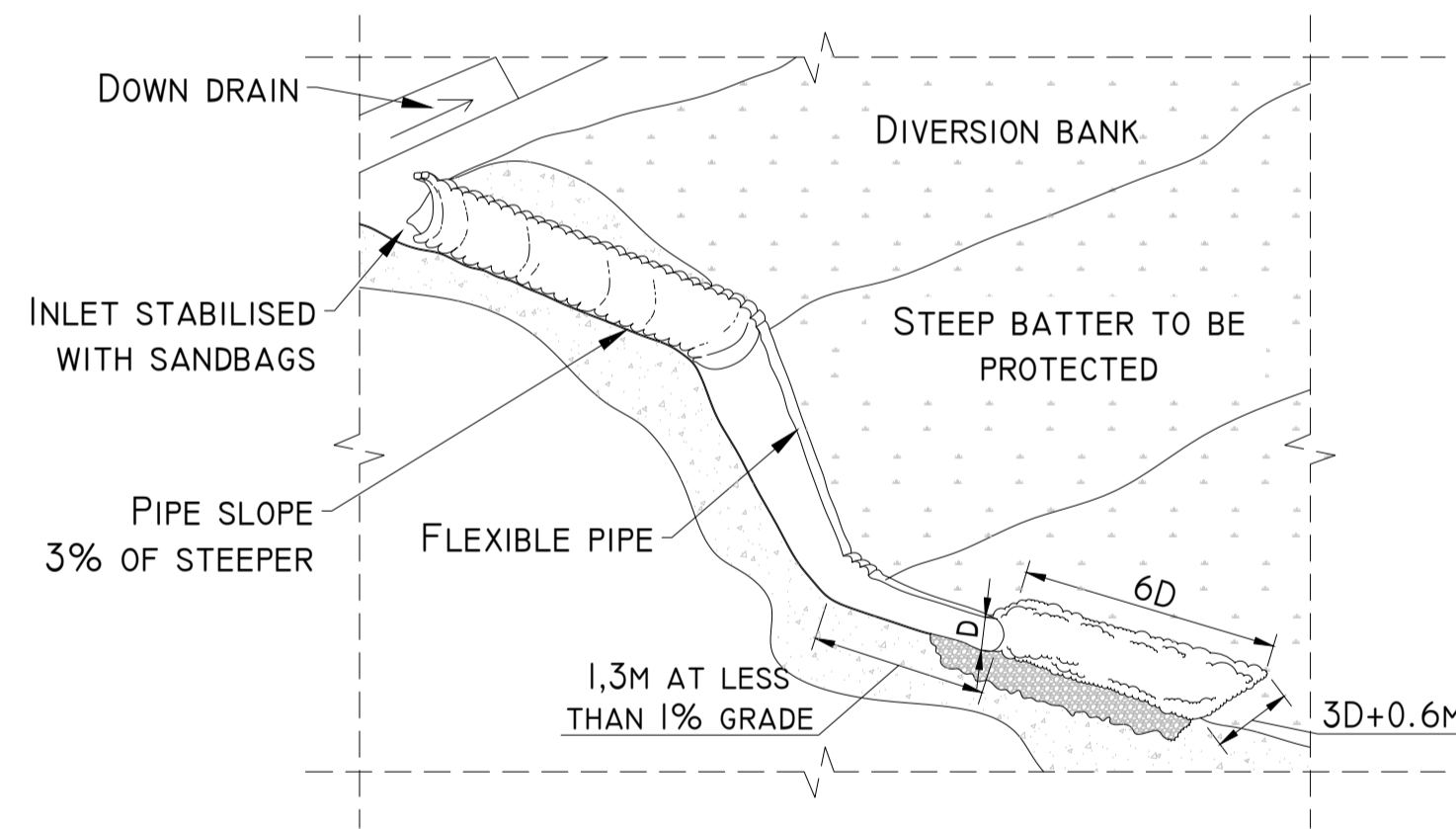
SCHEMATIC - NOT TO SCALE

DETAIL I



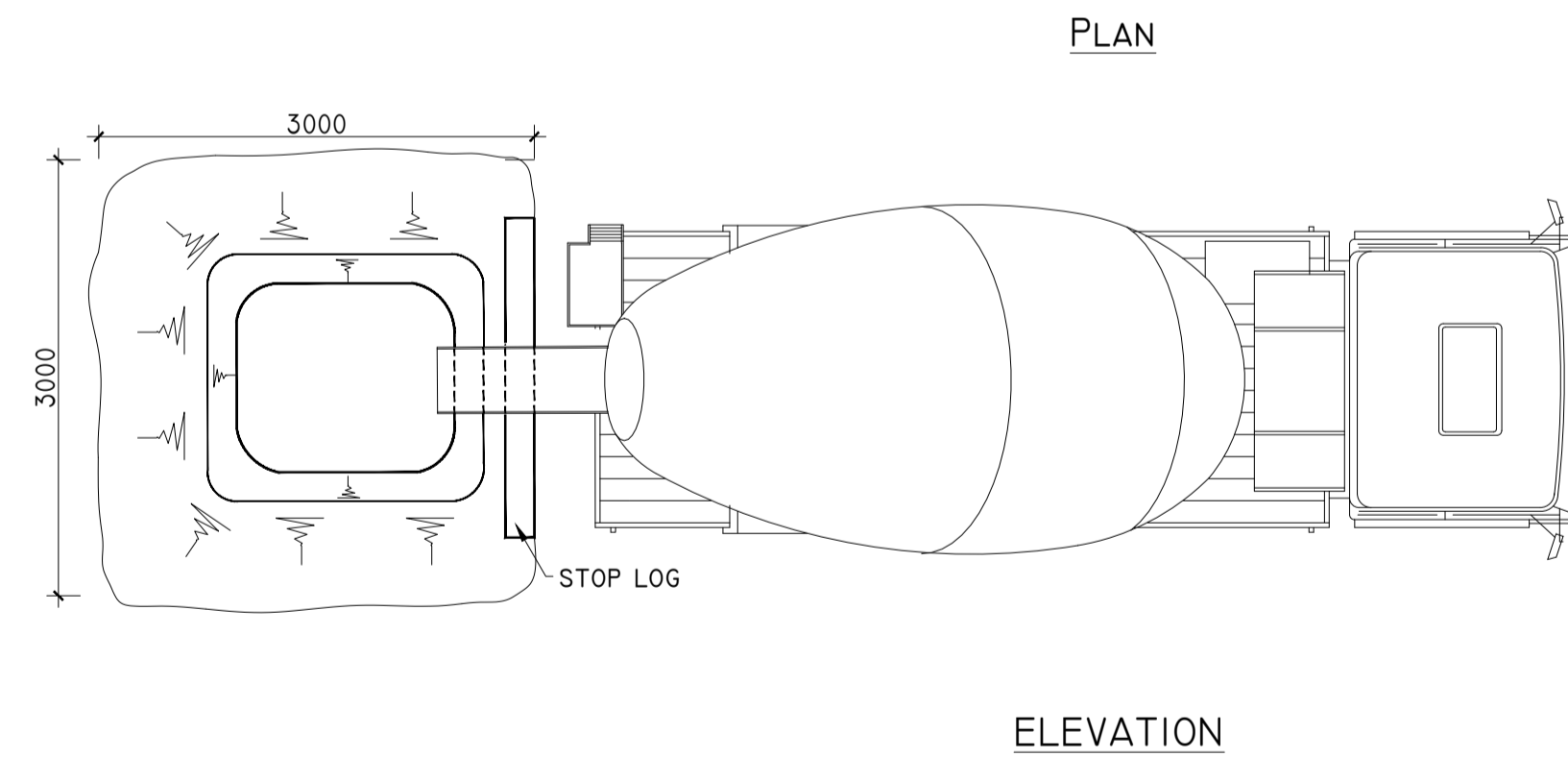
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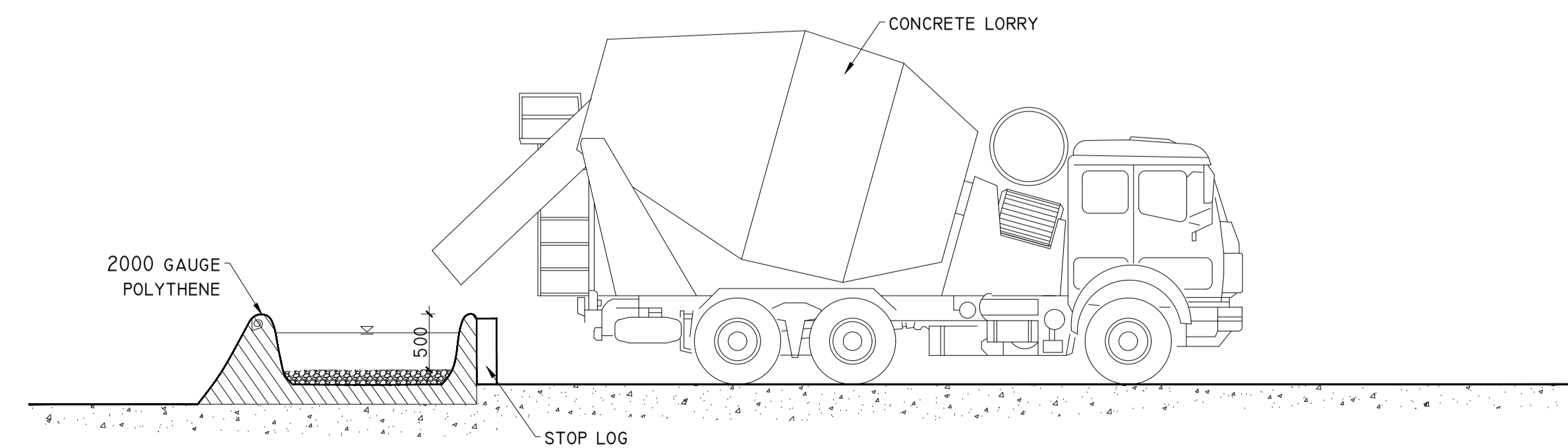


TEMPORARY CONCRETE WASH OUT PIT

SCALE 1:50



DETAIL J



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Revisions			

HYDRO ENVIRONMENTAL SERVICES
 22 Lower Main St
 Dungarvan
 Co. Waterford
 Ireland

tel: +353 (0) 58-44122
 tel: +353 (0) 58-44244
 email: info@hydroenvironmental.ie
 web: www.hydroenvironmental.ie

Client:
MCCARTHY KEVILLE O'SULLIVAN

Job:
ARDDERROO WF, Co. GALWAY

Title:
Drainage Details 4

Figure No: **0815-33**

Drawing No: **P1227-8-1118-A1-0815-33-00A**

Sheet Size: **A1** Project No.: **P1227-8**

Scale: **as shown (A1)** Drawn By: **MG/GD**

Date: **21/11/2018** Checked By: **M.G.**

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 7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
 8. Final levels may vary depending on local ground conditions.

- Drawing Legend**
- Existing Road To Be Upgraded
 - Proposed New Road
 - Indicative Internal Electrical Cable Trench
 - Indicative Cut
 - Indicative Fill



Temporary Construction Compound No. 1

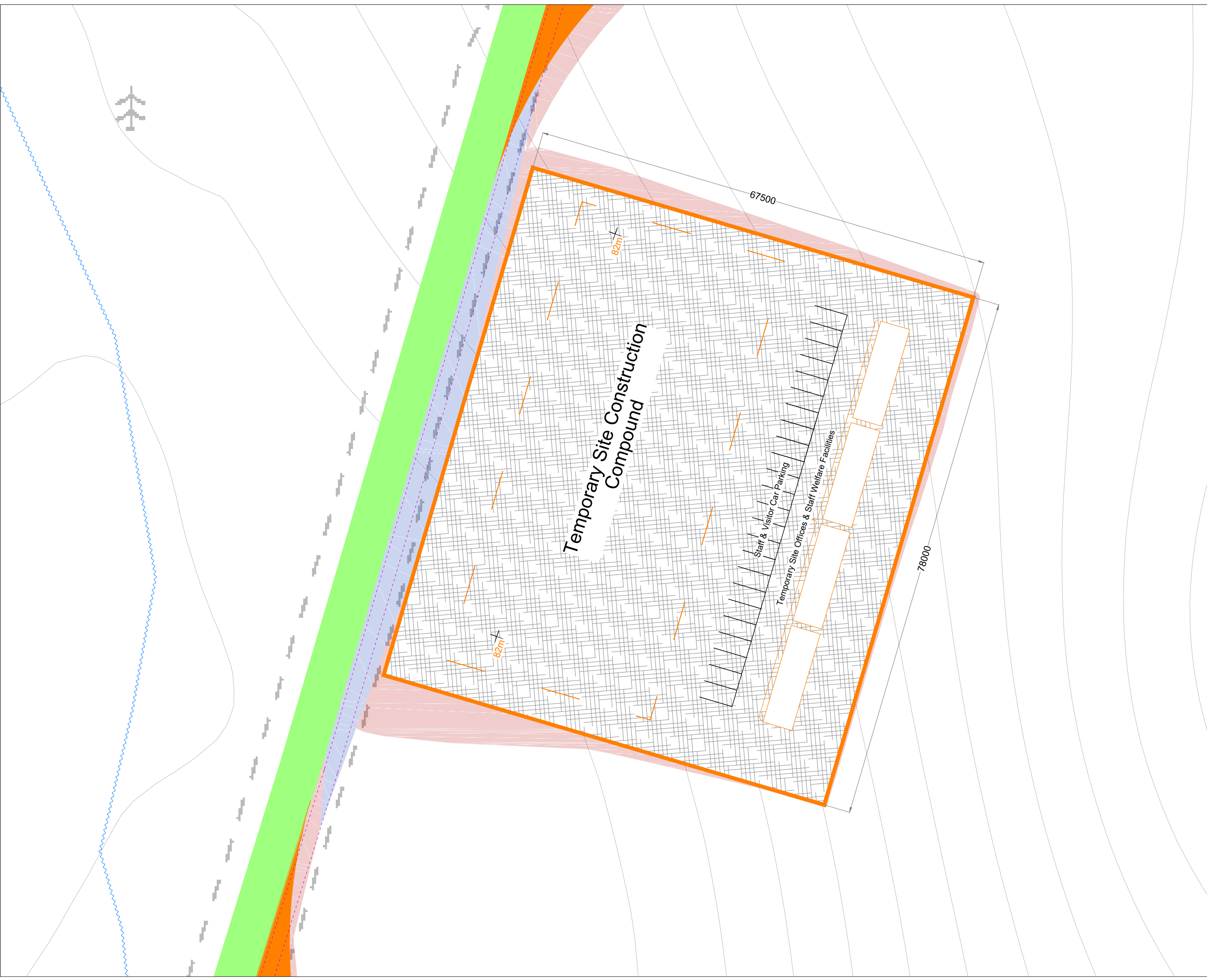
Ardderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No: 160815	DRAWING No.: 0815 - 34
SCALE: 1:500 @ A3	DATE: 22.11.2018

OS SHEET No.:
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McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279

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 8. Final levels may vary depending on local ground conditions.

Drawing Legend

	Existing Road To Be Upgraded
	Proposed New Road
	Indicative Internal Electrical Cable Trench
	Indicative Cut
	Indicative Fill

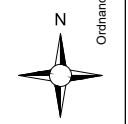
DRAWING TITLE:
Temporary Construction Compound No. 2

PROJECT TITLE:
 Arderroo Wind Farm, Co. Galway

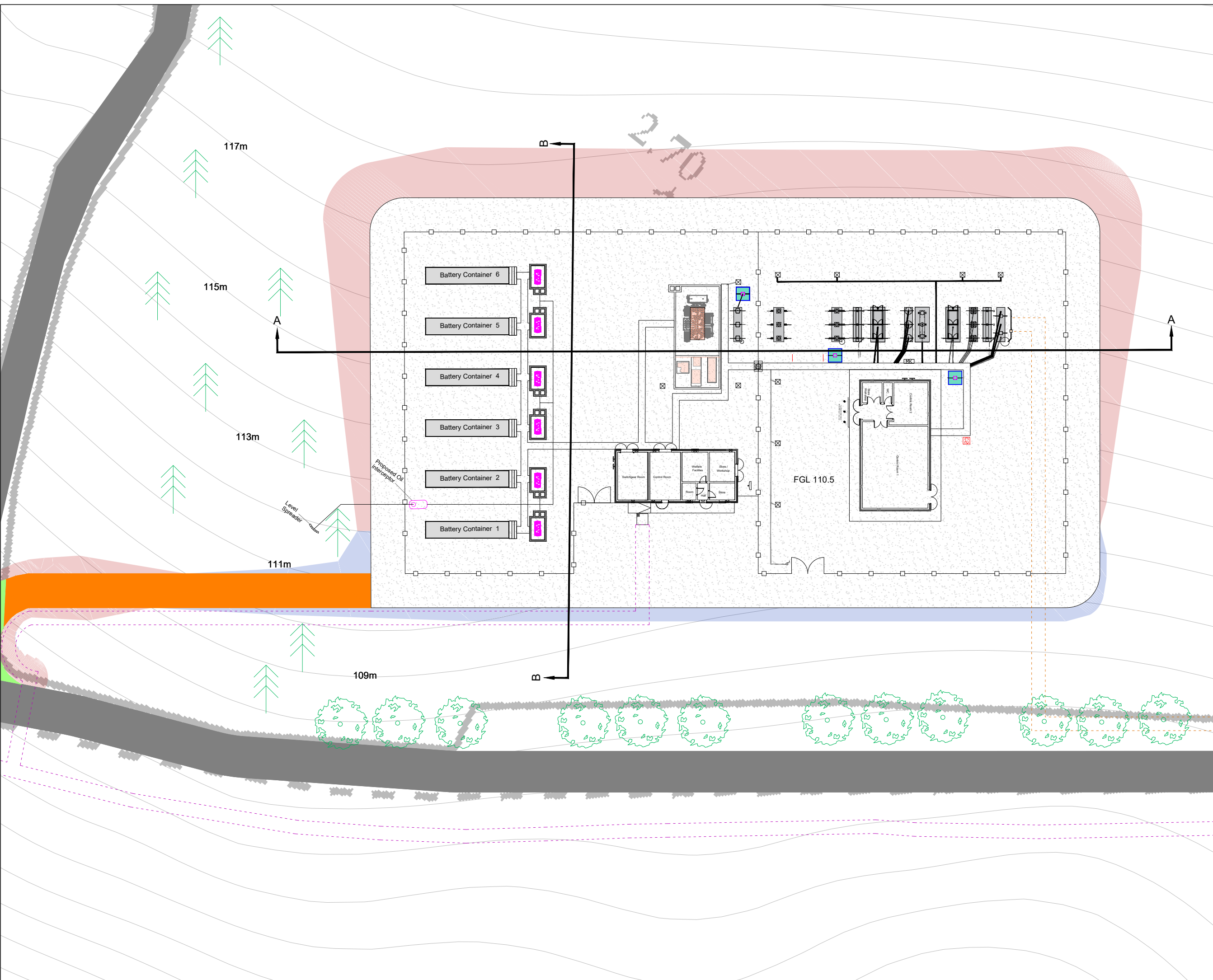
DRAWING BY: Joseph O Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 35
SCALE: 1:500 @A3	DATE: 22.11.2018

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McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279



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7. Exact location of cable/joint bay in the road curtilage to be subject to ESB specifications and agreement with Galway County Council.
8. Layout, arrangements and finished floor levels of substation buildings and electrical equipment is shown indicatively and for illustration purposes only as final specifications of buildings and electrical equipment is to be dictated by Eirgrid/ESB networks requirements.

Drawing Legend

	Existing Road To Be Upgraded
	Proposed New Road
	Existing Road
	Indicative Internal Electrical Cable Trench
	Indicative Grid Connection Cabling Route
	Indicative Cut
	Indicative Fill

Site Substation Layout

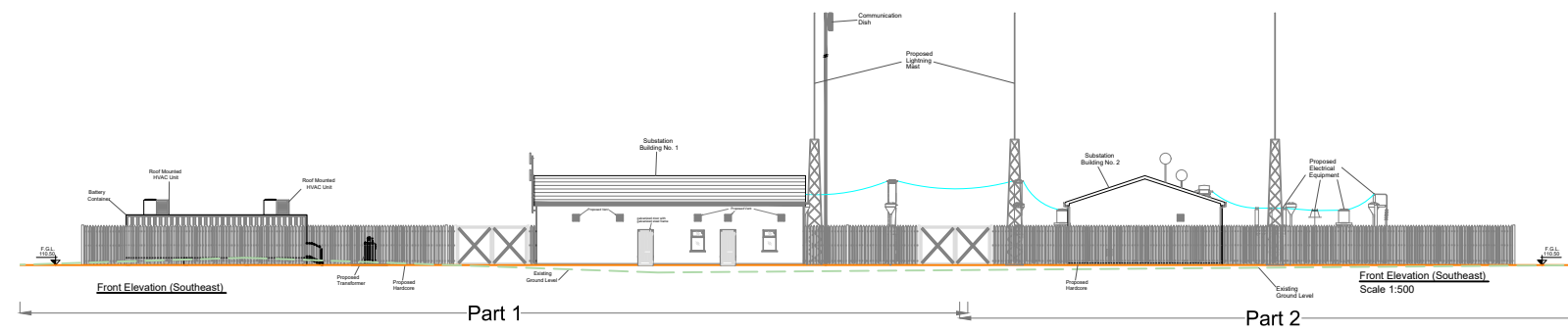
PROJECT TITLE:
Ardderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 36
SCALE: 1:500 @ A3	DATE: 22.11.2018

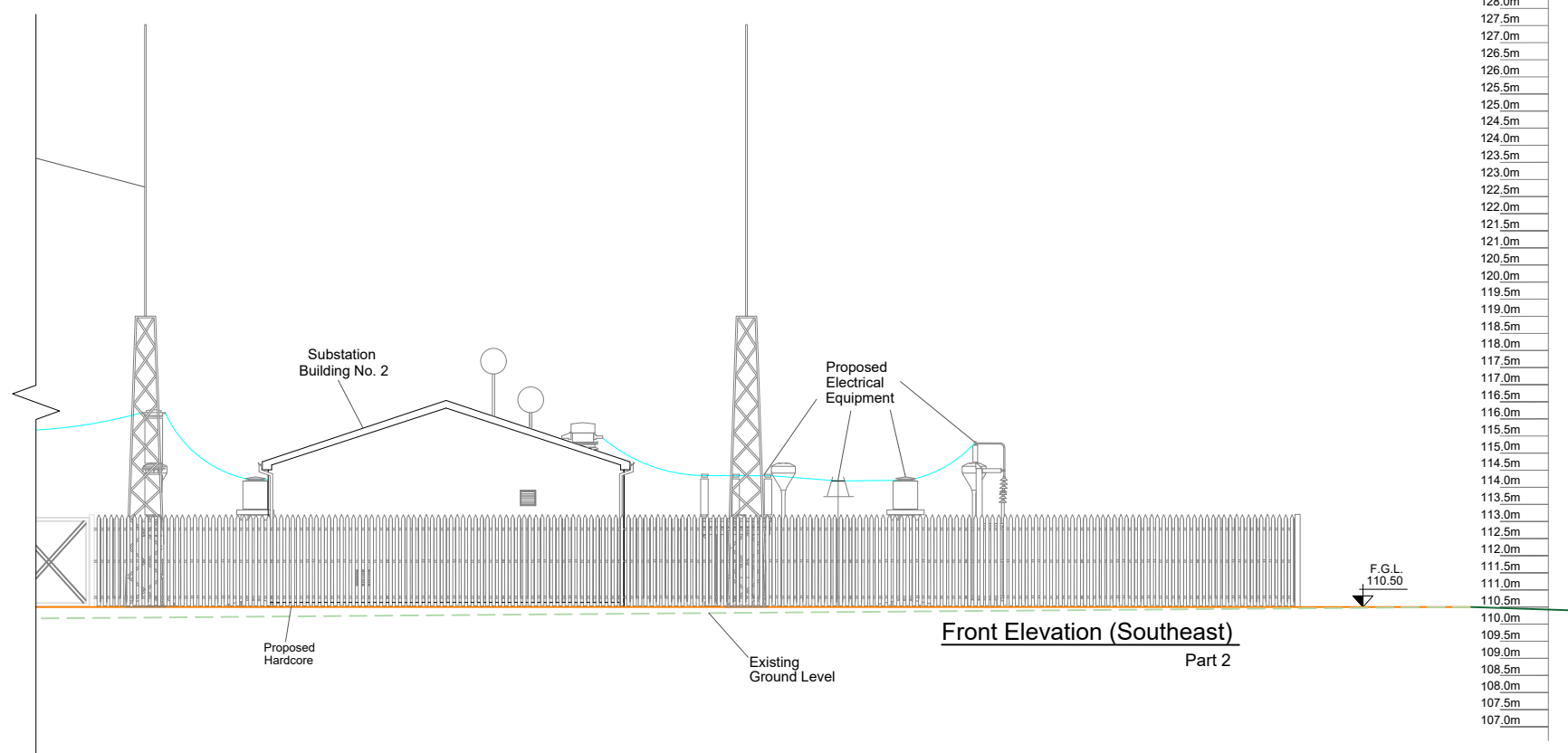
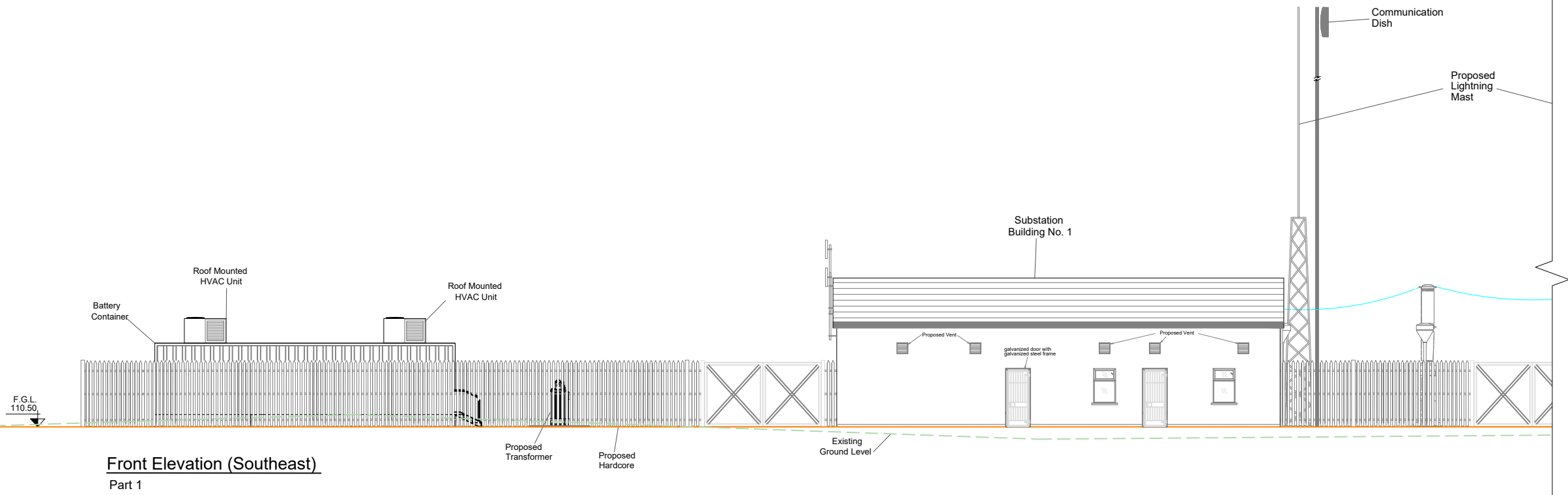
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McCarthy Keville O'Sullivan Ltd.
Planning & Environmental Consultants
Block 1,
Galway Financial Services Centre,
Moneenageisha Road,
Galway, Ireland.
email: info@mccarthynos.ie
website: www.mccarthynos.ie
Tel: +353 91 735611
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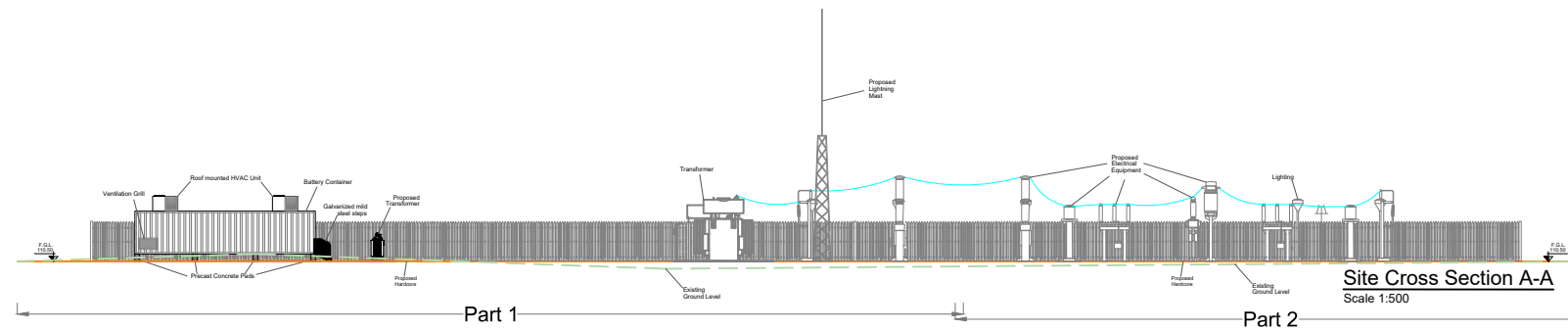


