

Acanthus Limited
c/- Civix
PO Box 5204
Victoria Street
Auckland 1141

Attention: Nick Mattison

Dear Nick

1 Selfs Road, Papatoetoe
Preliminary geotechnical assessment in support of fast-track consenting

1 Introduction

Acanthus Limited has engaged Tonkin & Taylor Ltd (T+T) to provide a preliminary (desktop) assessment of its proposal to construct some 115 dwelling units and lots at 1 Selfs Road, Papatoetoe (the site).

This assessment was prepared in accordance with our proposal dated 19 February 2021¹ and approval provided on 7 April 2021².

2 Development proposal

We understand that Acanthus Limited is seeking approval via the COVID-19 Recovery (Fast-track Consenting) Act 2020 to construct some 115 dwelling units and lots on the site. Preliminary development plans are provided in Appendix A. The proposal will involve benching into the existing slope to form level generally northeast-southwest oriented building platforms stepping up from Selfs Road. The building platforms will be supported by a combination of low retaining walls and batters. Cut depths and retained heights will be subject to detailed design but are currently anticipated to be less than approximately 3 m, and typically less than 2 m.

3 Scope of work

T+T undertook the following to provide a preliminary assessment of geotechnical conditions at the site:

- 1 Reviewed published geological maps for the site;

¹ 1 Selfs Road, Papatoetoe. Geological, geotechnical and contamination assessments in support of fast-track consenting. Letter to Andrew Fawcett at Myland Partners, dated 19 February 2021.

² Email from Andrew Fawcett at Myland Partners to Shane Moore at Tonkin & Taylor Ltd, dated 7 April 2021.

- 2 Reviewed T+T's records and the New Zealand Geotechnical Database³ of geotechnical data from nearby sites;
- 3 Obtained and reviewed Council property files for relevant geotechnical information;
- 4 A Senior Geotechnical Engineer reviewed site photographs taken by other T+T personnel; and
- 5 Preparation of this report.

4 Site description

The site location is shown in Figure 4.1. The site layout including contour information and nearby geotechnical investigation locations are shown in Figure B1 provided in Appendix B. The following section provides a summary of the site setting, with particular focus on features of geotechnical relevance, further information is provided in the geological assessment prepared concurrently by T+T⁴.



Figure 4.1: Site location (source: Auckland Council GeoMaps)

The site is located on the north-eastern flank of the tuff ring derived from the Crater Hill/Ngā Kapua Kohuora volcanic centre. The geological setting is summarised (from Edbrooke 2001⁵) in Figure 4.2.

³ www.nzgd.org.nz, accessed on 8 April 2021.

⁴ 1 Selfs Road, Papatoetoe. Geological assessment in support of fast-track consenting application. Report prepared for Acanthus Limited by Tonkin & Taylor Ltd, dated 10 September 2021.

⁵ Edbrooke, S.W. (compiler) 2001: Geology of the Auckland area: scale 1:250,000. Lower Hutt: Institute of Geological & Nuclear Sciences Limited. Institute of Geological & Nuclear Sciences 1:250,000 geological map 3. 74 p. + 1 folded map

A steep slope is present beyond the south-western boundary of the site, formed by a combination of cutting undertaken to create the South Western Motorway (State Highway 20) and the original inner slope of the tuff ring/explosion crater. The site itself generally slopes at a moderate gradient to the north-east towards Selfs Road.