- 128.0m
- 127.5m
- 127.0m
- 126.5m
- 126.0m
- 125.5m
- 125.0m
- 124.5m
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- 123.5m
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- 109.0m
- 108.5m
- 108.0m
- 107.5m
- 107.0m



DRAWING TITLE: Site Substation Front Elevation - South East	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 37
SCALE: 1:200 @ A3	DATE: 22.11.2018

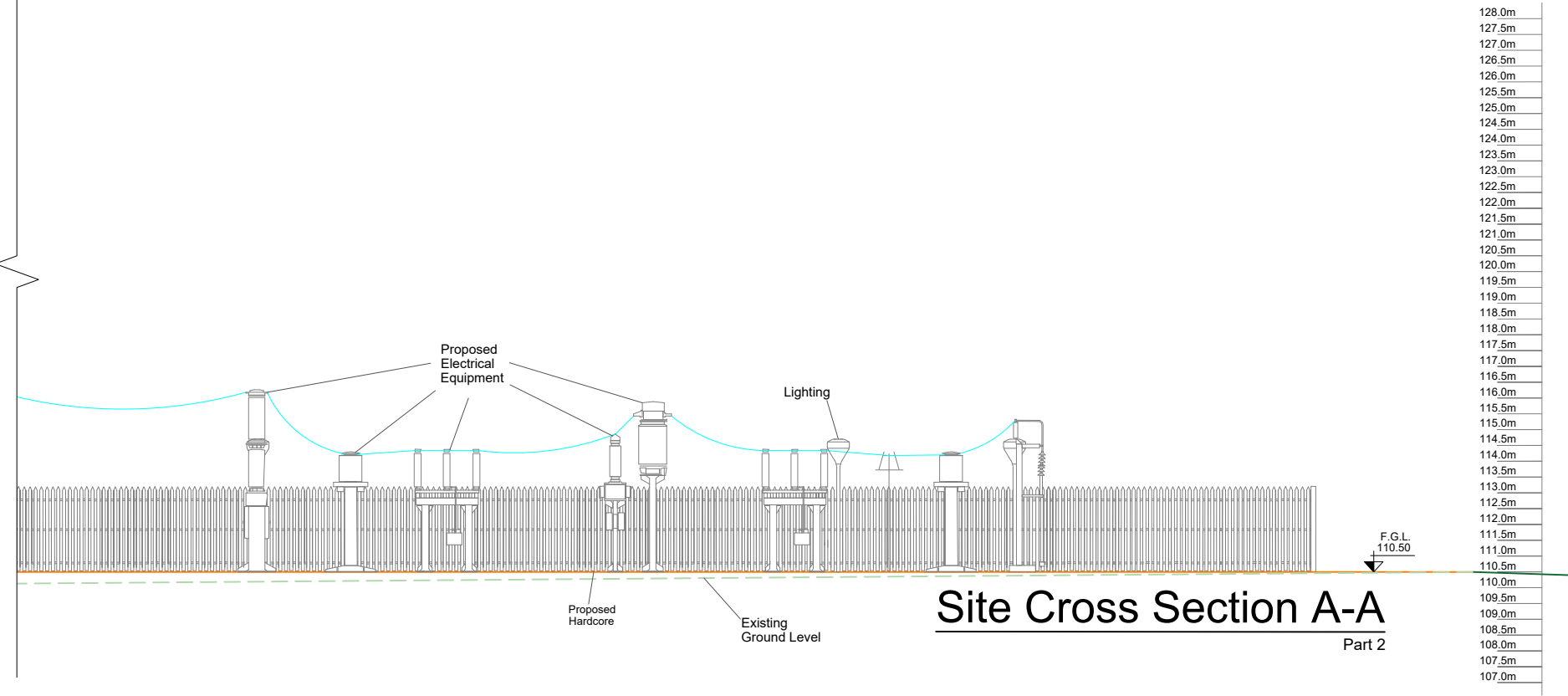

McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
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 website: www.mccarthykos.ie
 Tel: +353 91 735611
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Existing Ground Level

128.0m
127.5m
127.0m
126.5m
126.0m
125.5m
125.0m
124.5m
124.0m
123.5m
123.0m
122.5m
122.0m
121.5m
121.0m
120.5m
120.0m
119.5m
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Site Cross Section A-A
Part 1



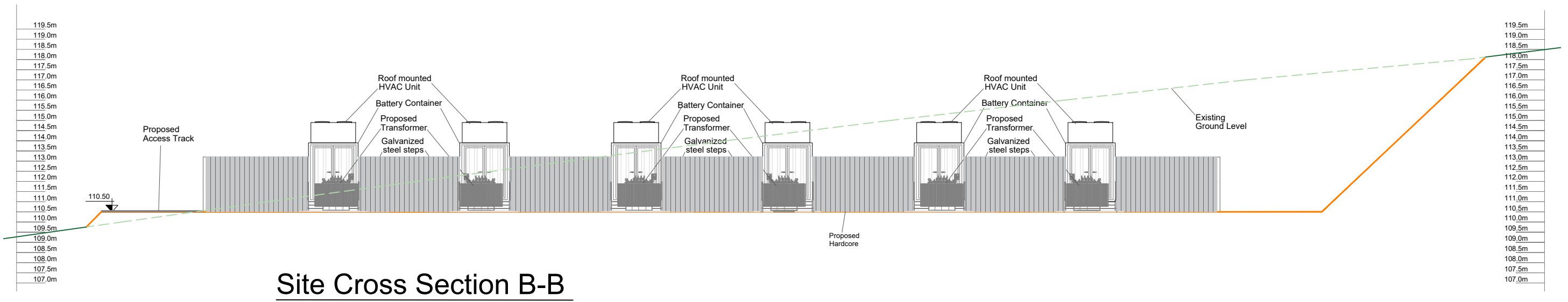
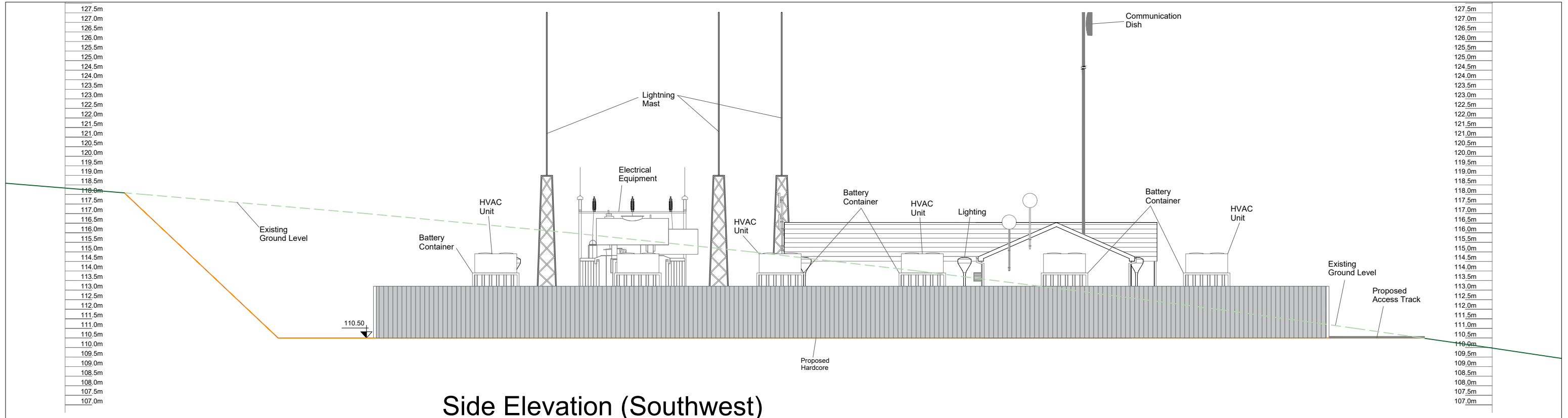
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107.0m

Site Cross Section A-A
Part 2

DRAWING TITLE: Site Substation Section A-A	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 38
SCALE: 1:200 @ A3	DATE: 22.11.2018

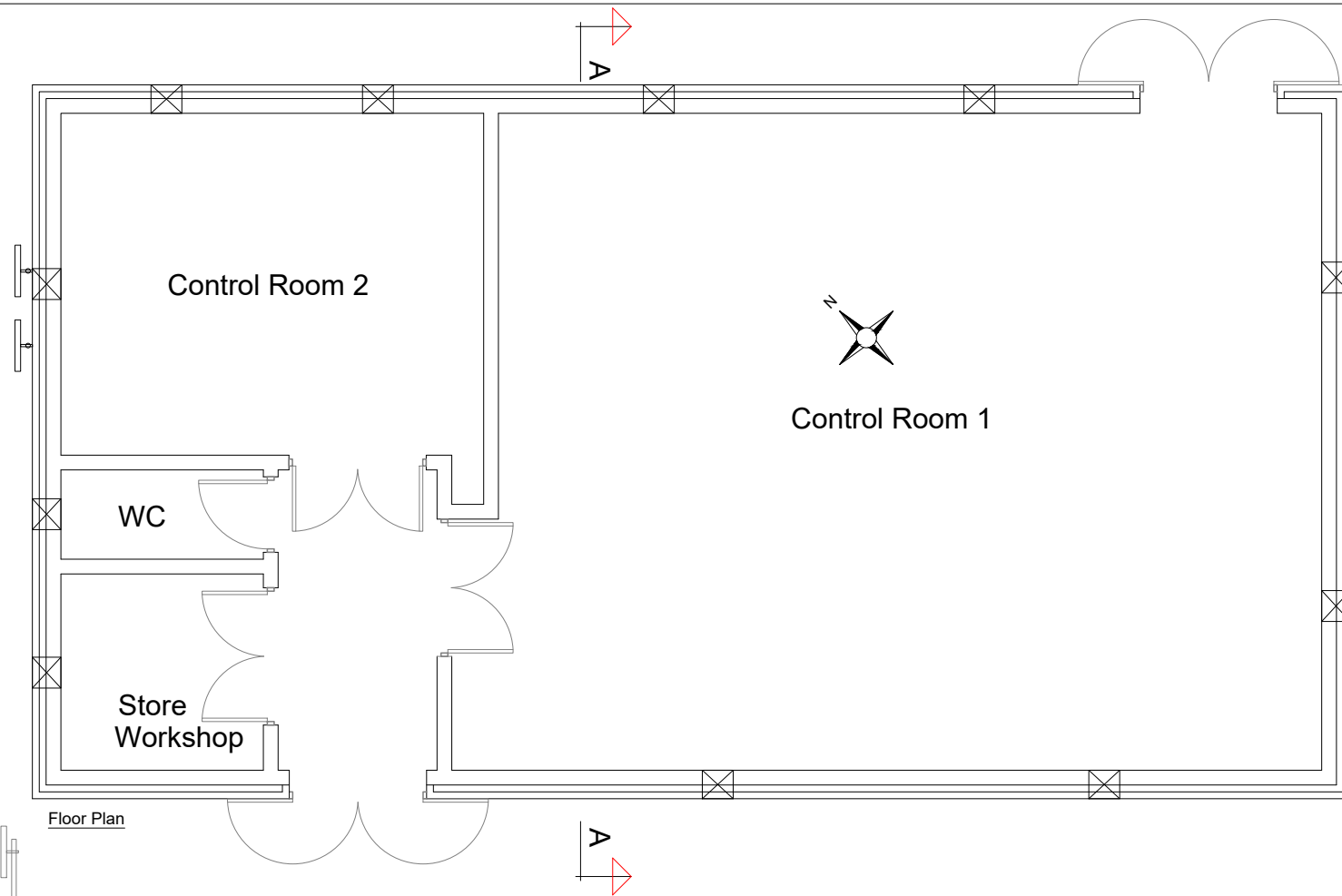
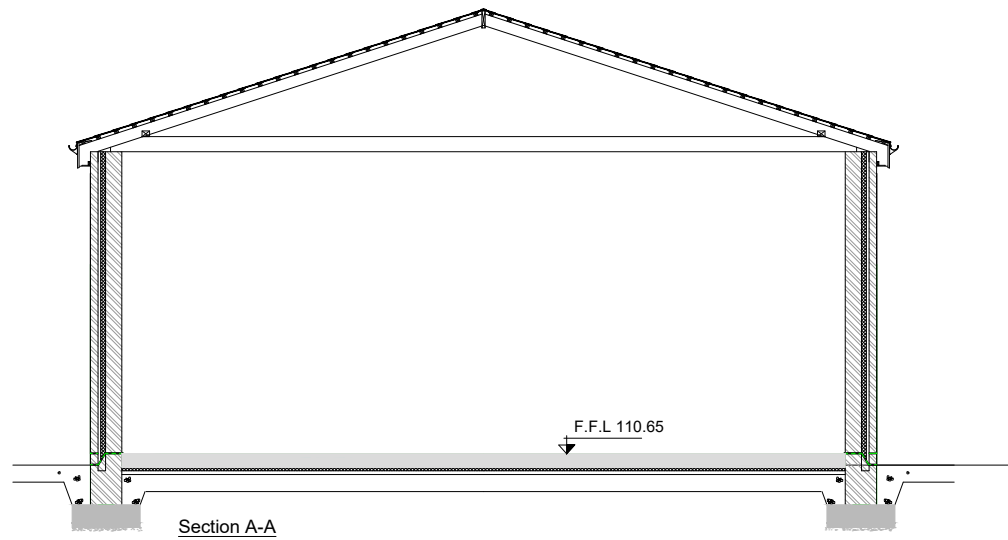


McCarthy Keville O'Sullivan Ltd.
Planning & Environmental Consultants
Block 1,
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Fax: +353 91 771279

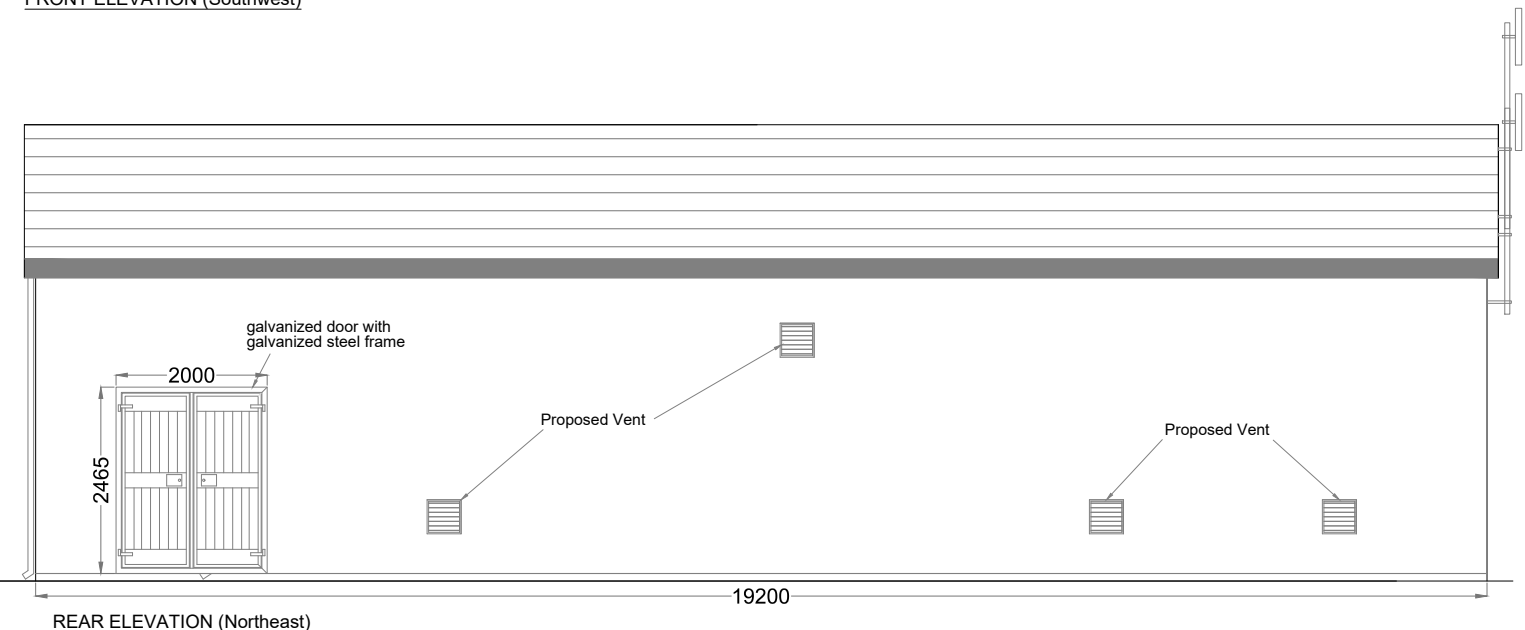
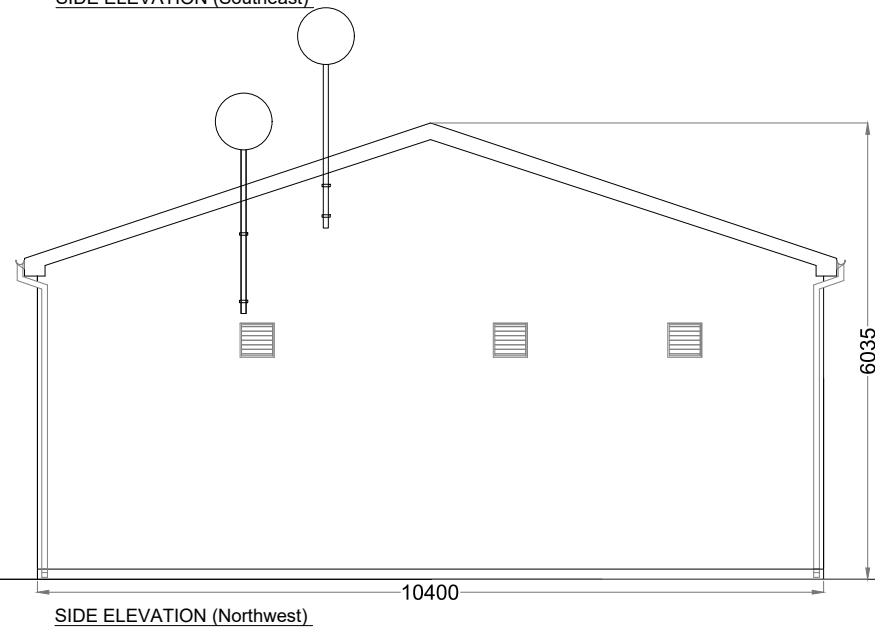
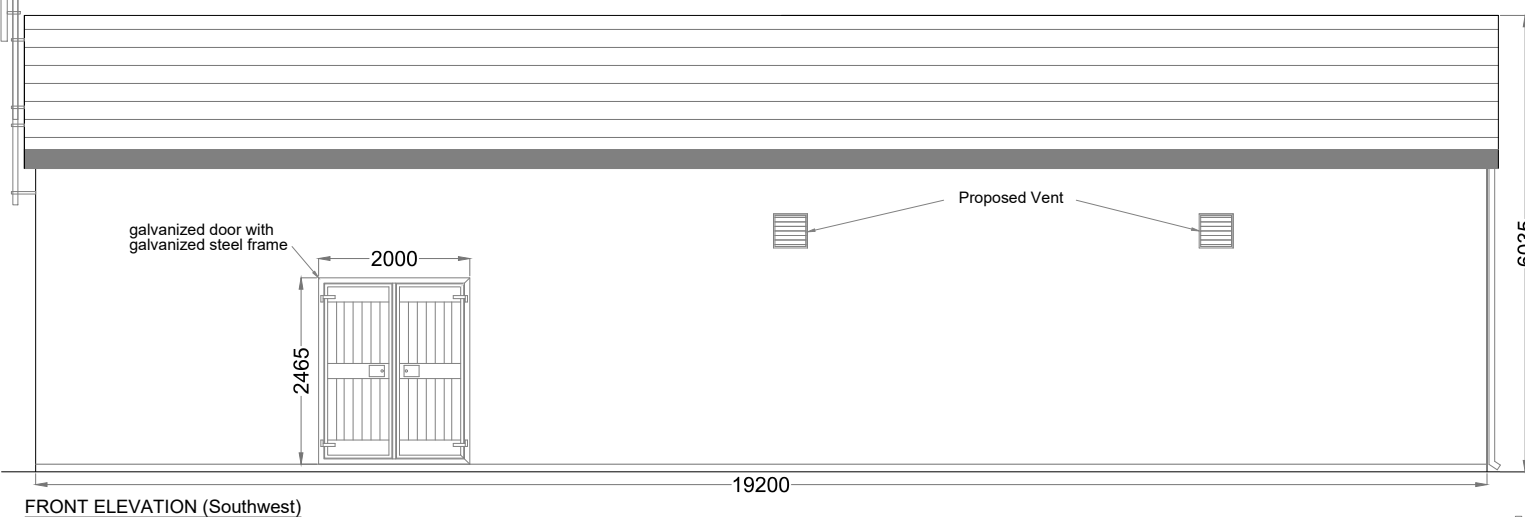
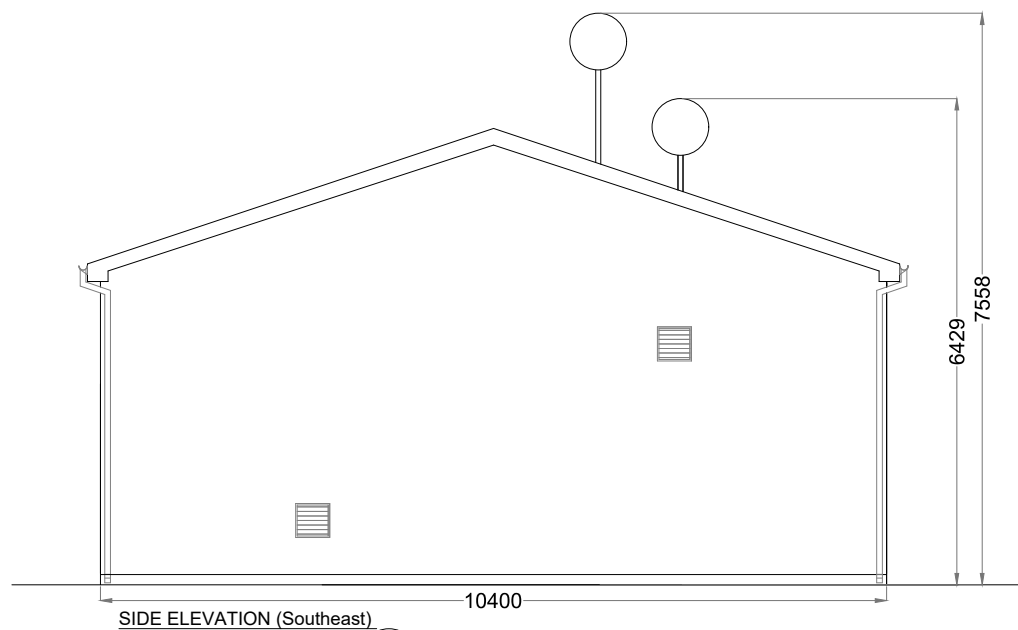