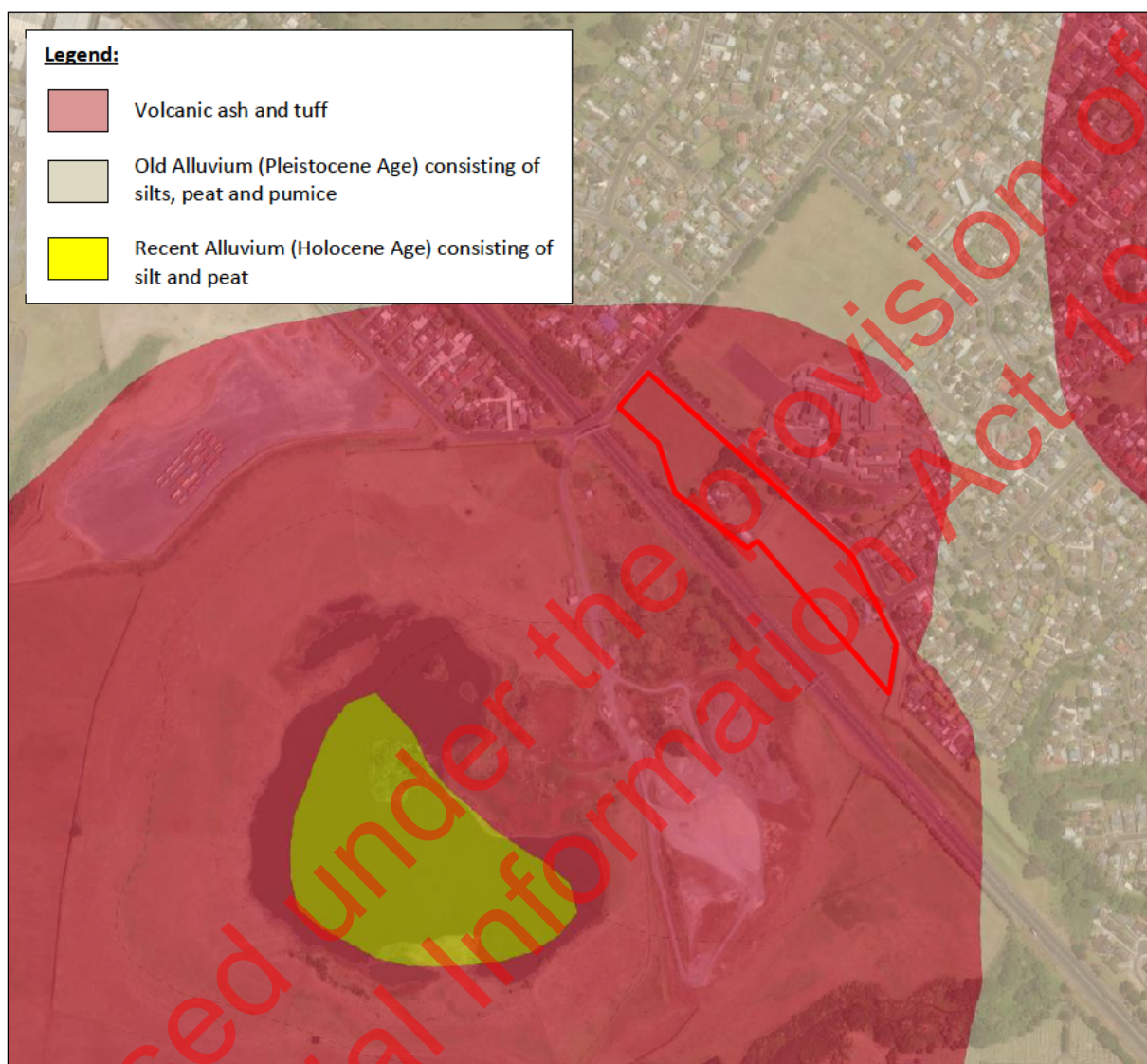


Figure 4.2: Mapped geology (after Edbrooke⁵) showing approximate site location (red outline)

The site is bordered by Portage and Selfs roads, to the north and east respectively, with existing residential properties beyond, except where Aorere College is located opposite the site along Selfs Road. Vacant lands, owned by Waka Kotahi NZ Transport Agency, border the site to its south and west, with the South Western Motorway beyond. A former quarry, now being filled, is located opposite the South Western Motorway from the site, within the Crater Hill/Ngā Kapua Kohuora volcanic centre. The remainder of the volcano is predominantly under pastoral and horticultural uses.