DRAWING TITLE: Site Substation Side Elevation - South West & Section	
PROJECT TITLE: Ardderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 39
SCALE: 1:200 @ A3	DATE: 22.11.2018


McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
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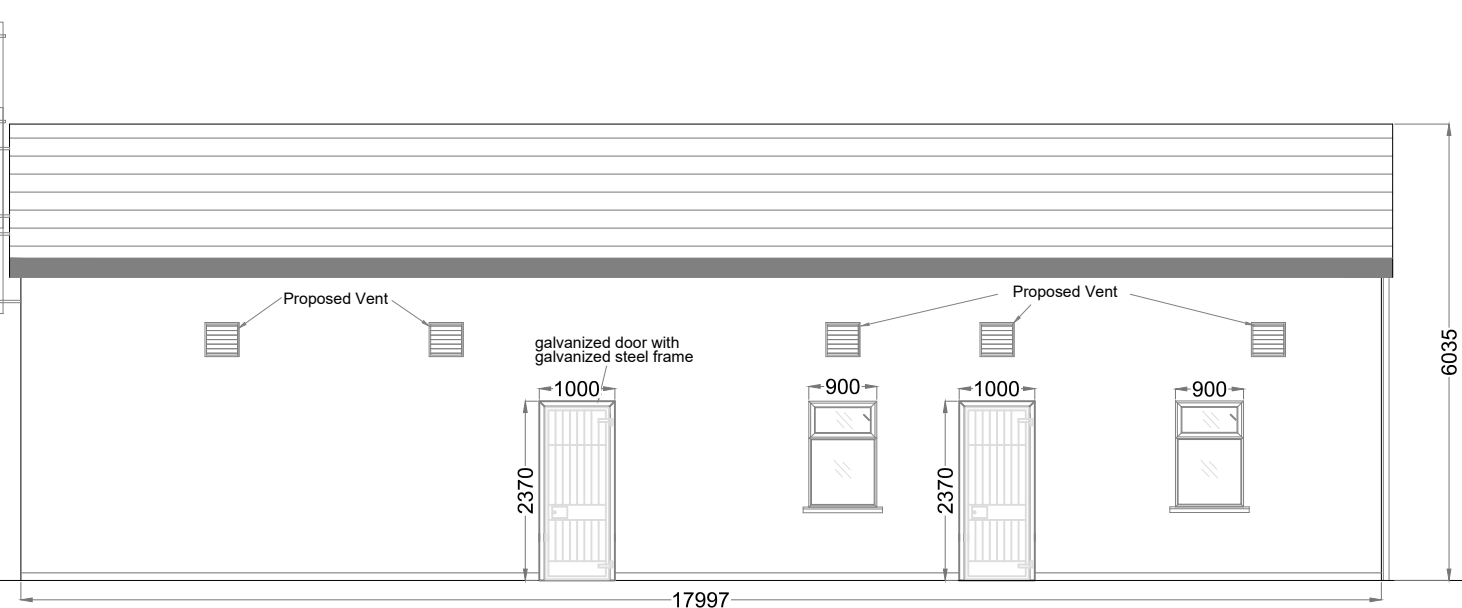
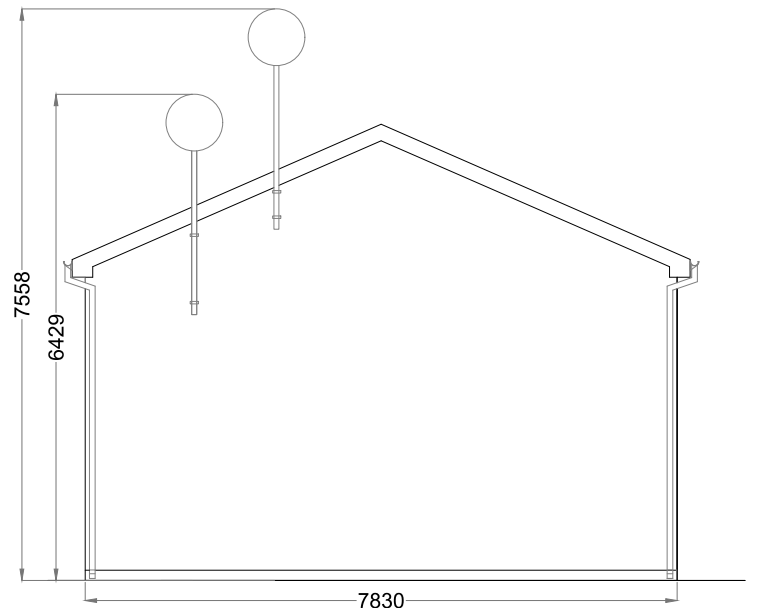
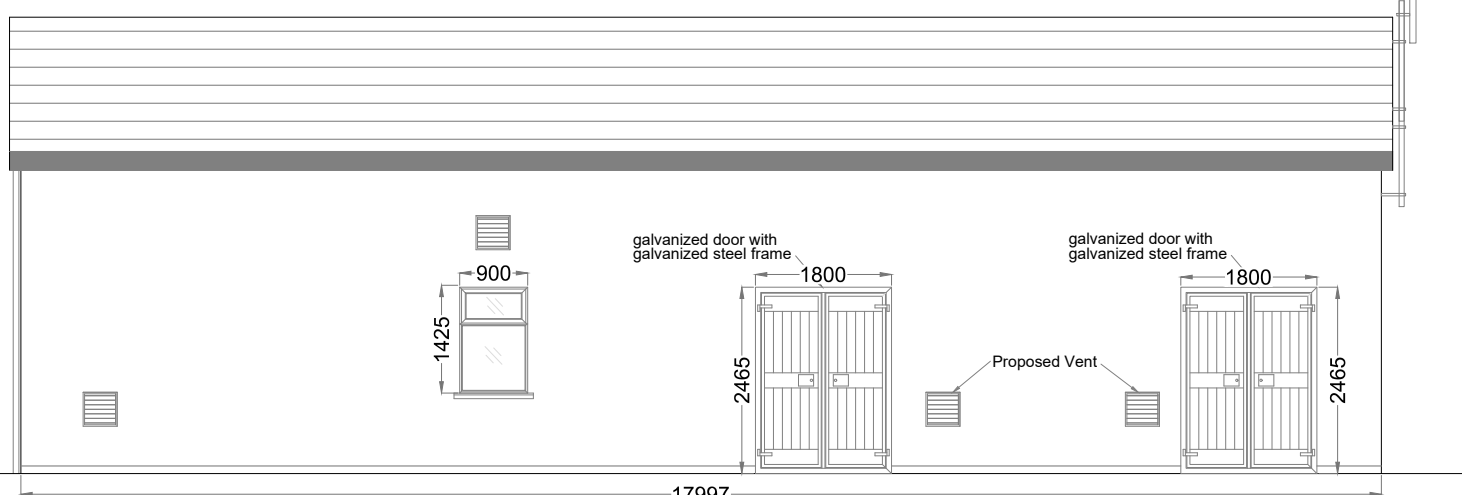
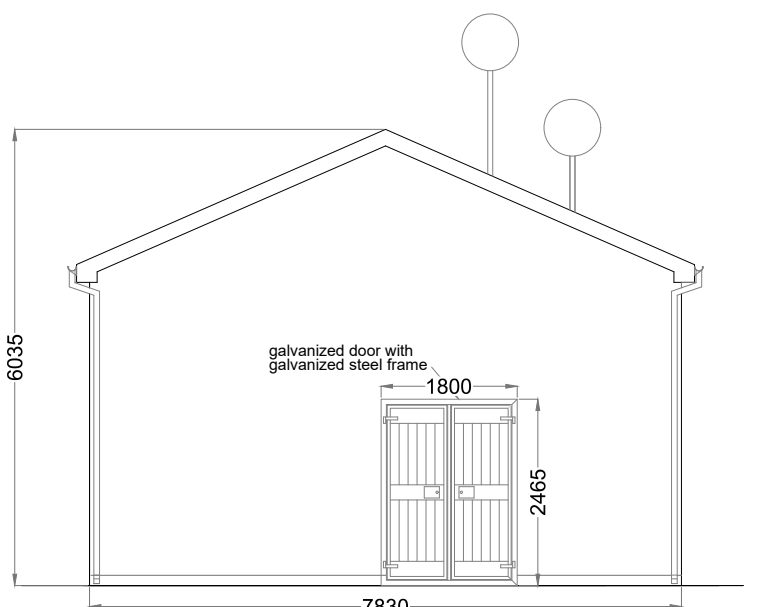
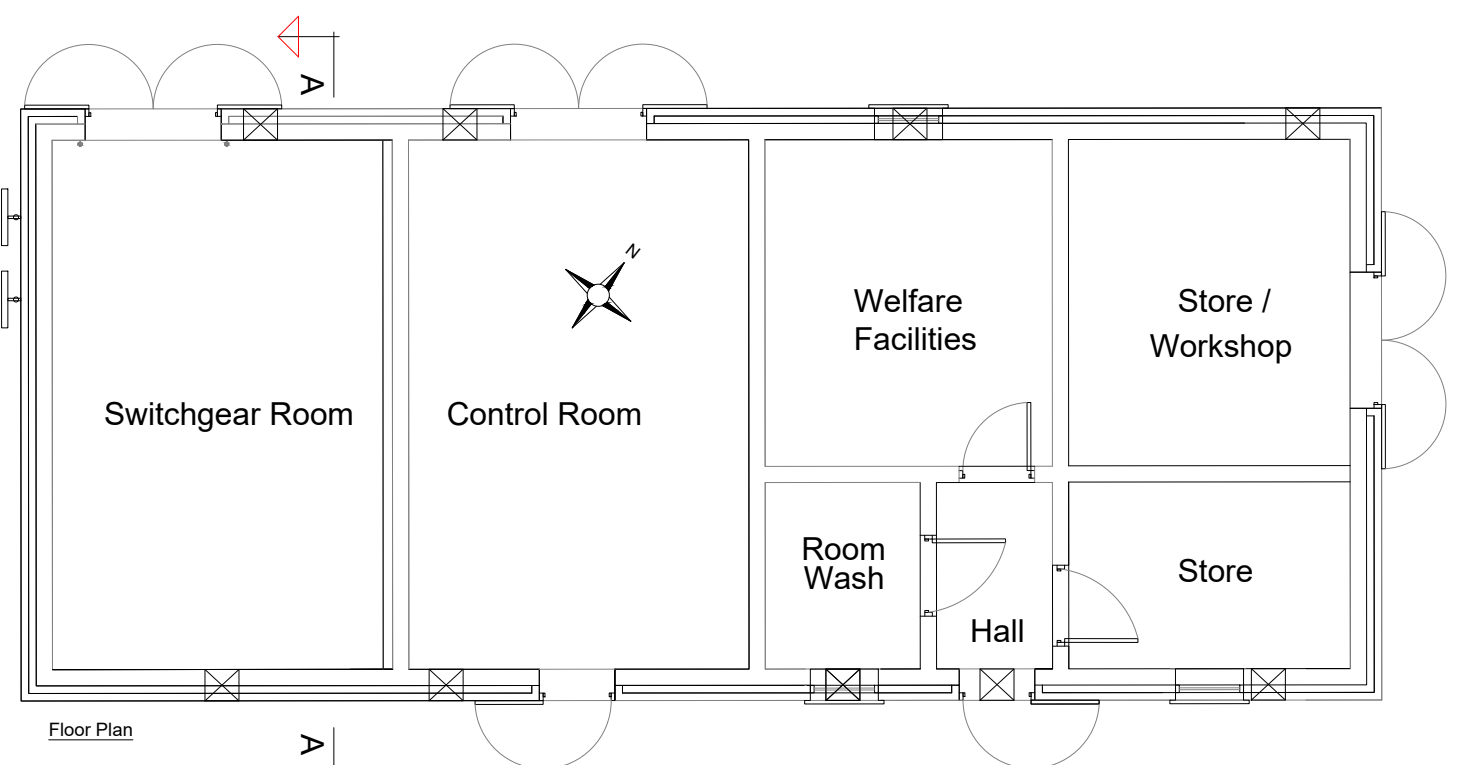
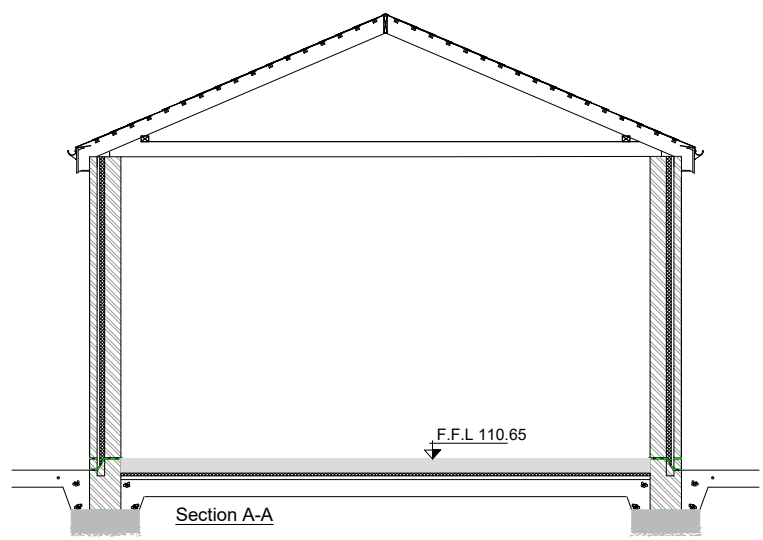


Control Building 1 Elevations & Section	
Arderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No: 160815	DRAWING No: 0815 - 40
SCALE: 1:100 @A3	DATE: 22.11.2018

McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279

Project Design Drawing Notes

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7. Exact location of cable/joint bay in the road curtilage to be subject to ESB specifications and agreement with Galway County Council.
8. Layout, arrangements and finished floor levels of substation buildings and electrical equipment is shown indicatively and for illustration purposes only as final specifications of buildings and electrical equipment is to be dictated by Eirgrid/ESB networks requirements

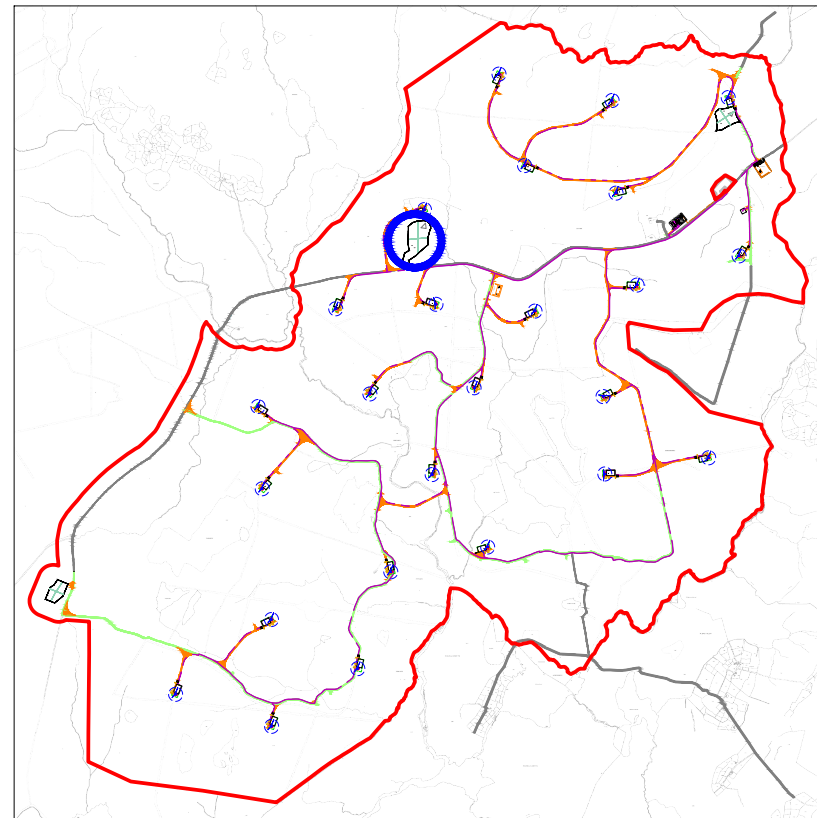
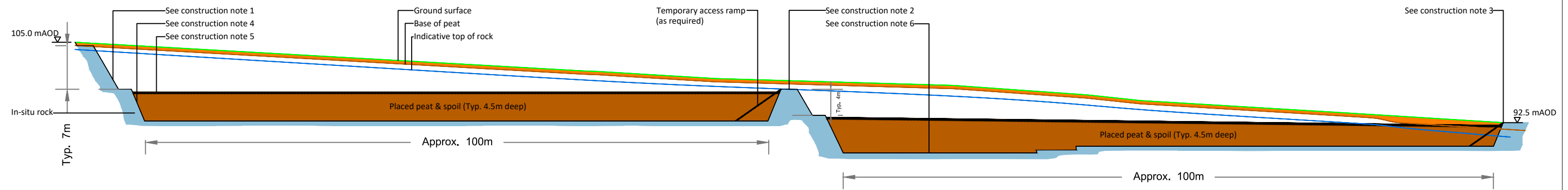



DRAWING TITLE:	
Control Building 2 Elevations & Section	
PROJECT TITLE:	
Ardderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Joseph O'Brien	Jimmy Green
PROJECT No.:	DRAWING No.:
160815	0815 - 41
SCALE:	DATE:
1:100 @ A3	22.11.2018

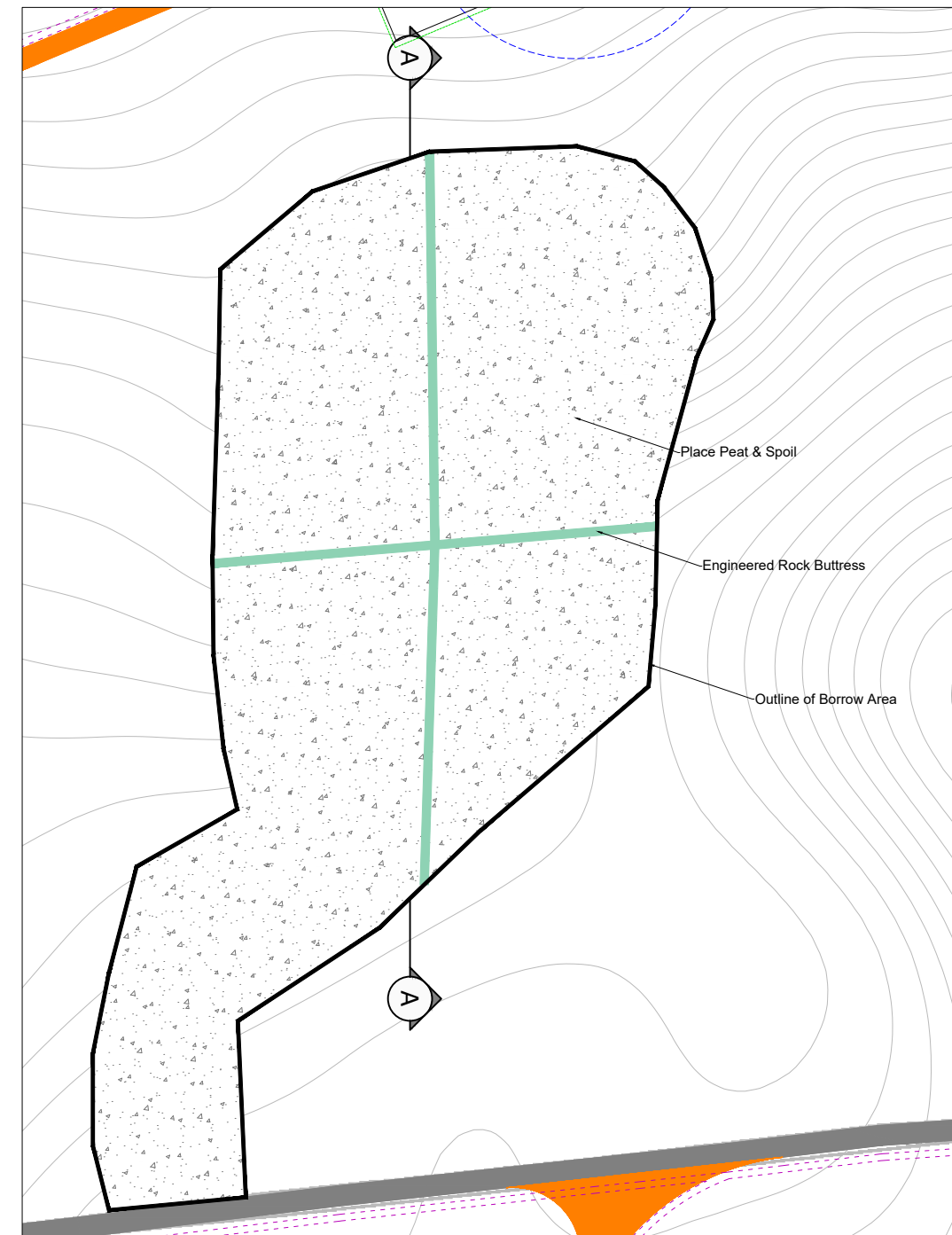


McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279

Cross Section A-A (Scale 1:600 @ A3)



1:50,000 Location on Context Map 



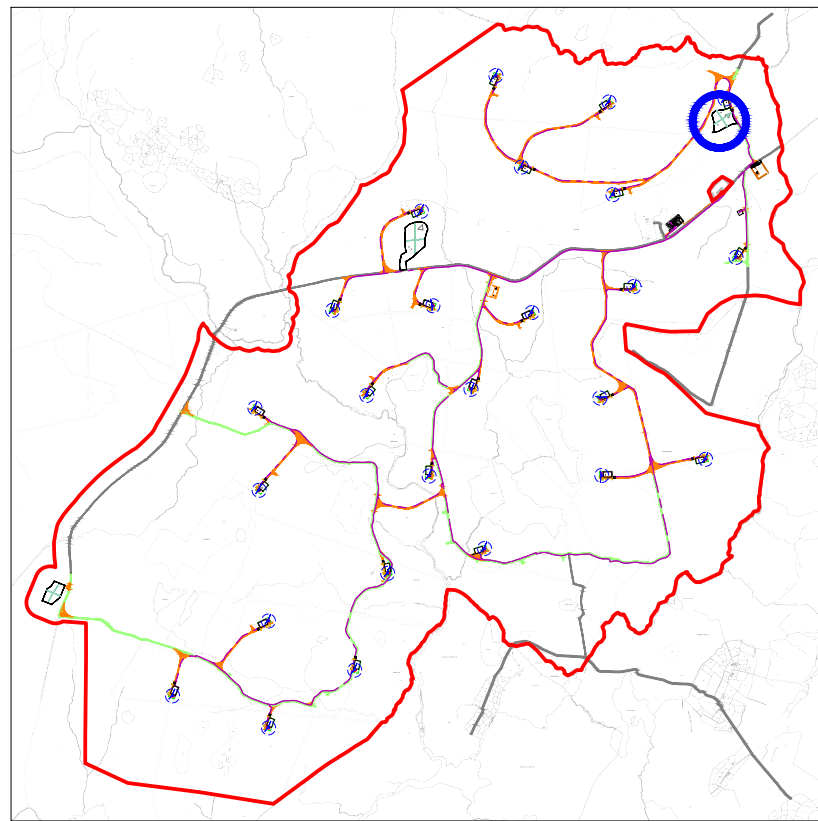
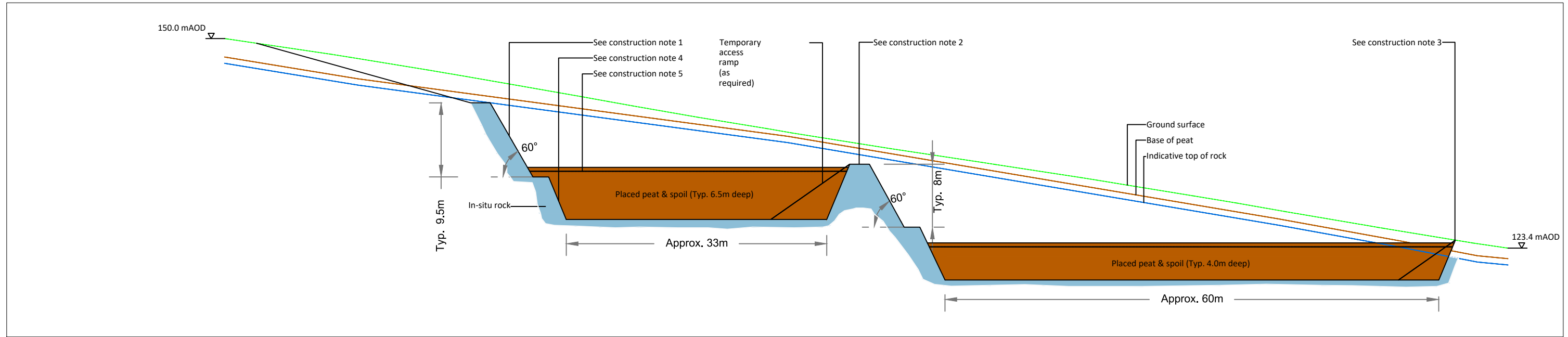
Borrow Pit No. 1 Scale 1:2,000

Construction Notes:

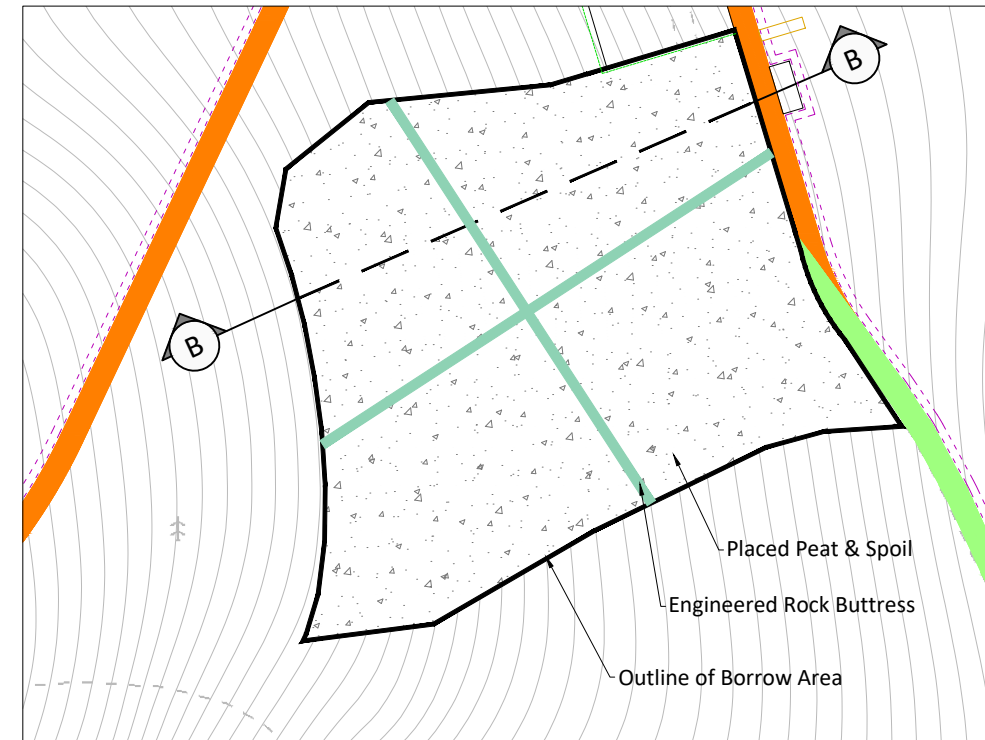
- (1) Exposed rock slopes formed at shallower inclinations (typically 60°) with face left irregular with declivities to promote re-vegetation and provide a naturalistic appearance (slope face exaggerated in section).
- (2) Engineered rock buttress left in-situ between cells of placed peat.
- (3) Footprint of quarry should be optimised to avoid areas of deeper peat.
- (4) In-situ rock slope formed at stable inclinations to suit local rock conditions.
- (5) Geogrid placed to strengthen surface of placed peat, as required.
- (6) Localised deepening of quarry floor to suit extraction operations, as required.
- (7) The location of the rock buttresses shown for the borrow areas are indicative only and may change subject to local conditions encountered on site during construction.
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- (9) Further guidelines on the construction of the borrow areas is included within Section 7.4 of the Peat Management Plan.

DRAWING TITLE: Borrow Pit 1 Layouts & Sections	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Gerry Kane	CHECKED BY: Paul Jennings
PROJECT No.: 1436_0586	DRAWING No.: 0815 - 42
SCALE: As Shown @ A3	DATE: 22.11.2018
<small>OS SHEET No.: 0000, 0001, 0002, 0003, 0004, 0005, 0006, 0007, 0008, 0009, 0010, 0011, 0012, 0013, 0014, 0015, 0016, 0017, 0018, 0019, 0020, 0021, 0022, 0023, 0024, 0025, 0026, 0027, 0028, 0029, 0030, 0031, 0032, 0033, 0034, 0035, 0036, 0037, 0038, 0039, 0040, 0041, 0042, 0043, 0044, 0045, 0046, 0047, 0048, 0049, 0050, 0051, 0052, 0053, 0054, 0055, 0056, 0057, 0058, 0059, 0060, 0061, 0062, 0063, 0064, 0065, 0066, 0067, 0068, 0069, 0070, 0071, 0072, 0073, 0074, 0075, 0076, 0077, 0078, 0079, 0080, 0081, 0082, 0083, 0084, 0085, 0086, 0087, 0088, 0089, 0090, 0091, 0092, 0093, 0094, 0095, 0096, 0097, 0098, 0099, 0100, 0101, 0102, 0103, 0104, 0105, 0106, 0107, 0108, 0109, 0110, 0111, 0112, 0113, 0114, 0115, 0116, 0117, 0118, 0119, 0120, 0121, 0122, 0123, 0124, 0125, 0126, 0127, 0128, 0129, 0130, 0131, 0132, 0133, 0134, 0135, 0136, 0137, 0138, 0139, 0140, 0141, 0142, 0143, 0144, 0145, 0146, 0147, 0148, 0149, 0150, 0151, 0152, 0153, 0154, 0155, 0156, 0157, 0158, 0159, 0160, 0161, 0162, 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Cross Section B-B (Scale 1:500 @ A3)



1:50,000 Location on Context Map



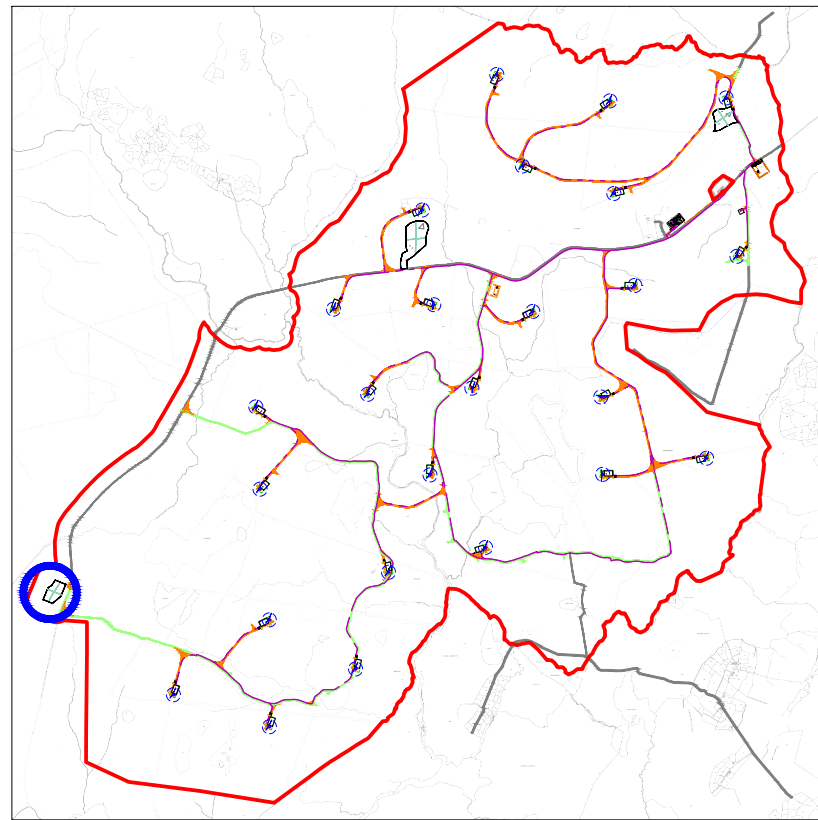
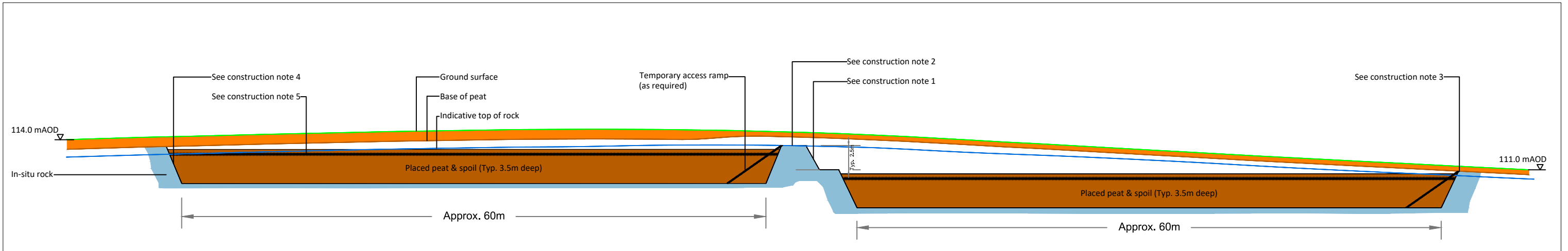
Borrow Pit No. 2 Scale 1:2,000

Construction Notes:

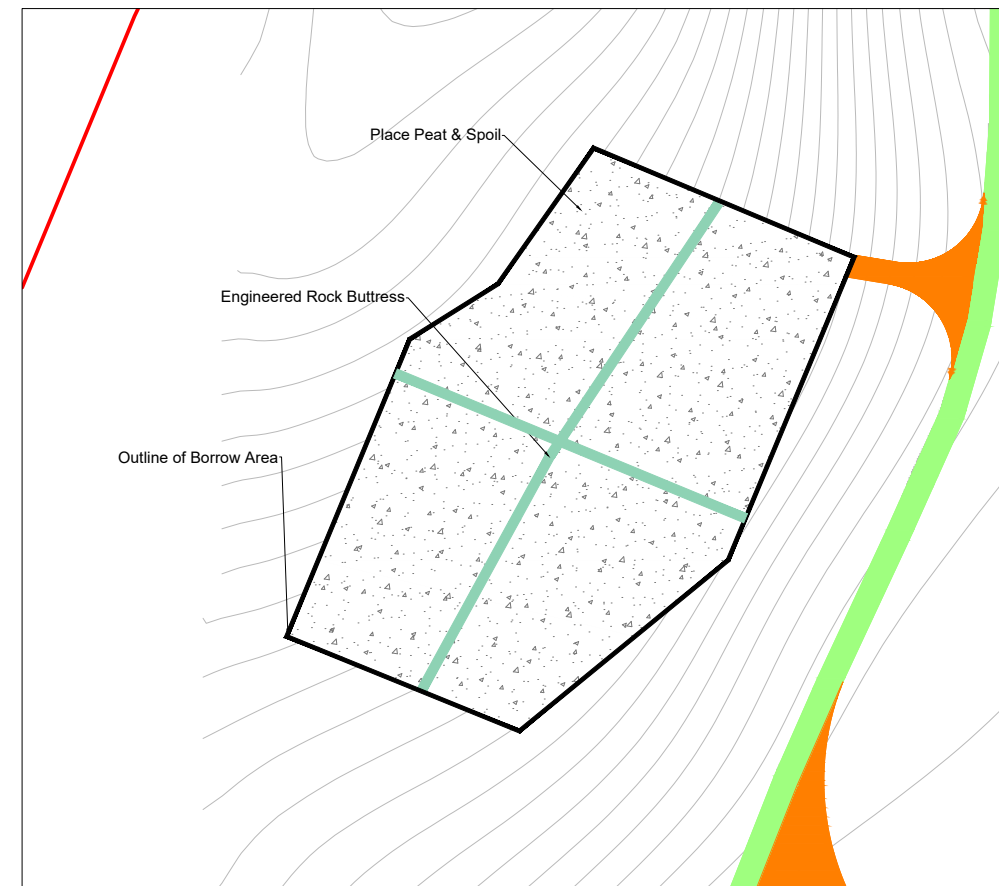
- (1) Exposed rock slopes formed at shallower inclinations (typically 60°) with face left irregular with declivities to promote re-vegetation and provide a naturalistic appearance (slope face exaggerated in section).
- (2) Engineered rock buttress left in-situ between cells of placed peat.
- (3) Footprint of quarry should be optimised to avoid areas of deeper peat.
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DRAWING TITLE: Borrow Pit 2 Layouts & Sections	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Gerry Kane	CHECKED BY: Paul Jennings
PROJECT No.: 1436_0586	DRAWING No.: 0815 - 43
SCALE: As Shown @ A3	DATE: 22.11.2018

Cross Section C-C (Scale 1:400 @ A3)



1:50,000 Location on Context Map



Borrow Pit No. 3 Scale 1:2,000

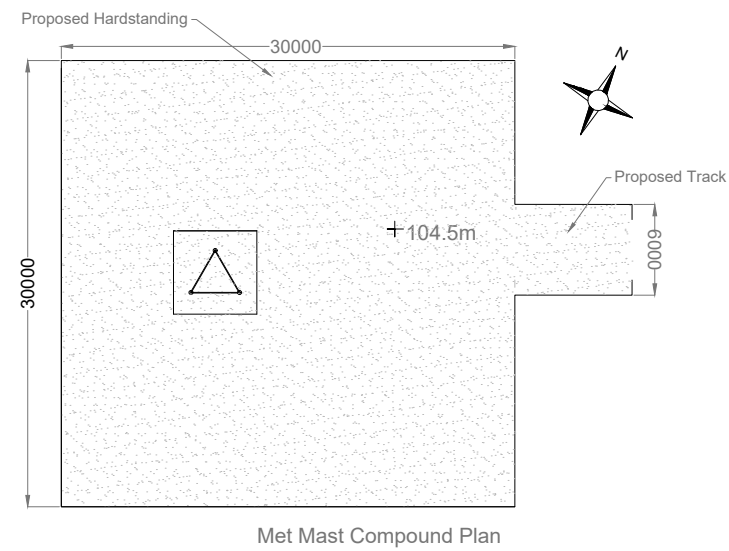
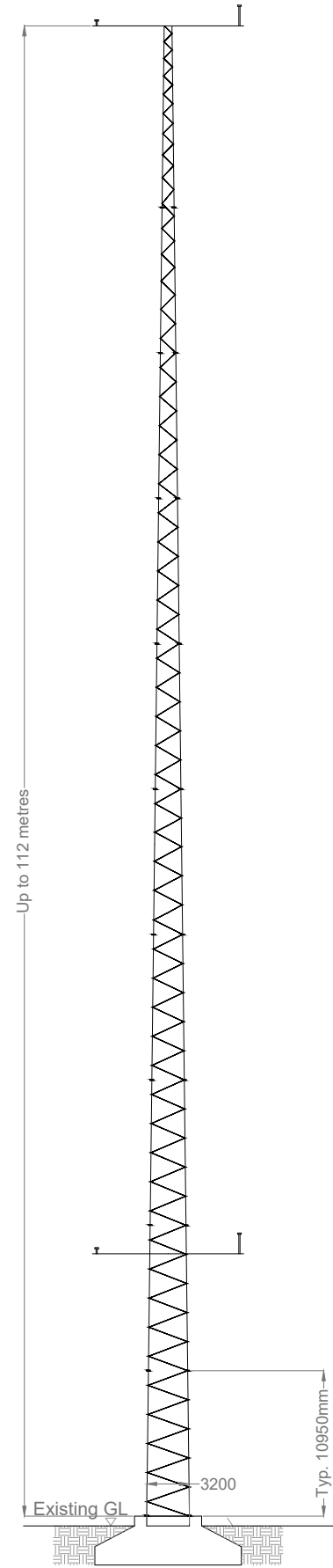
Construction Notes:

- (1) Exposed rock slopes formed at shallower inclinations (typically 60°) with face left irregular with declivities to promote re-vegetation and provide a naturalistic appearance (slope face exaggerated in section).
- (2) Engineered rock buttress left in-situ between cells of placed peat.
- (3) Footprint of quarry should be optimised to avoid areas of deeper peat.
- (4) In-situ rock slope formed at stable inclinations to suit local rock conditions.
- (5) Geogrid placed to strengthen surface of placed peat, as required.
- (6) Localised deepening of quarry floor to suit extraction operations, as required.
- (7) The location of the rock buttresses shown for the borrow areas are indicative only and may change subject to local conditions encountered on site during construction.
- (8) The excavatability of the rock and depth to top of rock within each of the borrow areas will need to be determined from a ground investigation.
- (9) Further guidelines on the construction of the borrow areas is included within Section 7.4 of the Peat Management Plan.

DRAWING TITLE: Borrow Pit 3 Layouts & Sections	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Gerry Kane	CHECKED BY: Paul Jennings
PROJECT No.: 1436_0586	DRAWING No.: 0815 - 44
SCALE: As Shown @ A3	DATE: 22.11.2018
<small>OS SHEET No.: 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 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Drawing Notes

The final ground level will be determined by actual ground conditions and may differ from those stated on the drawings.



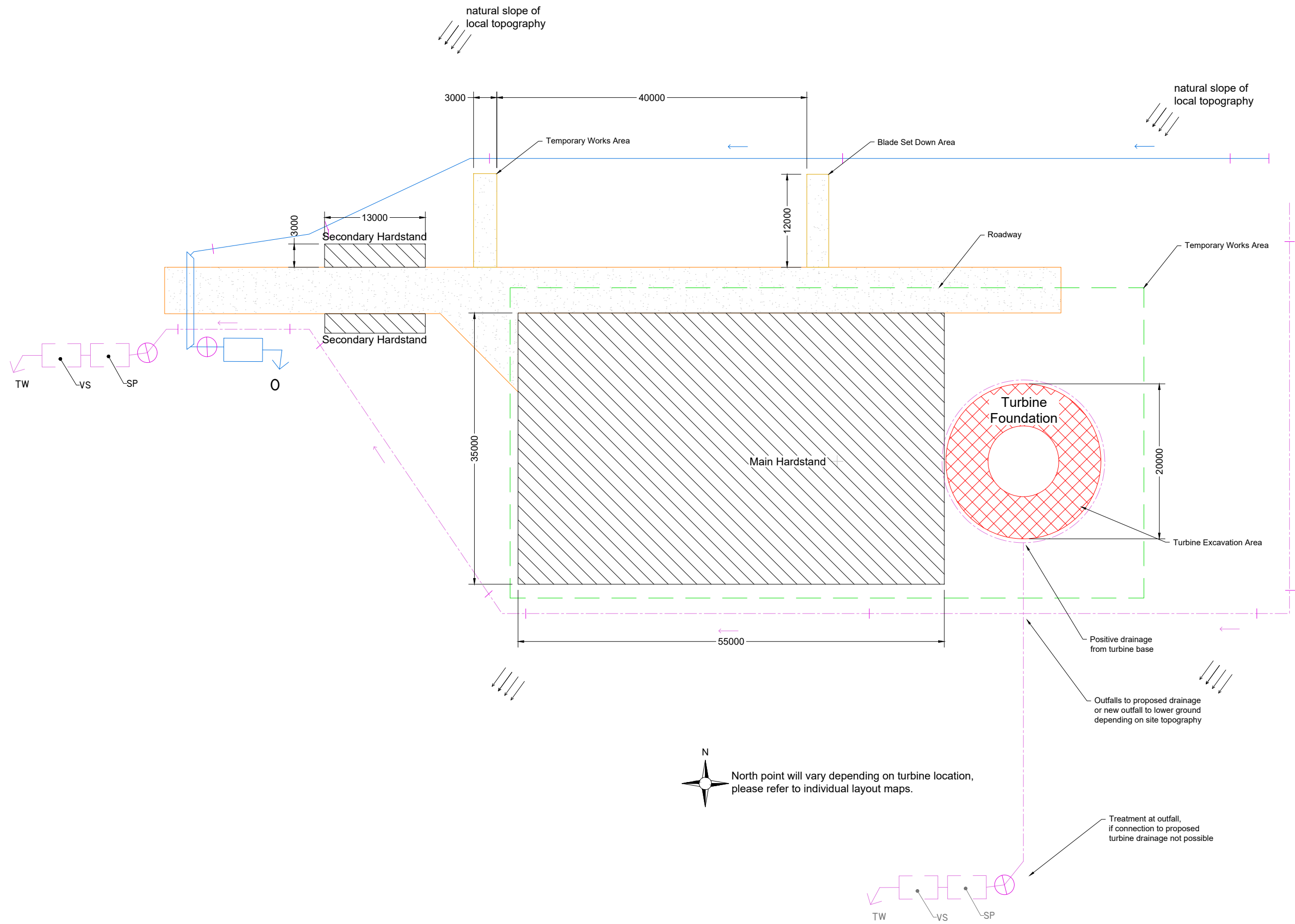
DRAWING TITLE:		Free Standing Anemometry Mast	
PROJECT TITLE:			
Ardderroo Wind Farm, Co. Galway			
DRAWING BY:	Joseph O'Brien	CHECKED BY:	Eoin McCarthy
PROJECT No:	160815	DRAWING No:	0815 - 45
SCALE:	1:500 @ A3	DATE:	22.11.2018



McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279

Drawing Notes

1. Typical Layout, final dimensions and configuration will be based on manufacturer's specifications



DRAWING LEGEND


	UPSTREAM INTERCEPTOR DRAIN
	SWALES/DOWNSTREAM COLLECTOR DRAIN
	DIRECTION OF FLOW
	SETTLEMENT POND - VEGETATION FILTER - LEVEL SPREADER
	CHECK DAM 'TYPE A'
	CHECK DAM 'TYPE B'
	INTERCEPTOR DITCH CULVERT
	COLLECTOR DITCH CULVERT
	OVERLAND FLOW DISCHARGE
	TREATED WATER DISCHARGE
	SETTLEMENT POND
	SEMI-NATURAL VEGETATION SWALE / FILTER BED / SECONDARY SP

PROPOSED DRAINAGE

DRAWING TITLE:
Typical Turbine Hardstand Layout Standard Detail

PROJECT TITLE:
Ardderroo Wind Farm, Co. Galway

DRAWING BY: Joseph O'Brien	CHECKED BY: Eoin McCarthy
PROJECT No.: 160815	DRAWING No.: 0815 - 46
SCALE: 1:500 @A3	DATE: 22.11.2018



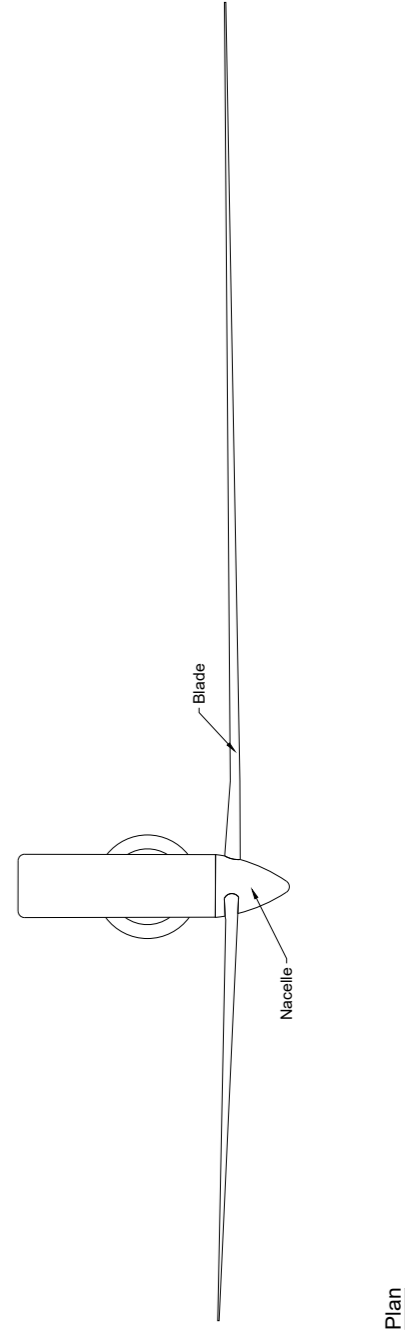
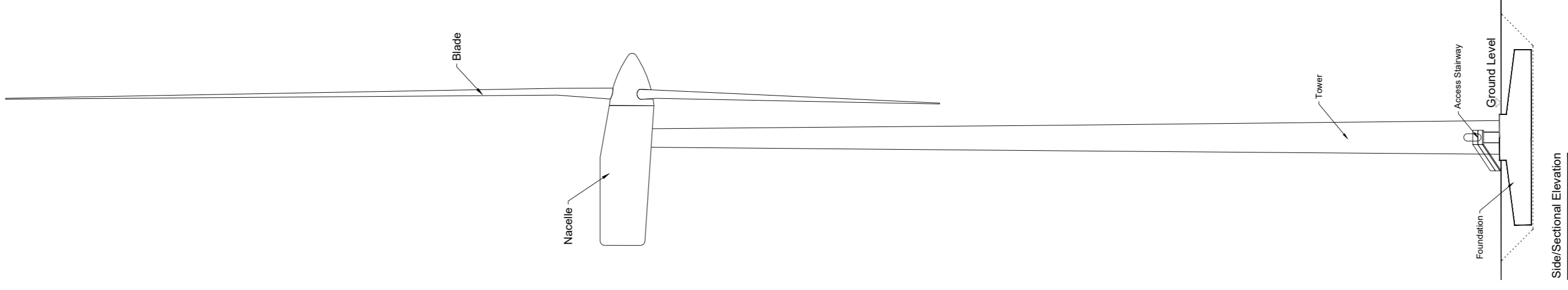
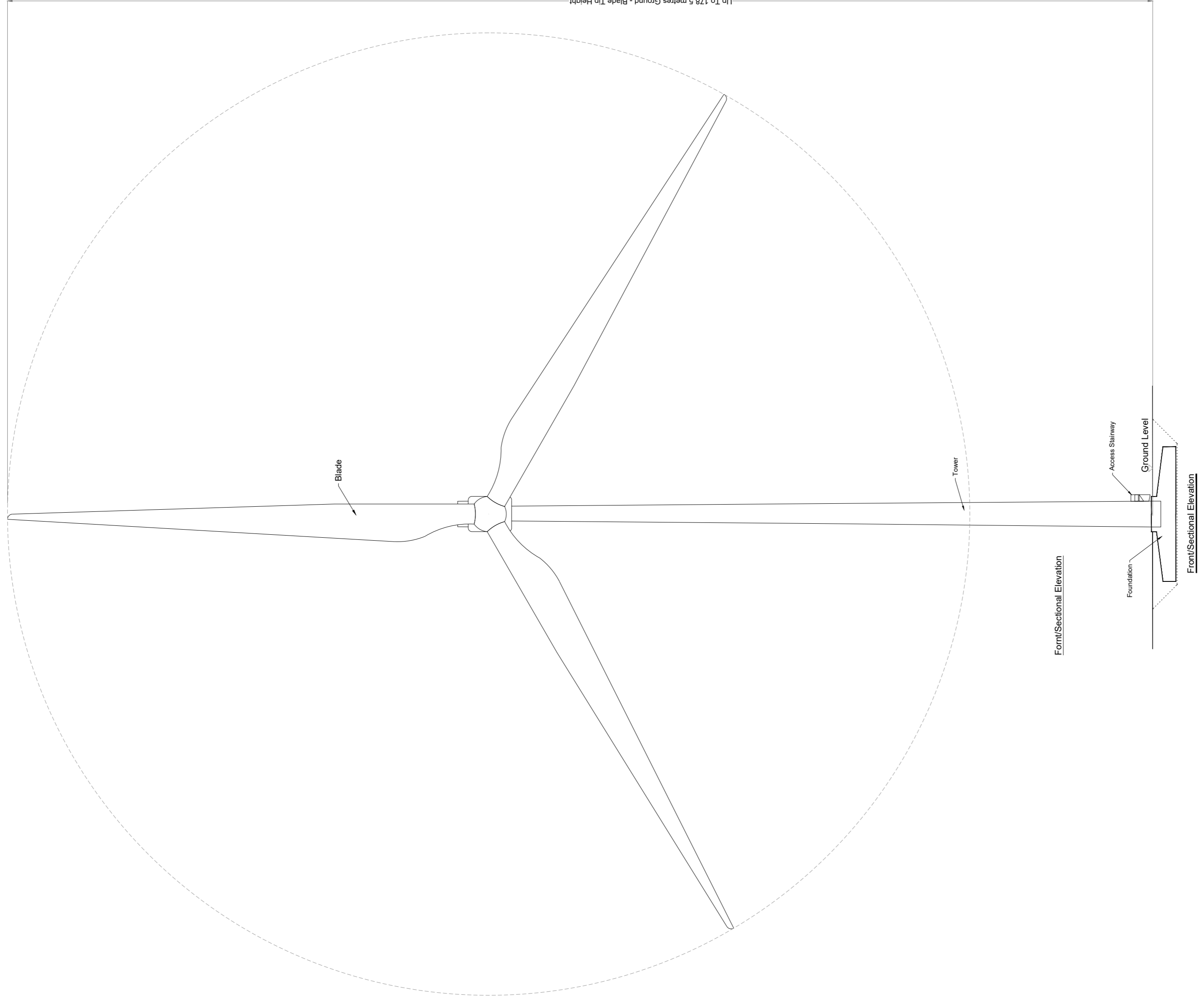
McCarthy Keville O'Sullivan Ltd.
Planning & Environmental Consultants

Block 1,
Galway Financial Services Centre,
Moneenageisha Road,
Galway, Ireland.

email: info@mccarthykos.ie
website: www.mccarthykos.ie
Tel: +353 91 735611
Fax: +353 91 771279

Drawing Notes

1. Proposed wind turbines to have a maximum ground to blade tip height of up to 178.5m.
2. Exact make and model of the turbine to be dictated by a competitive tender process.
3. Installed wind turbine not to exceed maximum size envelope set out above in any blade length and hub-height configuration.



DRAWING TITLE:

Wind Turbine Elevation & Plan

PROJECT TITLE:

Ardderroo Wind Farm, Co. Galway

DRAWING BY:

Joseph O'Brien

CHECKED BY:

Eoin McCarthy

PROJECT NO.:

160815

DRAWING NO.:

0815 - 47

SCALE:

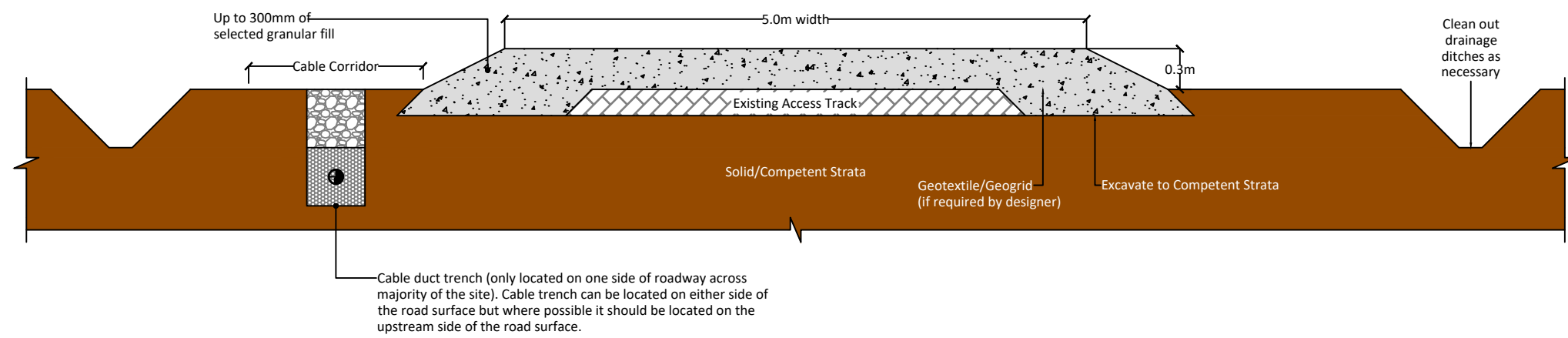
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DATE:

22.11.2018

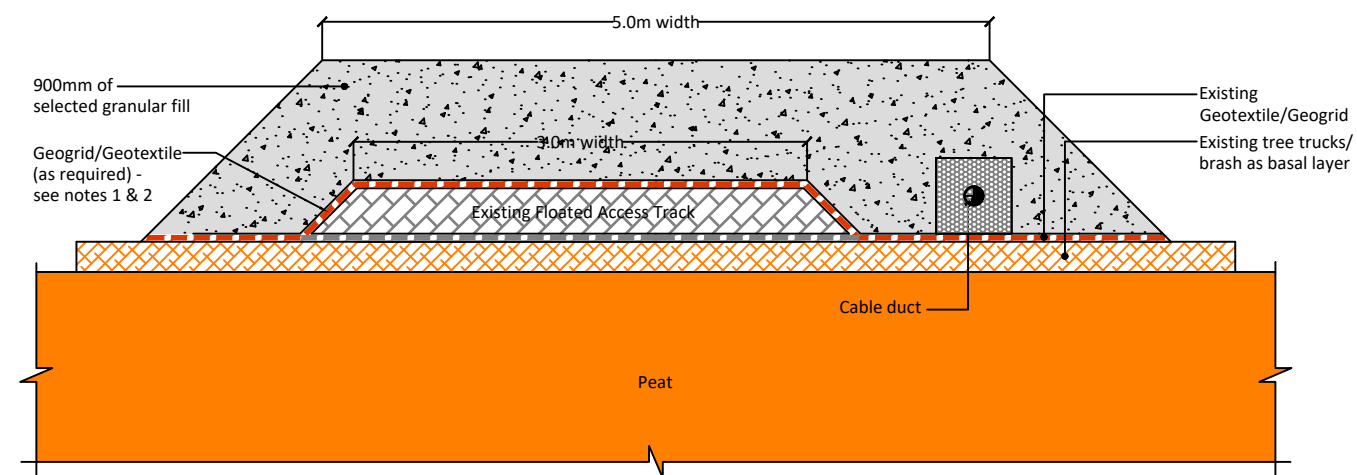


McCarthy Keville O'Sullivan Ltd.
Planning & Environmental Consultants
Block 1,
Galway Financial Services Centre,
Moneenagasha Road,
Galway, Ireland.
email: info@mccarthykos.ie
website: www.mccarthykos.ie
Tel: +353 91 735611
Fax: +353 91 771279



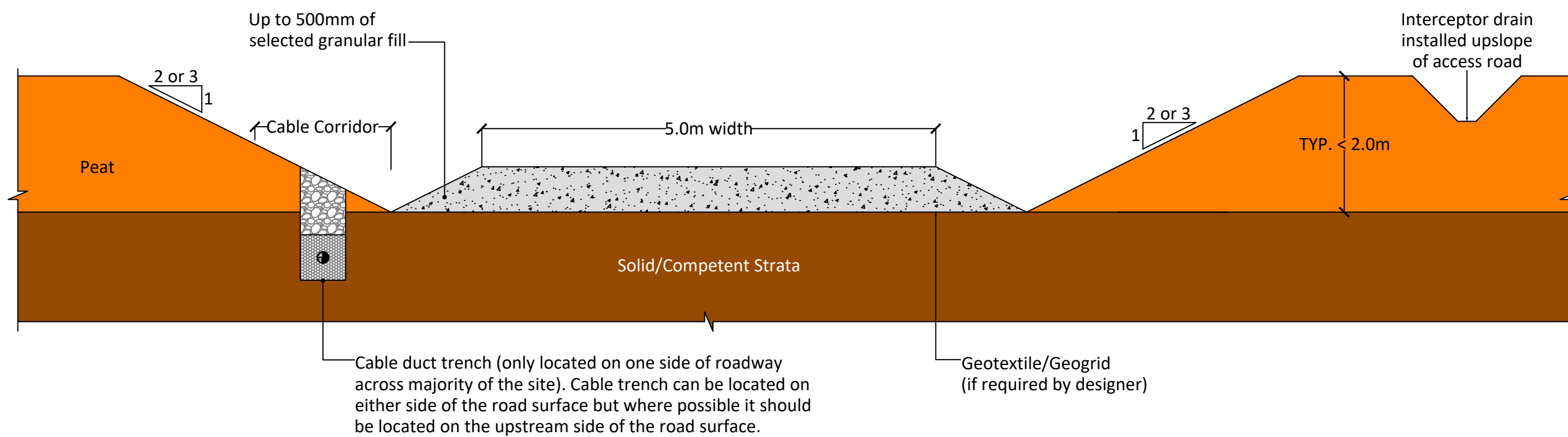
DRAWING TITLE: Road Type A - Upgrade of Existing Excavated Access Track	
PROJECT TITLE: Ardderroo Wind Farm, Co. Galway	
DRAWING BY: Gerry Kane	CHECKED BY: Paul Jennings
PROJECT No.: 1436_0586	DRAWING No.: 0815 - 48
SCALE: 1 : 50 @ A3	DATE: 22.11.2018
OS SHEET No.:	



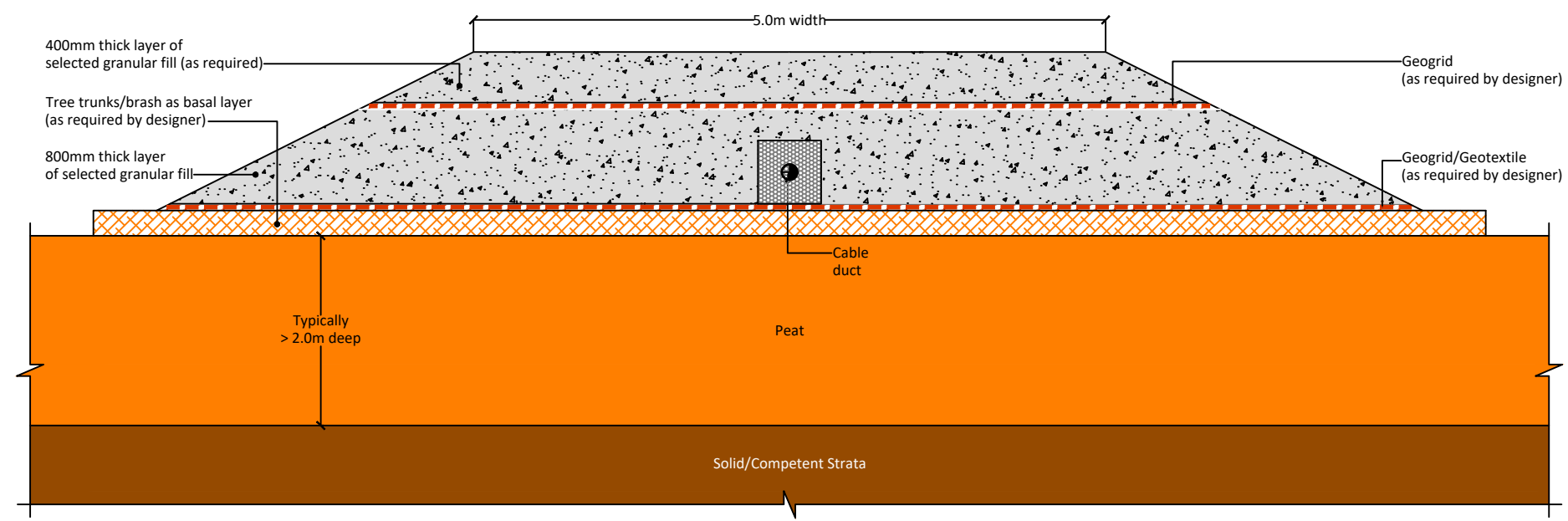


- (1) Where coarse granular fill has been used in the existing floated access road make-up, a layer of geogrid should be placed on top of the existing floated access track.
- (2) Where fine granular/cohesive type material has been used in the existing floated access road make-up (as is the case on some of the existing access roads in the southeast of the site), a layer of geotextile is likely to be required as a separator layer with a layer of geogrid.

DRAWING TITLE:	
Road Type B - Upgrade of Existing Floated Access Track	
PROJECT TITLE:	
Ardderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Gerry Kane	Paul Jennings
PROJECT No.:	DRAWING No.:
1436_0586	0815 - 49
SCALE:	DATE:
1 : 50 @ A3	22.11.2018
OS SHEET No.:	

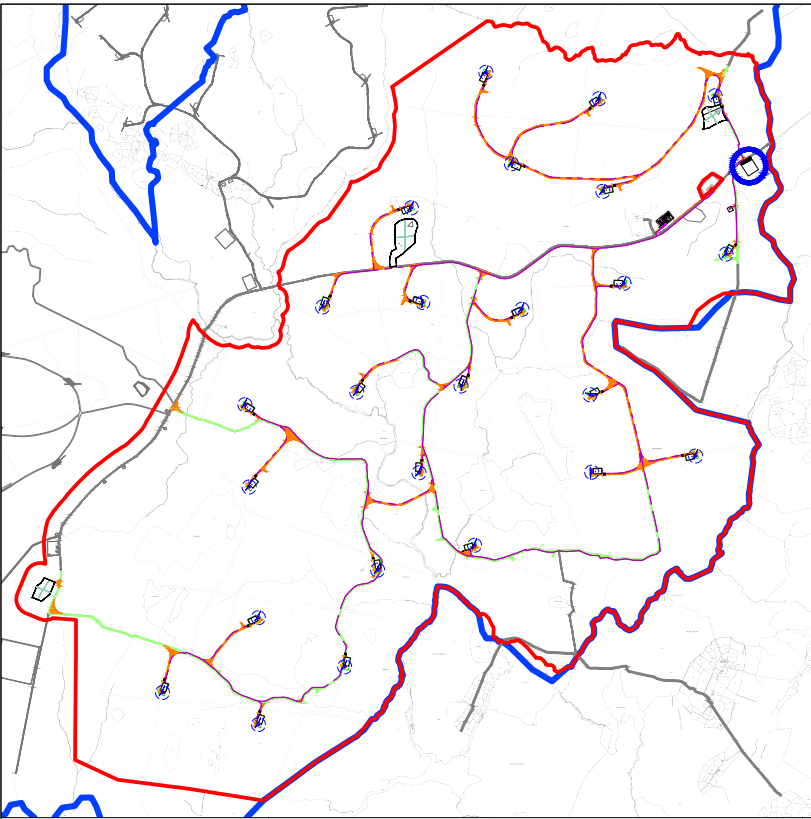



DRAWING TITLE:	
Road Type C - New Excavated & Replace Access Road	
PROJECT TITLE:	
Ardderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Gerry Kane	Paul Jennings
PROJECT No.:	DRAWING No.:
1436_0586	0815 - 50
SCALE:	DATE:
1 : 50 @ A3	22.11.2018
OS SHEET No.:	

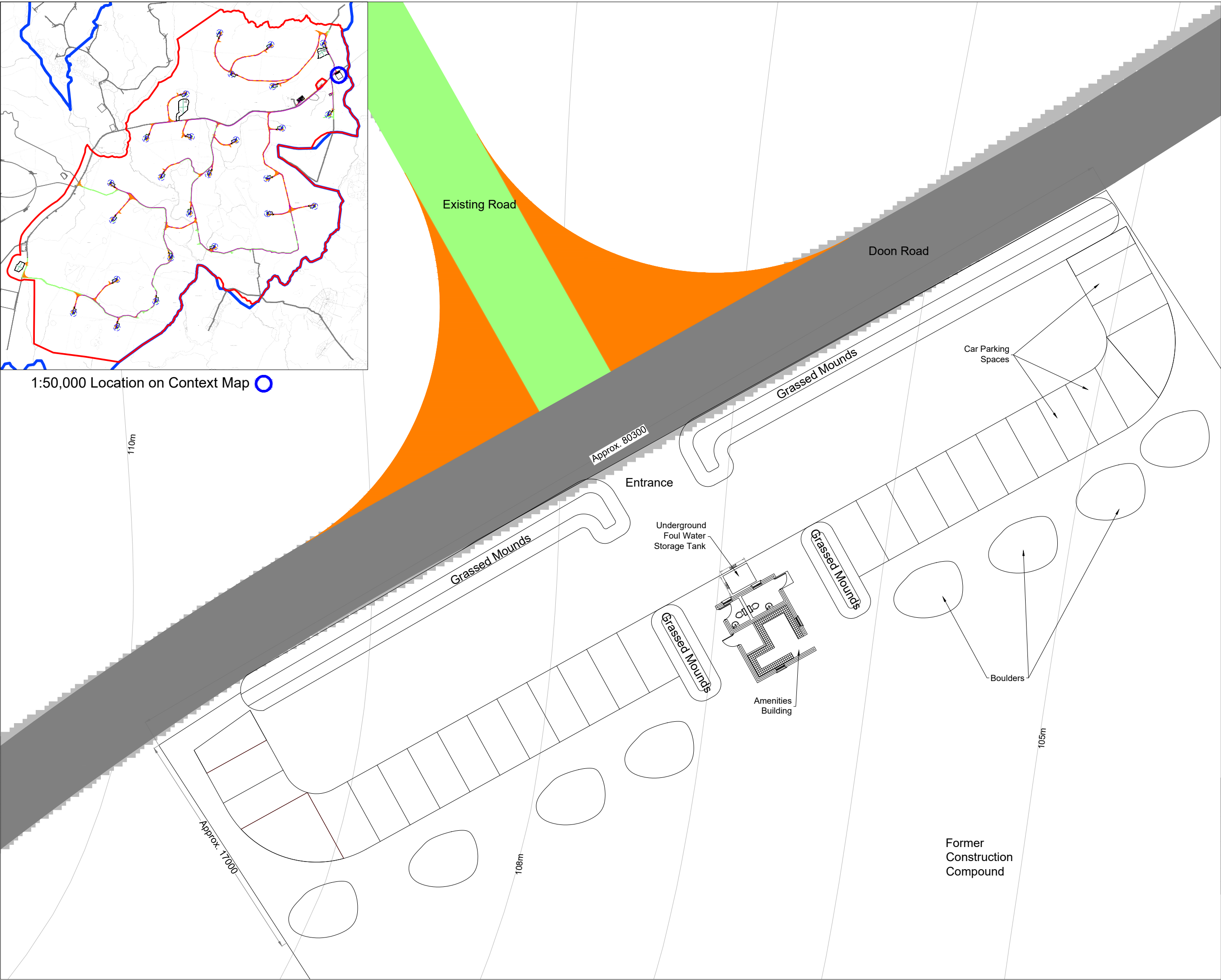


DRAWING TITLE:	
Road Type D - New Floated Access Track	
PROJECT TITLE:	
Ardderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Gerry Kane	Paul Jennings
PROJECT No.:	DRAWING No.:
1436_0586	0815 - 51
SCALE:	DATE:
1 : 50 @ A3	22.11.2018
OS SHEET No.:	





1:50,000 Location on Context Map 



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 7. Layout plans show typical Turbine rotor diameter as per turbine drawing.
 8. Final levels may vary depending on local ground conditions.

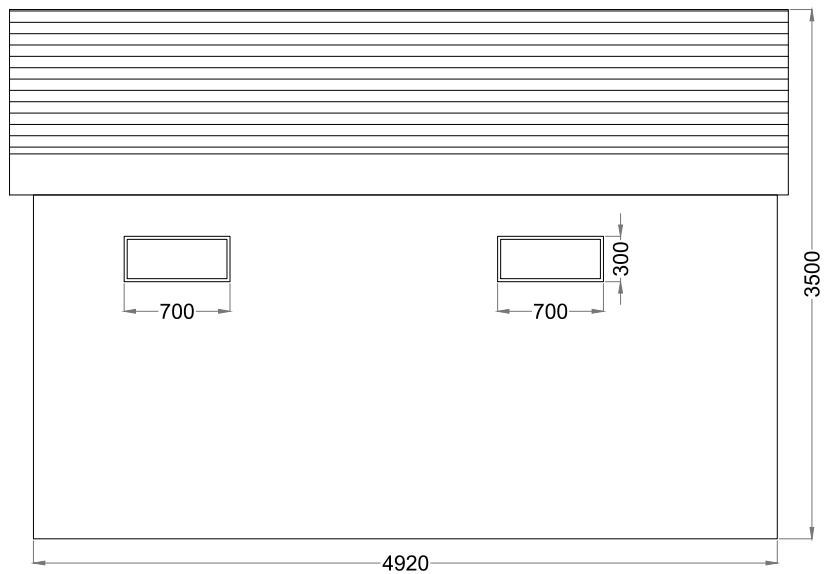
Ordnance Survey Ireland Licence No. AR0021818 © Ordnance Survey Ireland/Government of Ireland



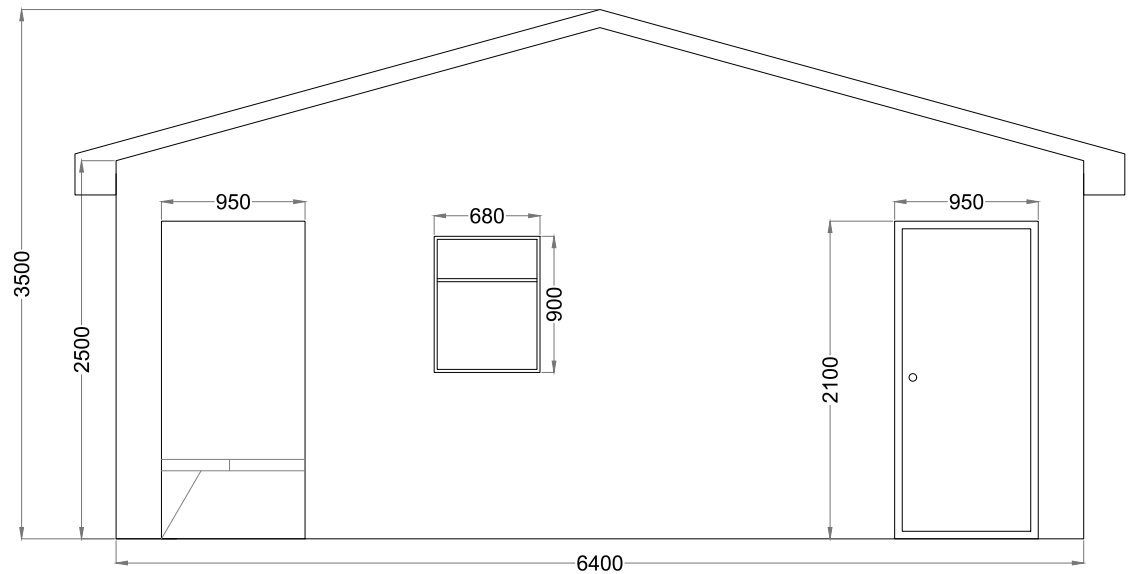
DRAWING TITLE: Proposed Amenity & Recreation Car Park	
PROJECT TITLE: Ardderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 52
SCALE: 1:250 @ A3	DATE: 22.11.2018

OS SHEET No.:
0800, 0801, 0802, 0803, 0804, 0805, 0806, 0807, 0808, 0809, 0810, 0811, 0812, 0813, 0814, 0815, 0816, 0817, 0818, 0819, 0820, 0821, 0822, 0823, 0824, 0825, 0826, 0827, 0828, 0829, 0830, 0831, 0832, 0833, 0834, 0835, 0836, 0837, 0838, 0839, 0840, 0841, 0842, 0843, 0844, 0845, 0846, 0847, 0848, 0849, 0850, 0851, 0852, 0853, 0854, 0855, 0856, 0857, 0858, 0859, 0860, 0861, 0862, 0863, 0864, 0865, 0866, 0867, 0868, 0869, 0870, 0871, 0872, 0873, 0874, 0875, 0876, 0877, 0878, 0879, 0880, 0881, 0882, 0883, 0884, 0885, 0886, 0887, 0888, 0889, 0890, 0891, 0892, 0893, 0894, 0895, 0896, 0897, 0898, 0899, 0900, 0901, 0902, 0903, 0904, 0905, 0906, 0907, 0908, 0909, 0910, 0911, 0912, 0913, 0914, 0915, 0916, 0917, 0918, 0919, 0920, 0921, 0922, 0923, 0924, 0925, 0926, 0927, 0928, 0929, 0930, 0931, 0932, 0933, 0934, 0935, 0936, 0937, 0938, 0939, 0940, 0941, 0942, 0943, 0944, 0945, 0946, 0947, 0948, 0949, 0950, 0951, 0952, 0953, 0954, 0955, 0956, 0957, 0958, 0959, 0960, 0961, 0962, 0963, 0964, 0965, 0966, 0967, 0968, 0969, 0970, 0971, 0972, 0973, 0974, 0975, 0976, 0977, 0978, 0979, 0980, 0981, 0982, 0983, 0984, 0985, 0986, 0987, 0988, 0989, 0990, 0991, 0992, 0993, 0994, 0995, 0996, 0997, 0998, 0999, 1000

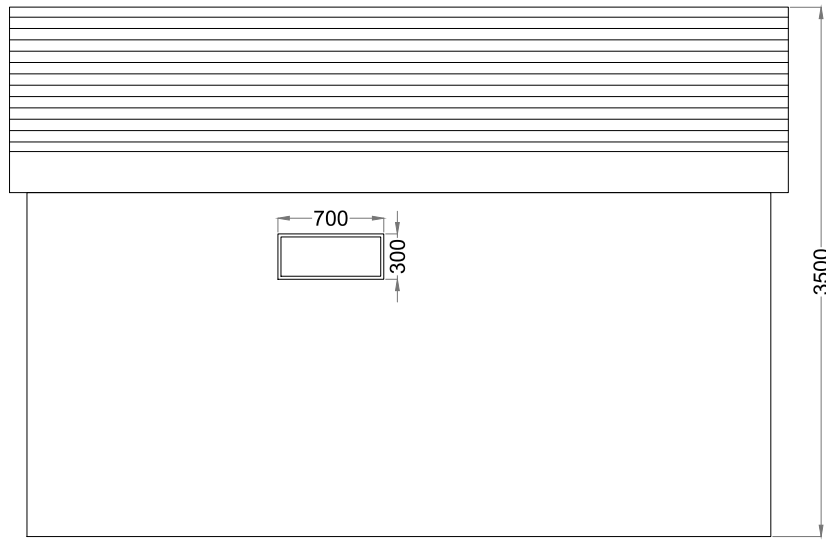
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North West Elevation



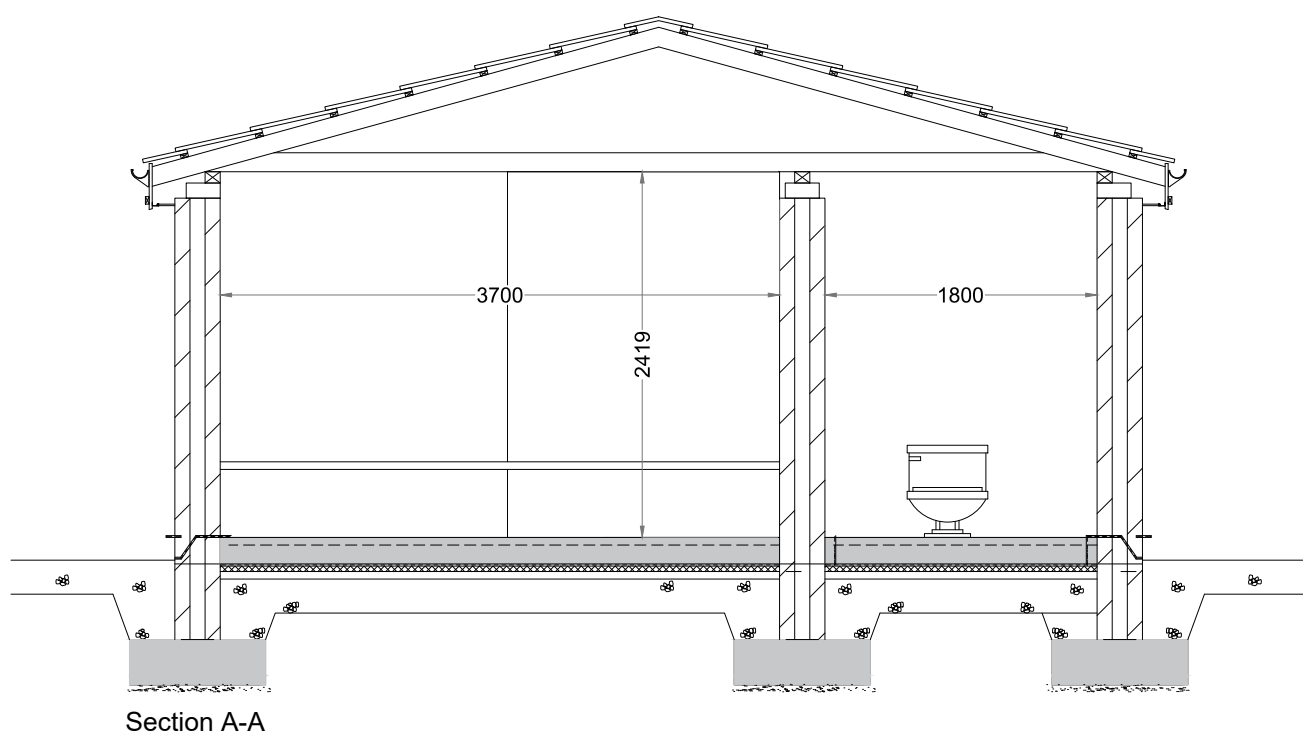
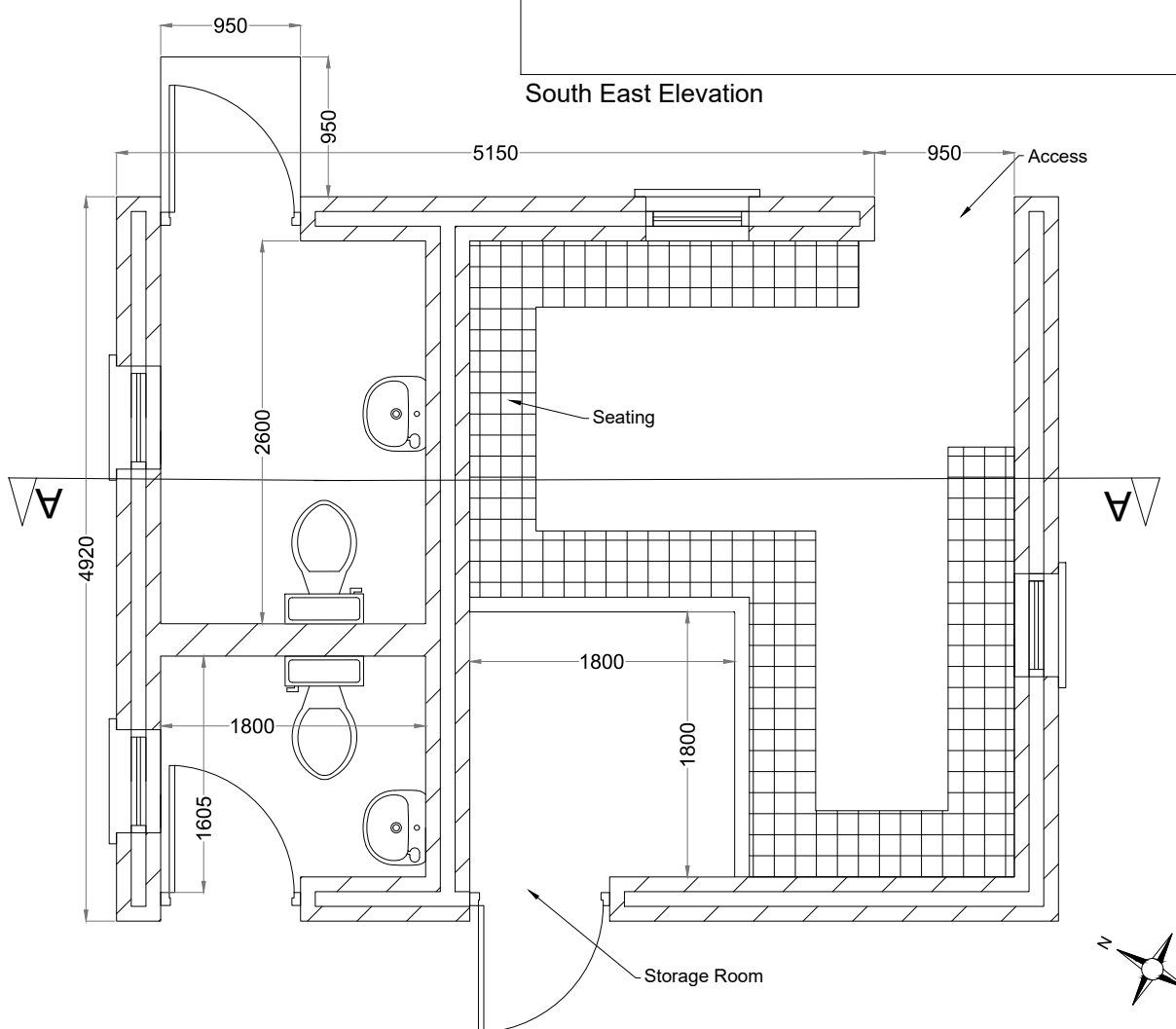
North East Elevation



South East Elevation



South West Elevation



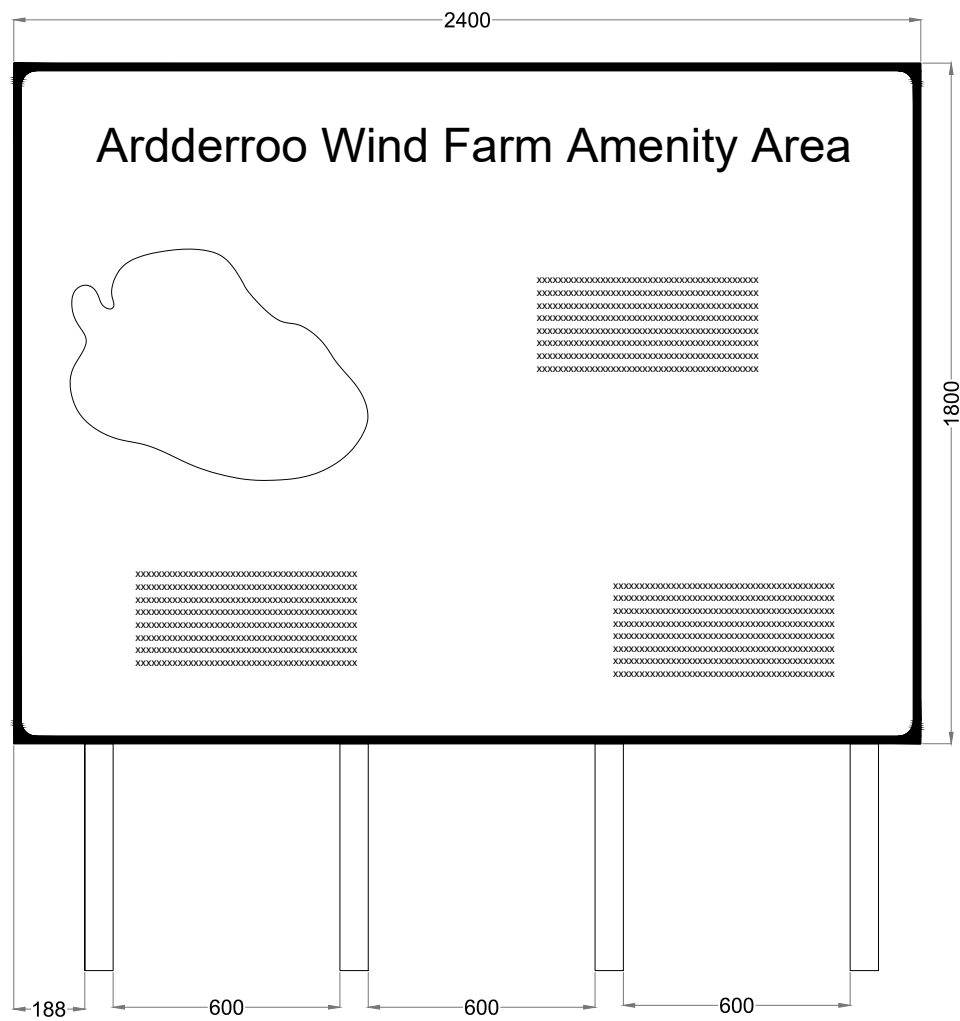
Section A-A

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 8. Final levels may vary depending on local ground conditions.

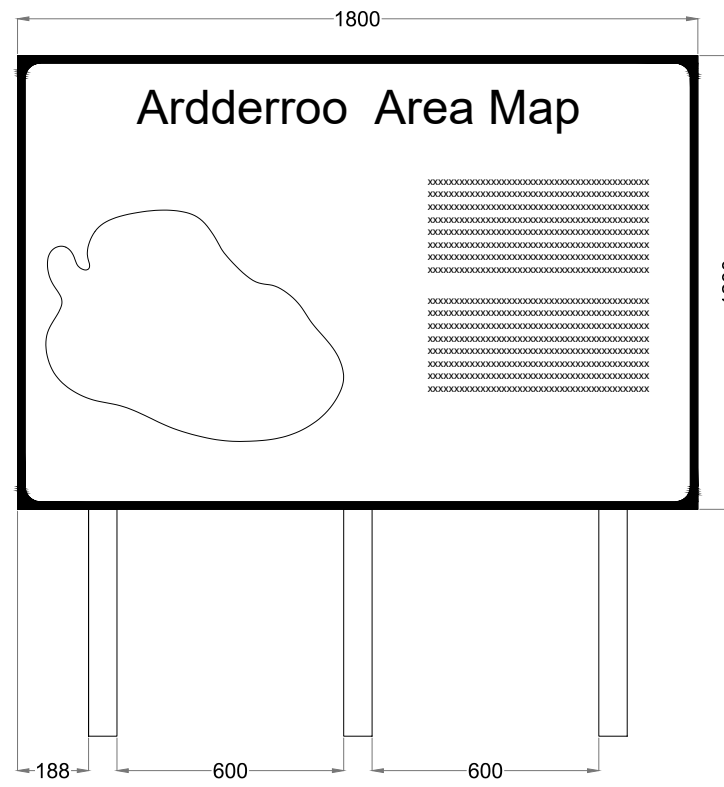
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Toilets Layout and Elevations	
PROJECT TITLE:	
Ardderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Joseph O'Brien	Jimmy Green
PROJECT No.:	DRAWING No.:
160815	0815 - 53
SCALE:	DATE:
1:50 @ A3	22.11.2018



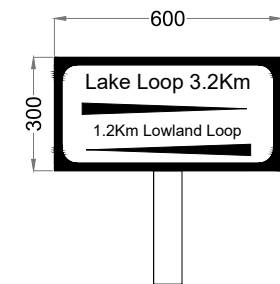
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Signage Type B - Waypoint Map Signage




Signage Type A - Entry Point Signage

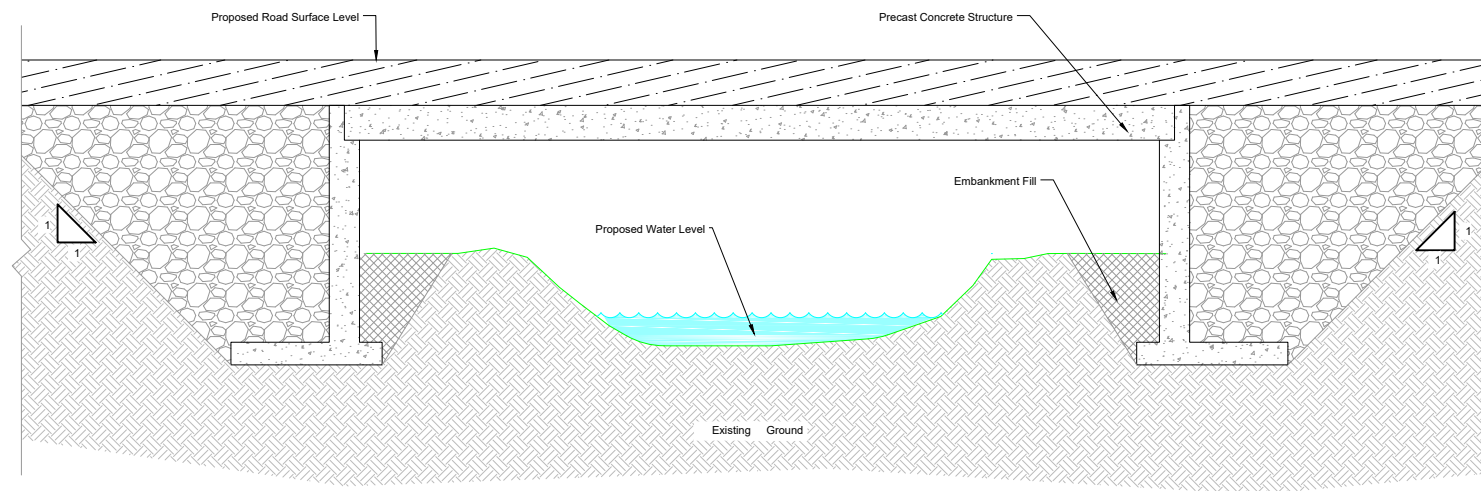


Signage Type C - Way Point Direction Signage

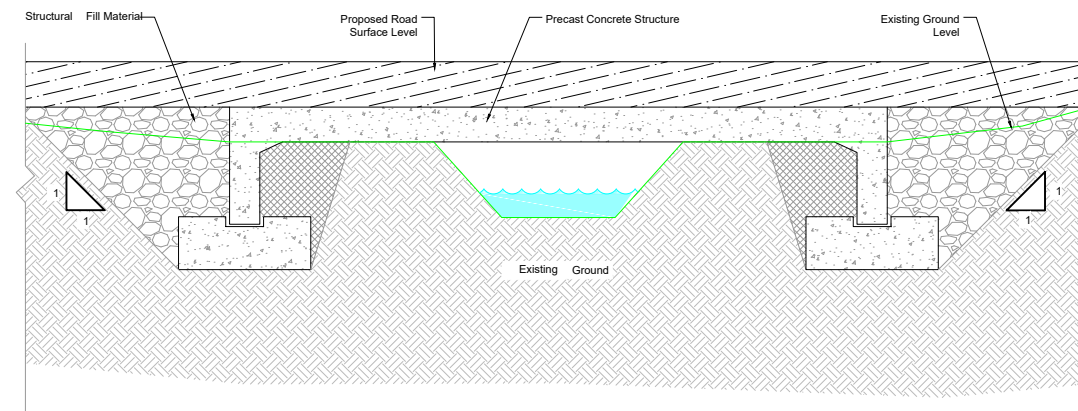
DRAWING TITLE: Amenity Area Signage	
PROJECT TITLE: Ardderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 54
SCALE: 1:20,000 @ A3	DATE: 22.11.2018



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 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
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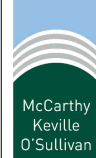


Road Cross Section - Crossing No.1
Scale 1:100

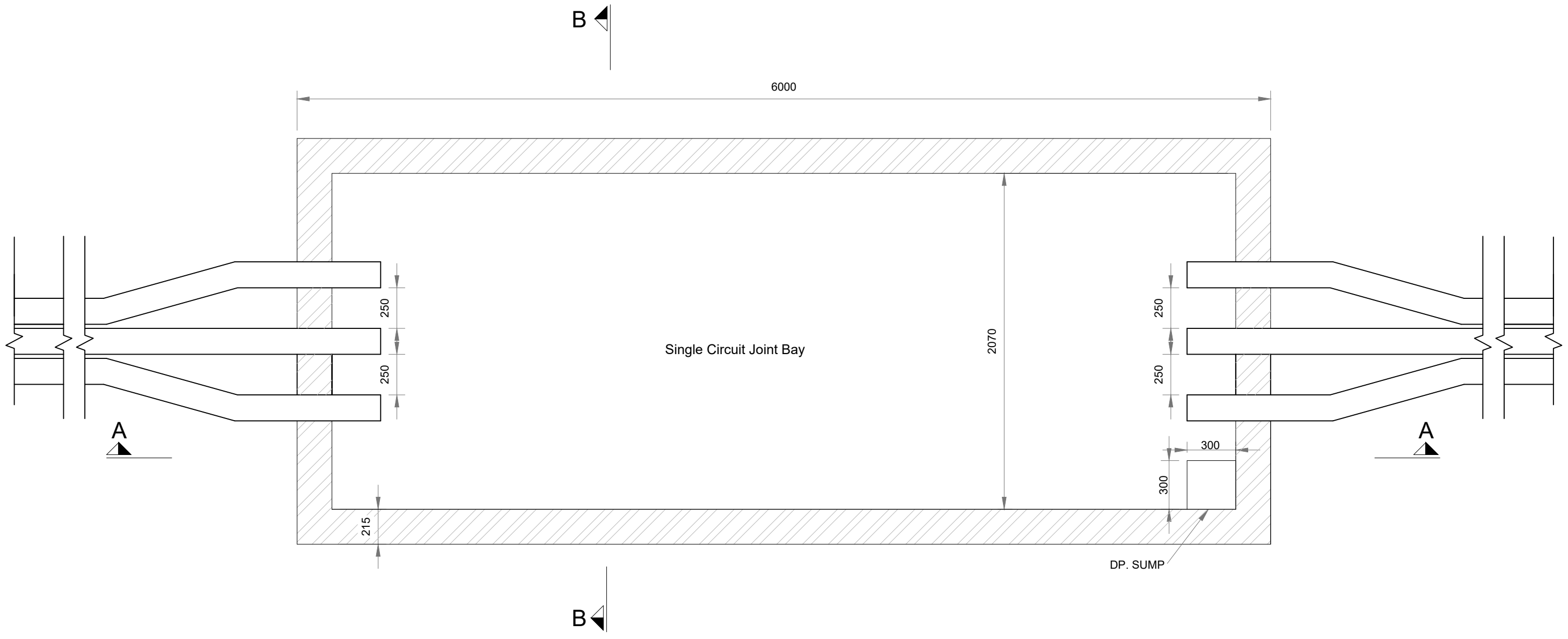


Road Cross Section - Crossings No.2 & No.3
Scale 1:100

DRAWING TITLE: Typical Clear Span Watercourse Crossing Detail & Cross Section	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 55
SCALE: 1:100 @ A3	DATE: 22.11.2018



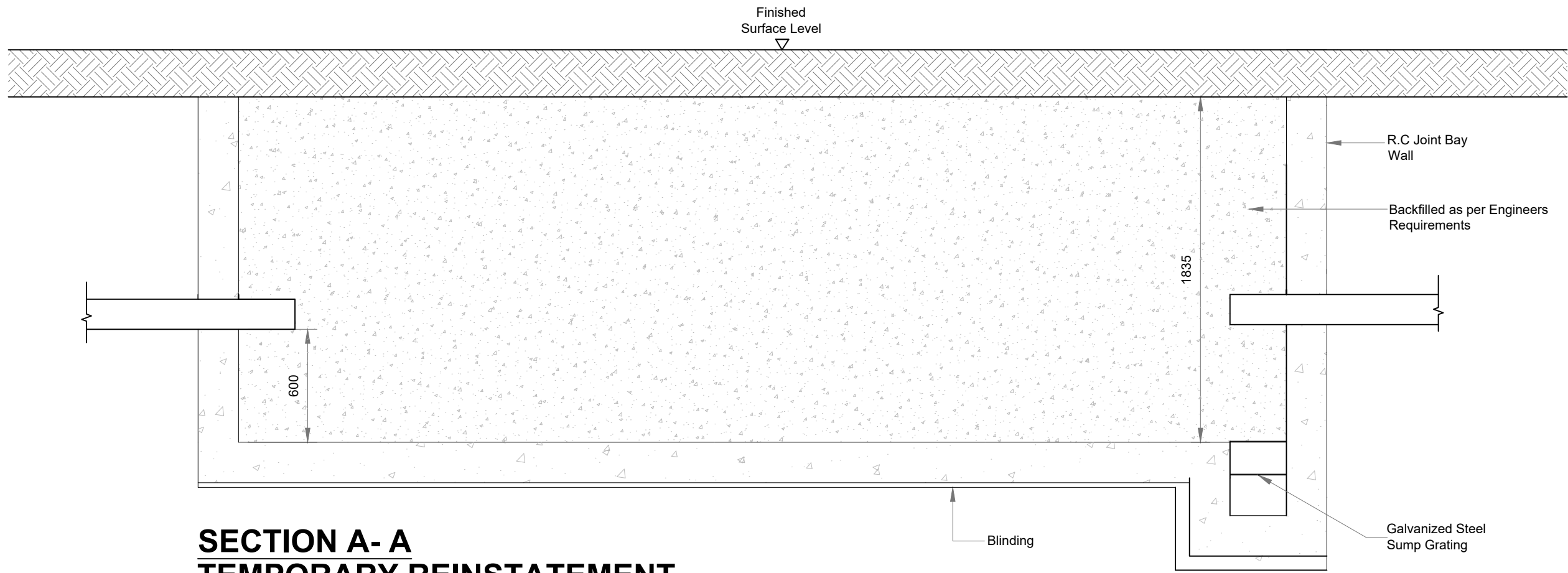
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Tel: +353 91 735611
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DRAWING TITLE: Typical Joint Bay Details - Sheet 1 of 3	
PROJECT TITLE: Ardderroe Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT NO.: 160815	DRAWING NO.: 0815 - 56
SCALE: 1: 25 @ A3	DATE: 22.11.2018

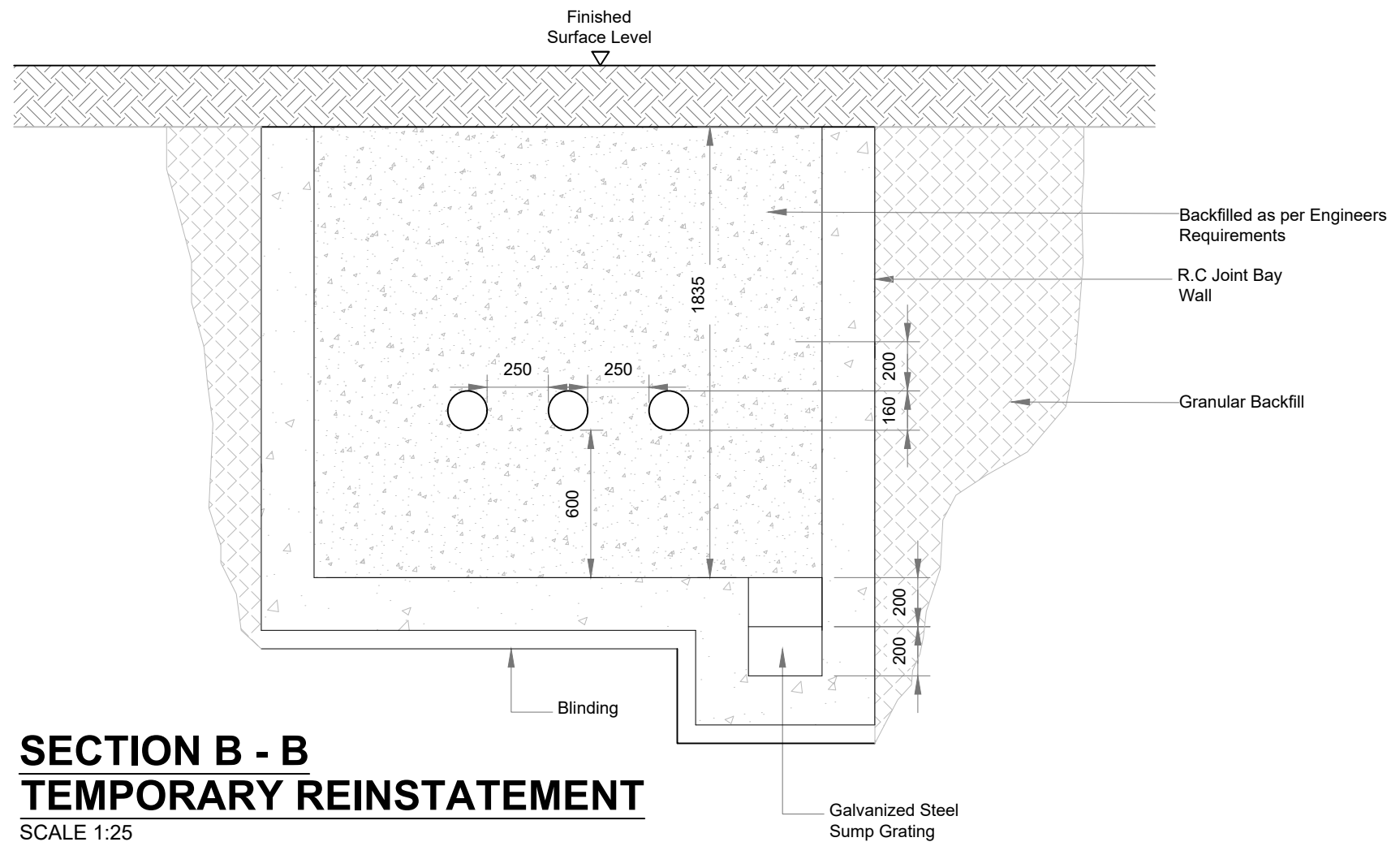


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SECTION A - A
TEMPORARY REINSTATEMENT


SCALE 1:25



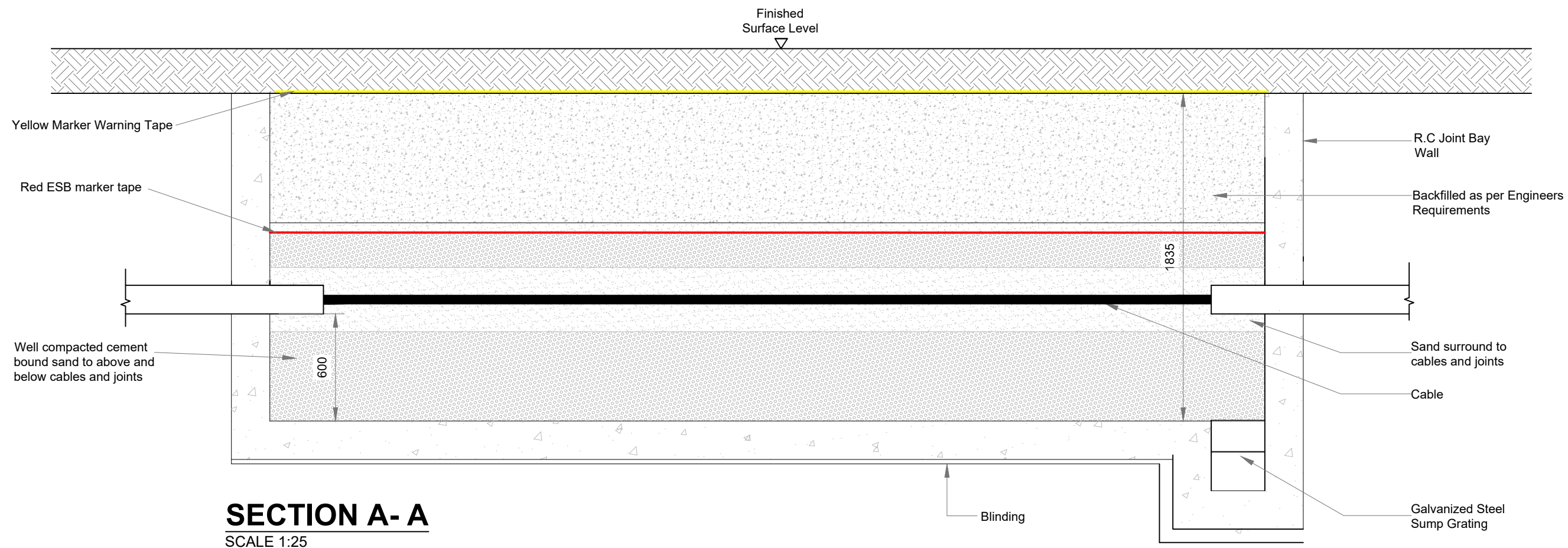
SECTION B - B
TEMPORARY REINSTATEMENT

SCALE 1:25

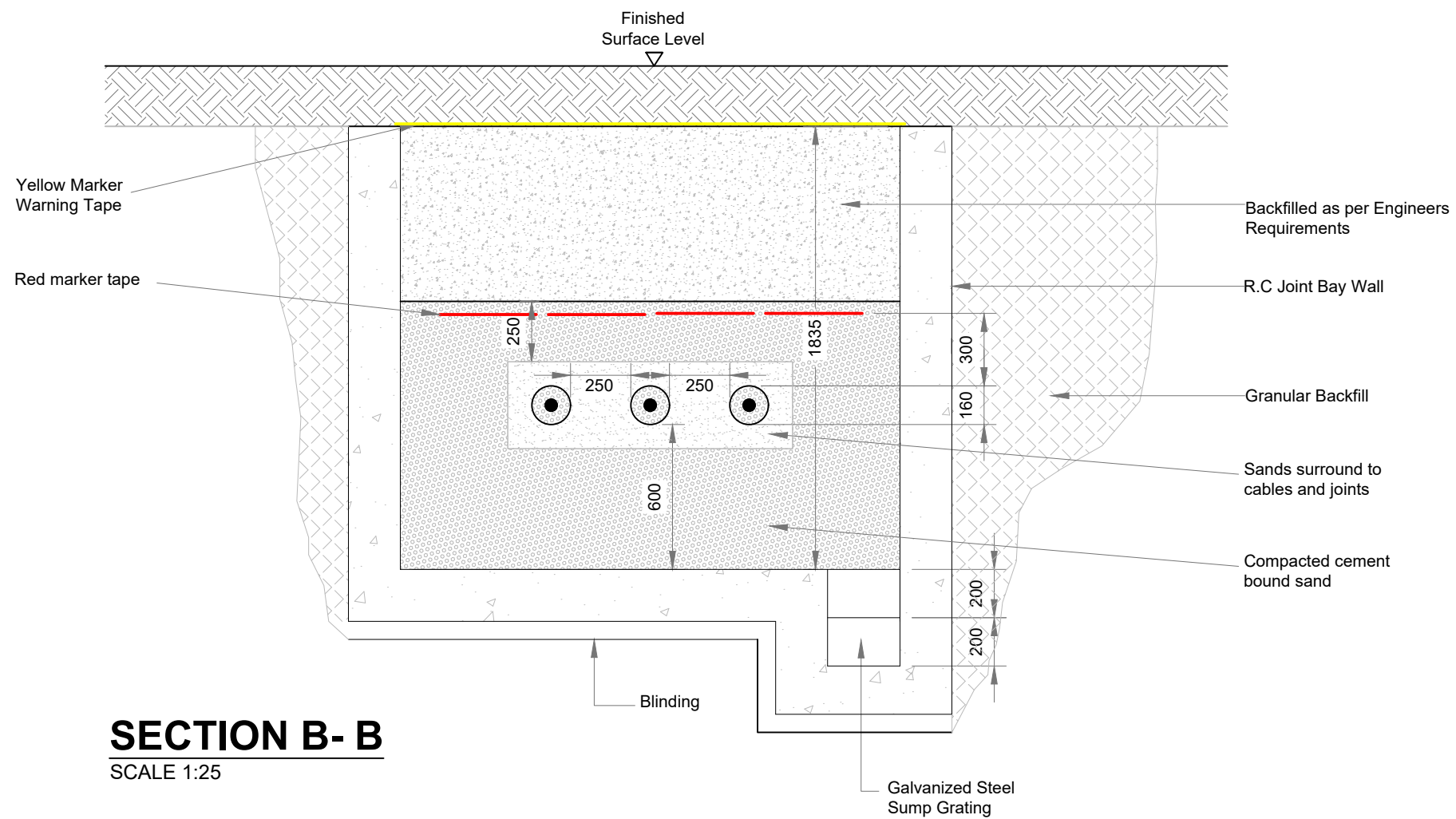
DRAWING TITLE: Typical Joint Bay Details - Sheet 2 of 3	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT NO.: 160815	DRAWING NO.: 0815 - 57
SCALE: 1: 25 @ A3	DATE: 22.11.2018



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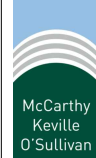


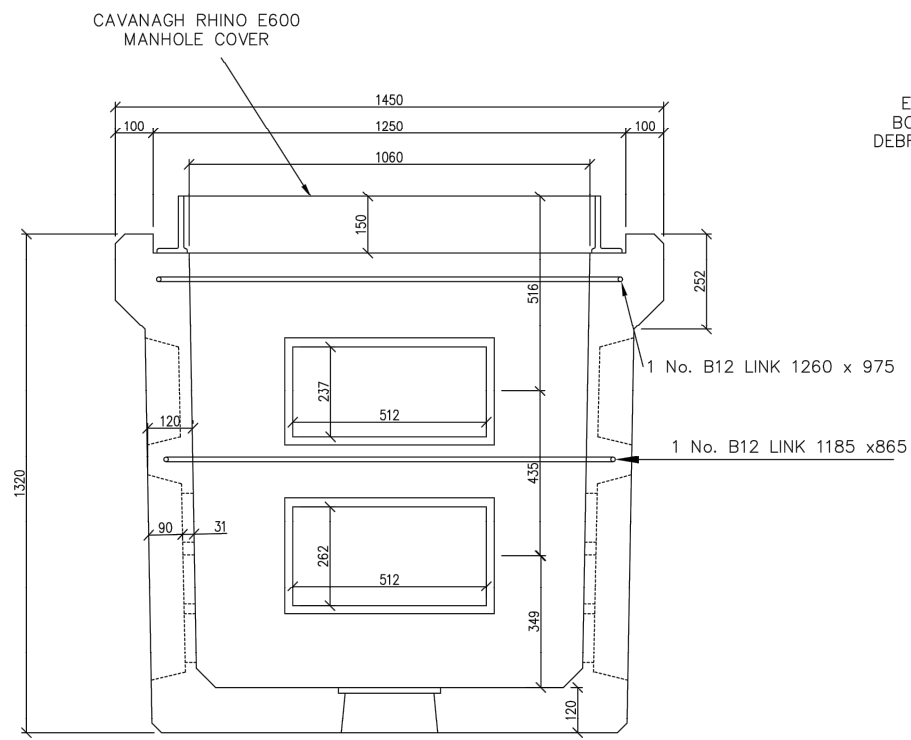
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SCALE 1:25



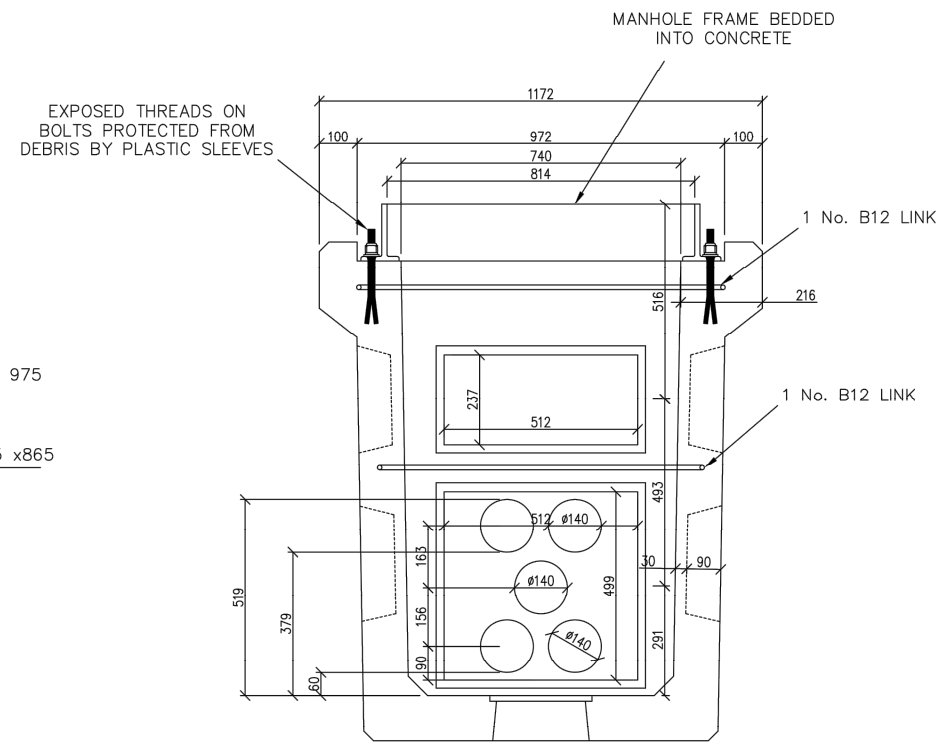
SECTION B- B
SCALE 1:25

DRAWING TITLE: Typical Joint Bay Details - Sheet 3 of 3	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No: 160815	DRAWING No.: 0815 - 58
SCALE: 1: 25 @ A3	DATE: 22.11.2018

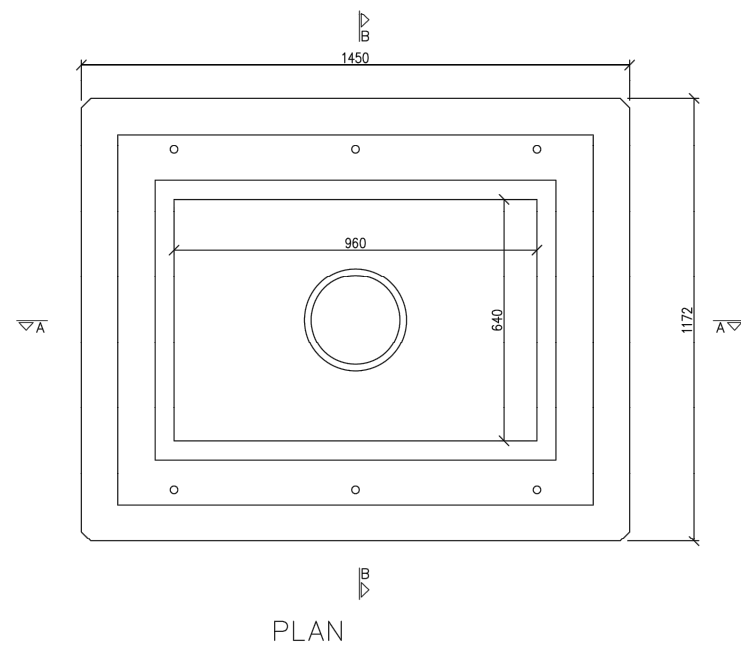

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SECTION A-A

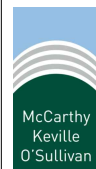


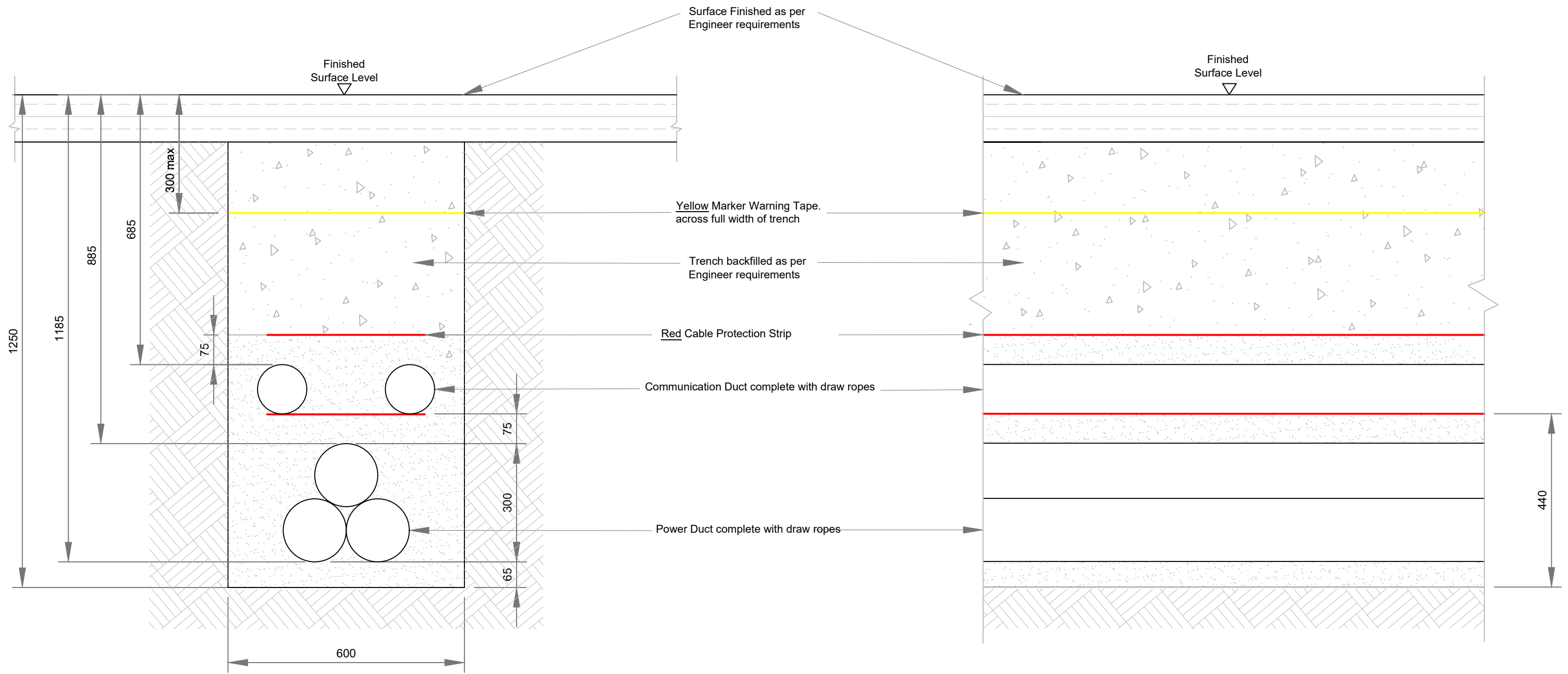
SECTION B-B



PLAN

DRAWING TITLE: Typical Comms Chamber Detail	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No.: 160815	DRAWING No.: 0815 - 59
SCALE: 1:20 @ A3	DATE: 22.11.2018

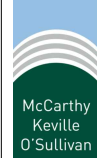

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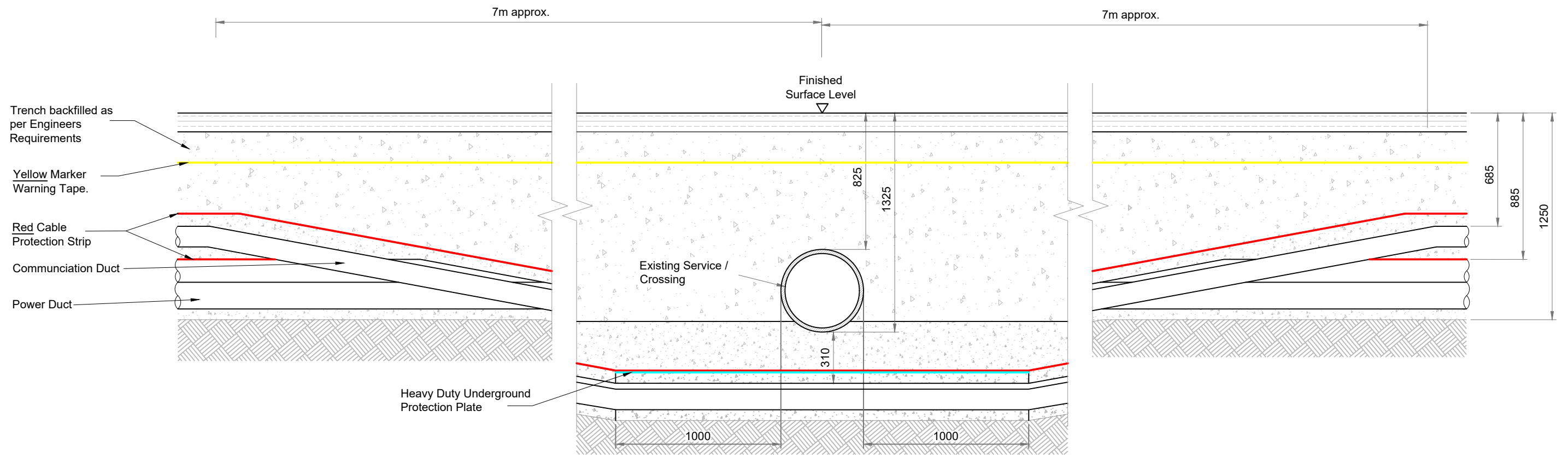


TYPICAL CROSS SECTION
SCALE 1:10

TYPICAL LONGITUDINAL SECTION
SCALE 1:10

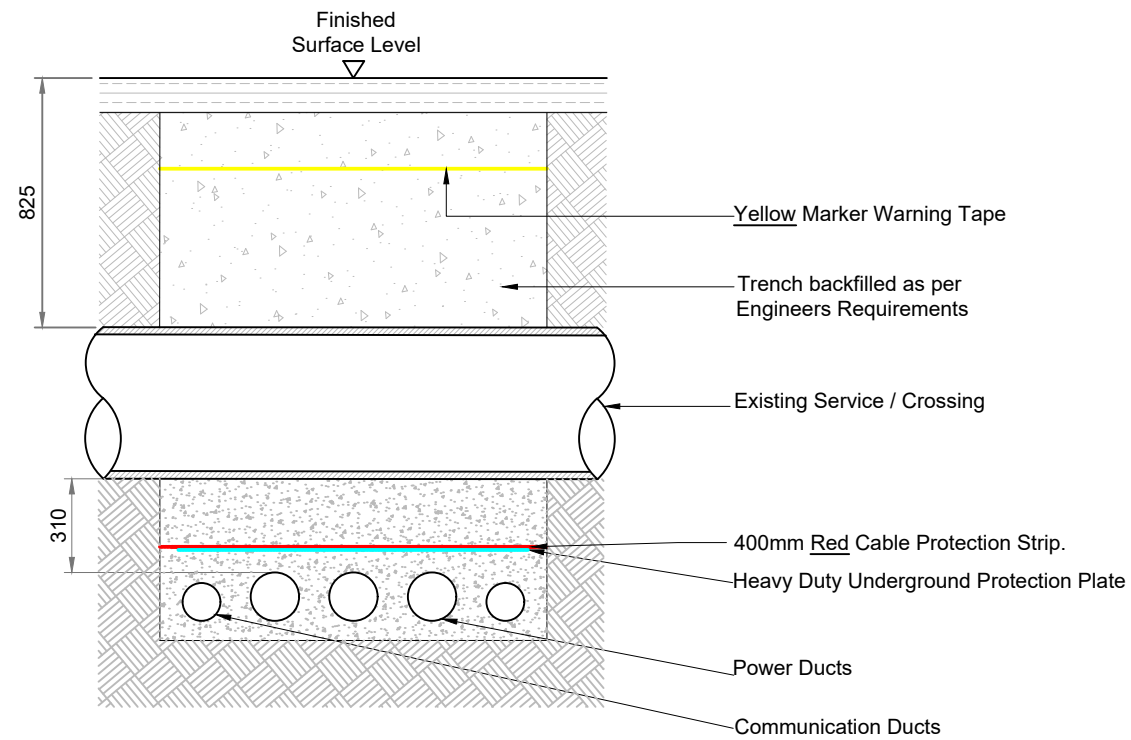
DRAWING TITLE: Roadside Cable Trench Cross Section	
PROJECT TITLE: Ardderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT No: 160815	DRAWING No.: 0815 - 60
SCALE: 1:10 @ A3	DATE: 22.11.2018


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SECTION THRU' SERVICE / CROSSING

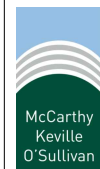
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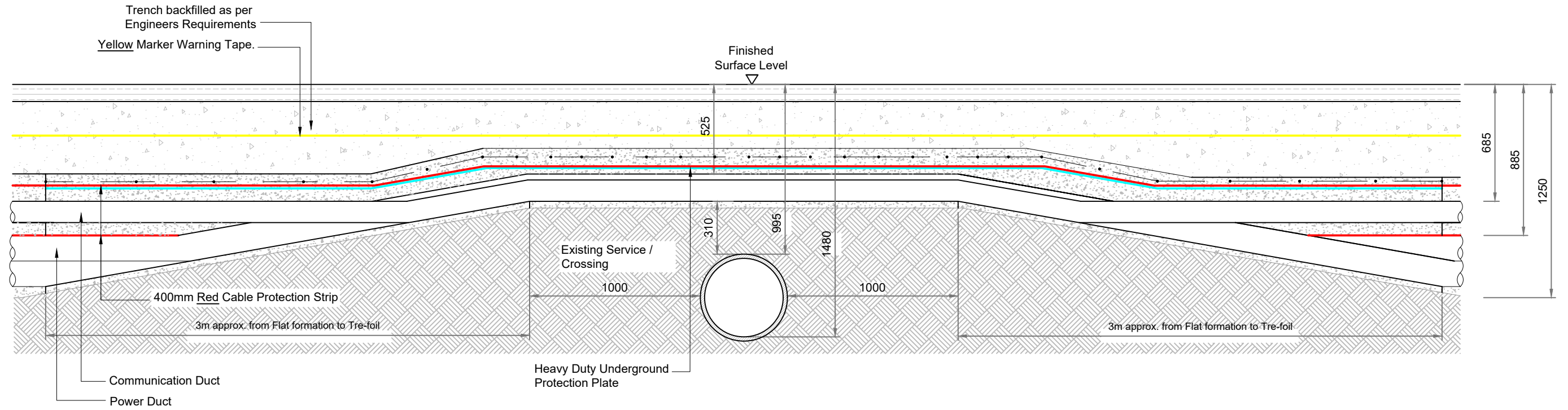


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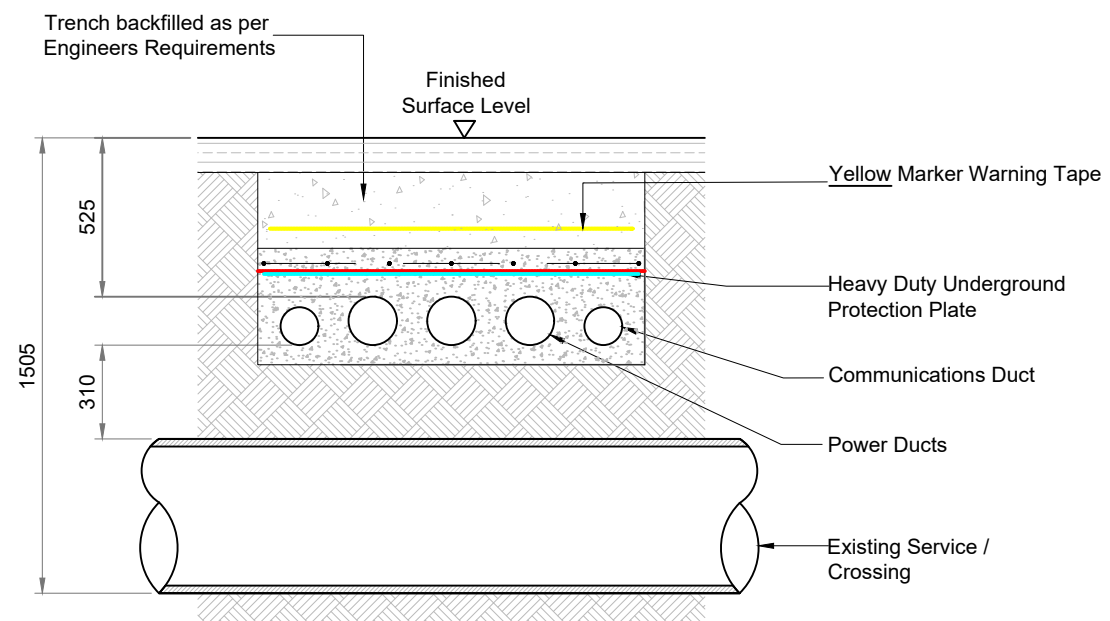
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Cable Trench Under Service/Crossing Flatbed Formation	
PROJECT TITLE:	
Arderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Joseph O'Brien	Jimmy Green
PROJECT NO:	DRAWING NO:
160815	0815 - 61
SCALE:	DATE:
1: 25 @ A3	22.11.2018


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SECTION THRU' SERVICE / CROSSING

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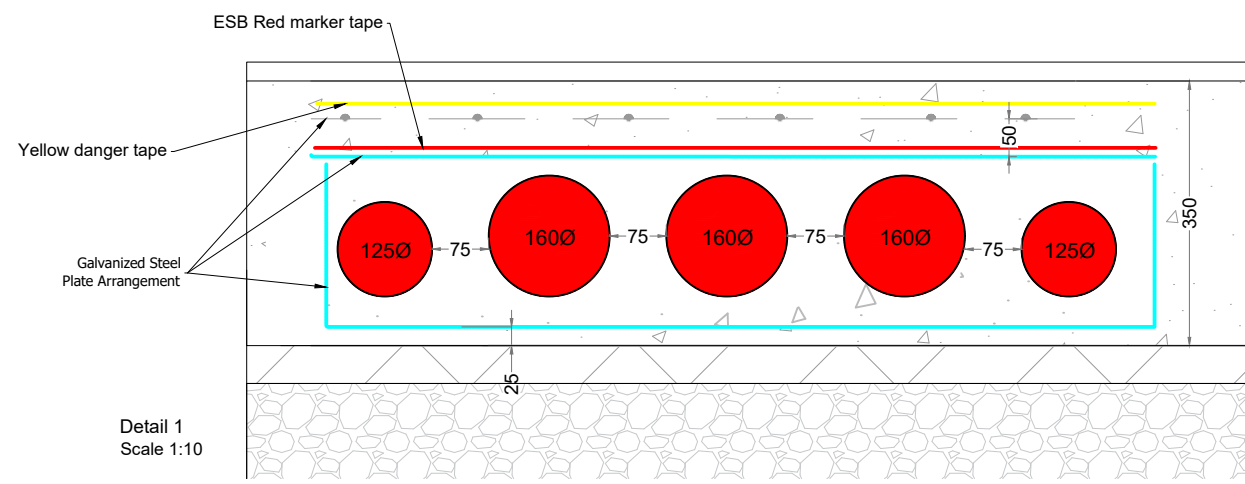
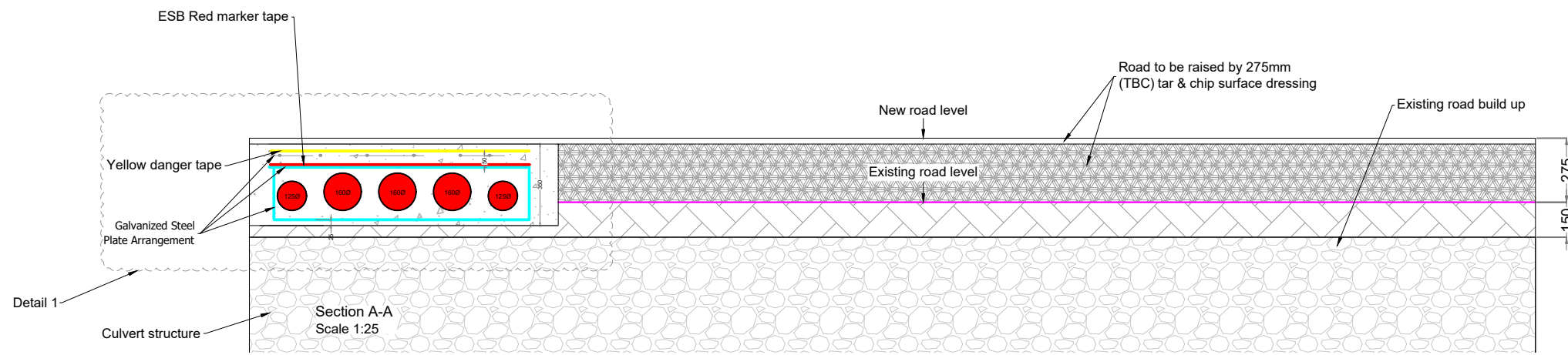
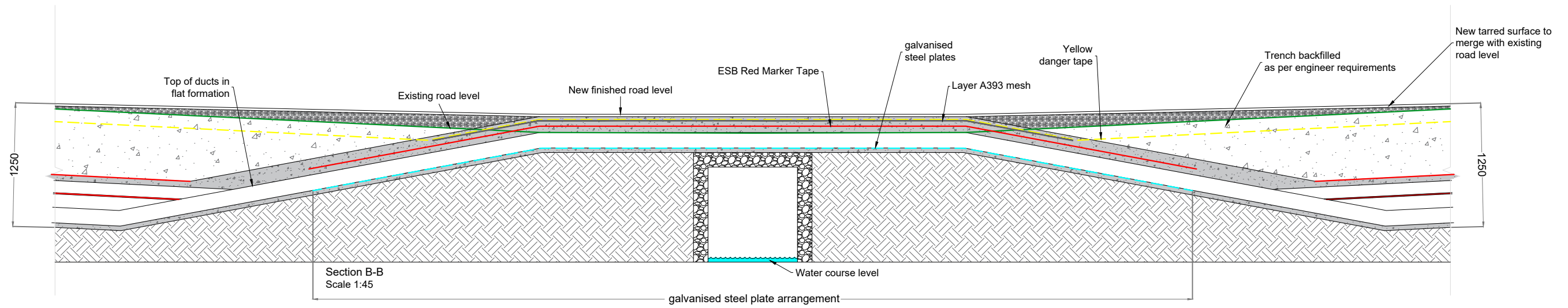


SECTION THRU' DUCTING

SCALE 1:25

DRAWING TITLE:	
Cable Trench Over Service/Crossing Flatbed Formation	
PROJECT TITLE:	
Arderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Joseph O'Brien	Jimmy Green
PROJECT No:	DRAWING No:
160815	0815 - 62
SCALE:	DATE:
1: 25 @ A3	22.11.2018


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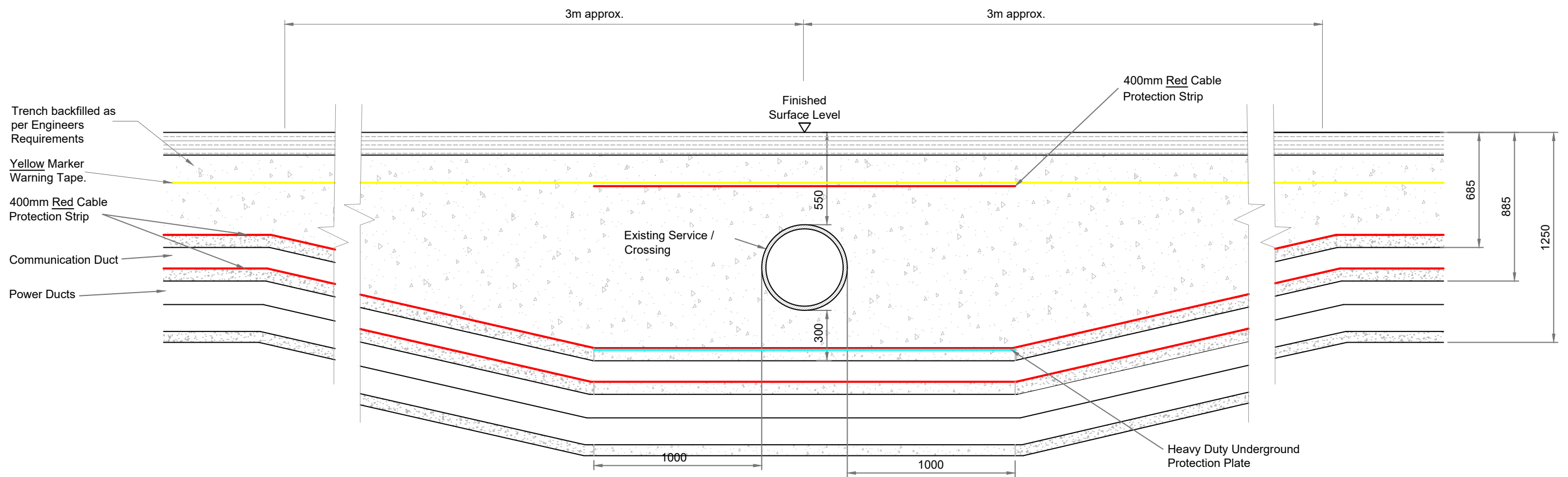


DRAWING TITLE: Cable Trench Flatbed at Road Surface Level	
PROJECT TITLE: Arderroo Wind Farm, Co. Galway	
DRAWING BY: Joseph O'Brien	CHECKED BY: Jimmy Green
PROJECT NO: 160815	DRAWING NO: 0815 - 63
SCALE: As Shown @ A3	DATE: 22.11.2018

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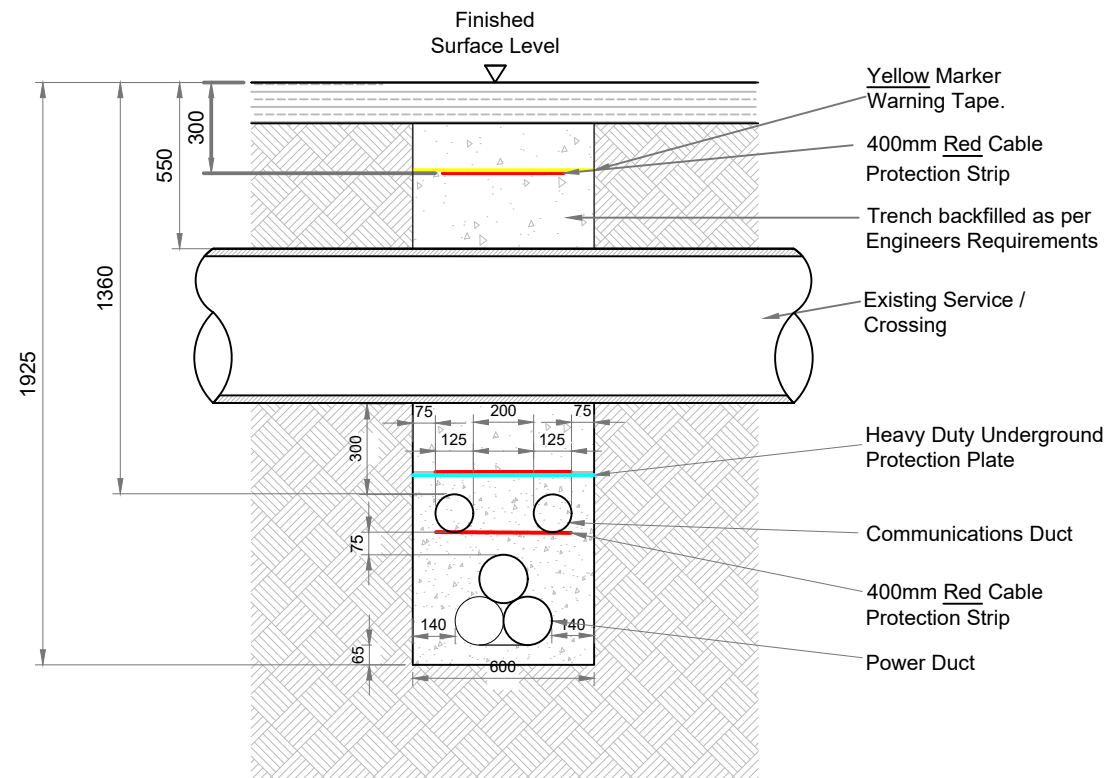
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SECTION THRU' SERVICE / CROSSING

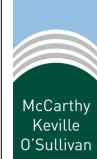
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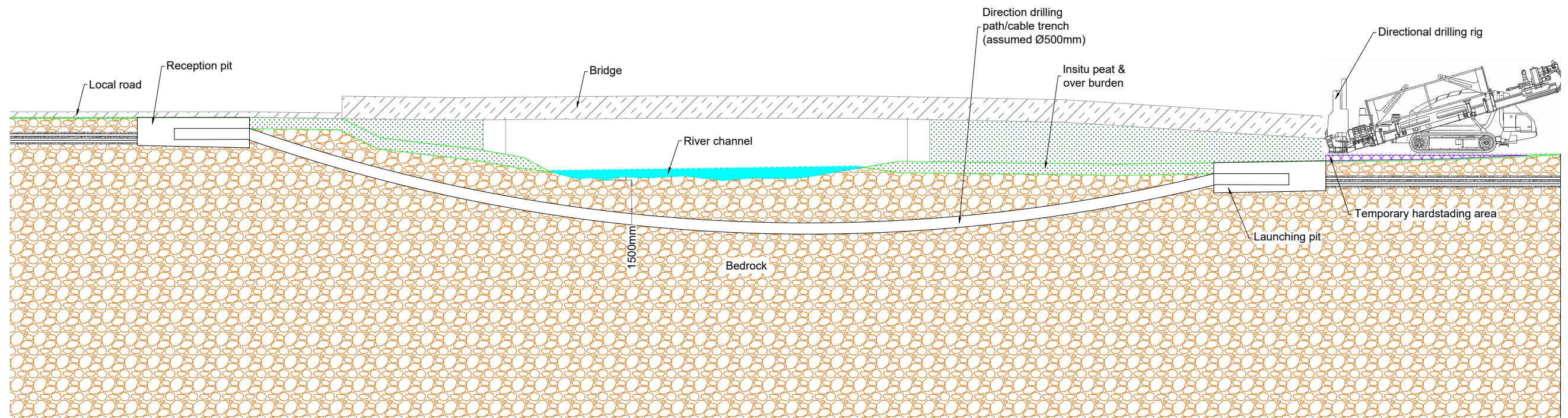


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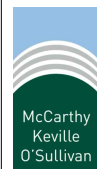
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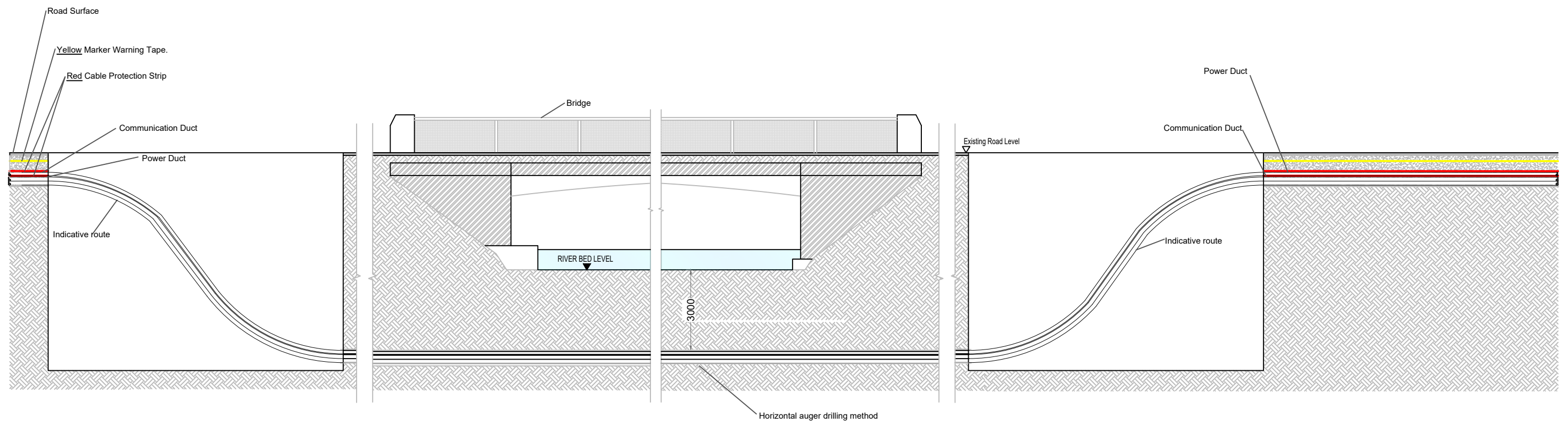
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Cable Trench Under Service/Crossing Trefoil Formation	
PROJECT TITLE:	
Ardderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Joseph O'Brien	Jimmy Green
PROJECT No:	DRAWING No:
160815	0815 - 64
SCALE:	DATE:
1:25 @ A3	22.11.2018


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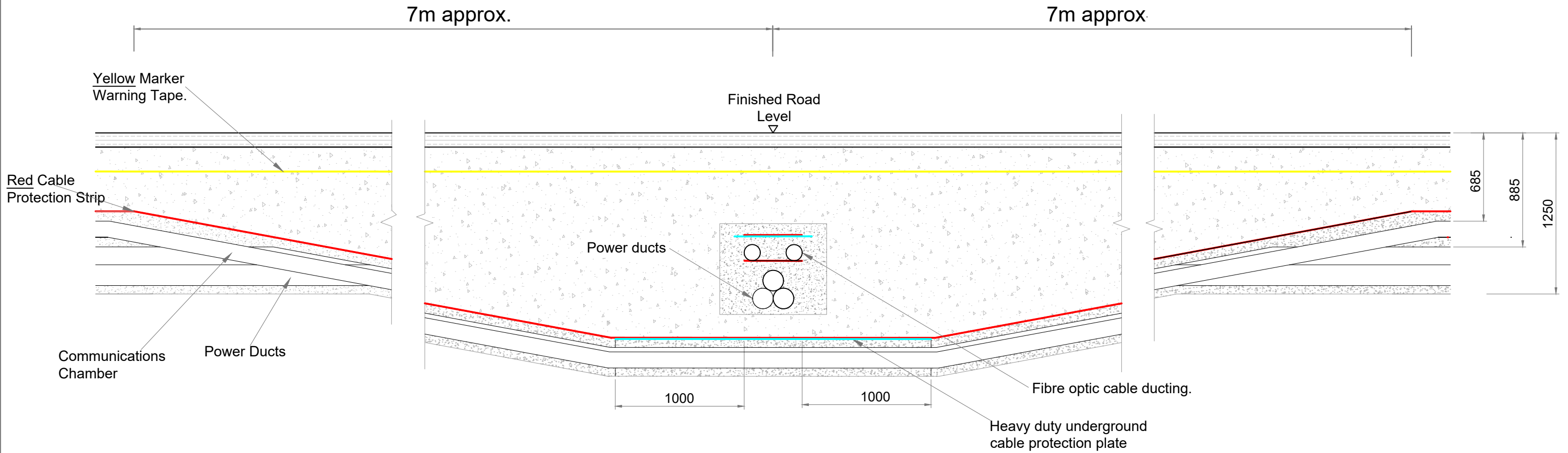
DRAWING TITLE:	
Directional Drilling	
PROJECT TITLE:	
Ardderroe Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Joseph O'Brien	Jimmy Green
PROJECT NO.:	DRAWING NO.:
160815	0815 - 65
SCALE:	DATE:
1:200 @ A3	22.11.2018


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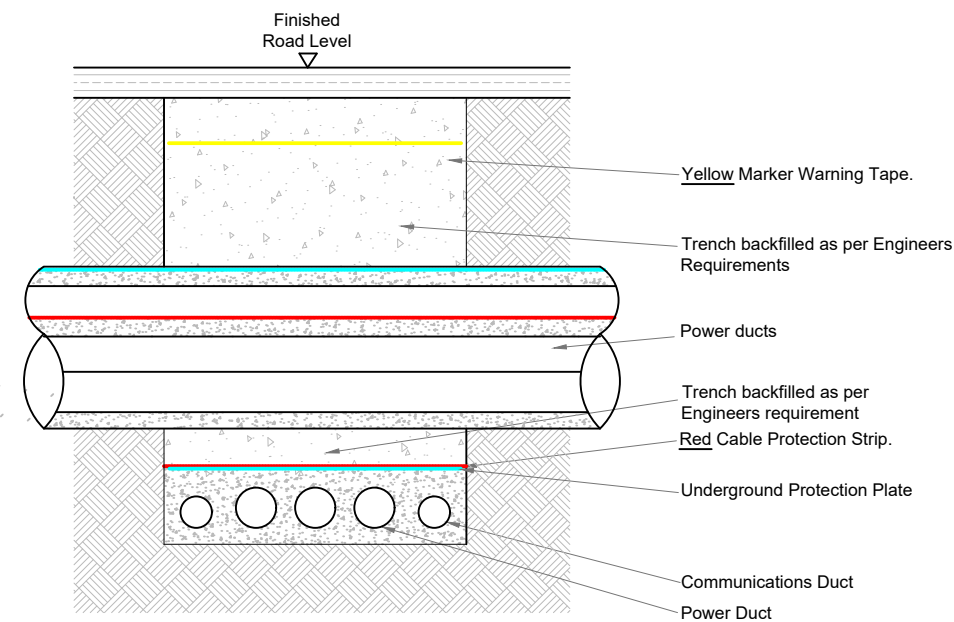
DRAWING TITLE:	
Horizontal Auger Drilling	
PROJECT TITLE:	
Ardderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:
Joseph O'Brien	Jimmy Green
PROJECT No.:	DRAWING No.:
160815	0815 - 66
SCALE:	DATE:
1: 150 @ A3	22.11.2018


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SECTION THRU' SERVICE / CROSSING

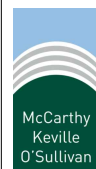
SCALE 1:30



SECTION THRU' DUCTING

SCALE 1:30

DRAWING TITLE:		Typical Cable Crossing Detail	
PROJECT TITLE:		Arderroo Wind Farm, Co. Galway	
DRAWING BY:	CHECKED BY:	Joseph O'Brien	Jimmy Green
PROJECT No.:	DRAWING No.:	160815	0815 - 67
SCALE:	DATE:	1:30 @ A3	22.11.2018



McCarthy Keville O'Sullivan Ltd.
 Planning & Environmental Consultants
 Block 1,
 Galway Financial Services Centre,
 Moneenageisha Road,
 Galway, Ireland.
 email: info@mccarthykos.ie
 website: www.mccarthykos.ie
 Tel: +353 91 735611
 Fax: +353 91 771279