5 Geotechnical considerations

5.1 Subsurface conditions

Based upon geotechnical investigations undertaken on adjacent sites, including Portage Road overbridge \approx 30metres to the west and Aorere College \approx 20metres to the north, the site is likely to be underlain by very stiff to hard ash and tuff originating from the Crater Hill/Ngā Kapua Kohuora volcanic centre. The ash and tuff generally consist of silt sized clasts with occasional lenses of sand and gravel. Insitu shear strength tests are generally in excess of 100 kPa, increasing in strength with depth with SPT N values greater than 50 at depths of less than 4 metres. The groundwater level is uncertain, but is anticipated to be at least 5 metres below the surface, possibly controlled by excavation of the South Western Motorway (which is formed at approximately RL 25m).

5.2 Foundations

The proposed development consists of single level units. Based upon available subsurface information, shallow foundations are likely to be suitable to support the proposed structures. For preliminary design a maximum ULS bearing capacity of 250 kPa may be utilised.

5.3 Stability

Beyond the south western boundary of the development, a steep cut has been formed to create the south western motorway. The maximum height of this slope is approximately 13 metres, with the maximum slope of approximately 1:1. Arcuate features beyond the northern and southern end of the development, forming towards the south western motorway, indicate the possibility of historic ground movement, although these features may be remnants of the volcanic activity that formed the site. The crests of both these slopes are beyond the south-western boundary of the site. Both these arcuate features will need to be investigated during detailed design of the development. In the event that they indicate potential instability that extends to the proposed development, the following options may be considered to create stable building platforms:

- 1 Set back units further from the crest of the slope. The current proposed development suggests the units are at least 10 to 15 metres beyond the crest of the slope.
- 2 Lower the units. Removing soil from the top of the slope unloads the slope and improves stability. Current perspective views of the development suggest the proposed units near the crest of the slope will be up to 2 metres below the existing ground level.
- 3 Construct a palisade wall between the proposed units and the crest of any unstable slope.

In summary, there is a slight risk that the stability of slope beyond the south-western boundary is less than commonly acceptable (factor of safety <1.5). If this is identified during detailed investigation for the development, stable building platforms can readily be formed with careful earthworks.

6 Applicability

This report has been prepared for the exclusive use of our client, Acanthus Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of an application for resource consent and that the consenting authority will use this report for the purpose of assessing that application.

Recommendations and opinions in this report are based on our desktop review of previous investigations. The nature and continuity of stratigraphy away from the previous investigation locations is inferred but it must be appreciated that actual conditions may vary from the assumed model.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

Report prepared by:



Andrew Langbein
Technical Director - Geotechnical

Authorised for Tonkin & Taylor Ltd by:



Gerard Bird
Project Director

SRMM

p:\1016494\issueddocuments\srmm 20210910.prelimgtech.v2.docx

Appendix A: Preliminary development plans

Released under the provision of
the Official Information Act 1982



SELFS ROAD HOUSING PROPOSAL

1 SELFS ROAD, OTAHUHU
AUCKLAND

CASA

Collingridge And Smith Architects (UK) Ltd | Beautiful Human Spaces

REV | DESCRIPTION | CHANGE ID | CHANGE NAME | DATE

NOTES

All survey information shown supplied from CMIX
CASA accept no liability for the accuracy of this
information

Landscaping and planting shown is indicative only Refer
to Boffa Miskell landscape masterplan for accurate
information



	TYPE A
	TYPE B
	TYPE D
	TYPE E
	TYPE F
	TYPE G
	TYPE H
	TYPE I
	TYPE J
	TYPE K
	TYPE L
	TYPE M
---	SITE BOUNDARY
---	SETBACKS
---	APPROX TUFF RING



DT	Drawn By	Checked By	Project Manager
REV	DESCRIPTION	DATE	DATE

MYLAND PARTNERS

1 SELF'S ROAD, PAPATOETOE
AUCKLAND

TPOLOGY SITE PLAN

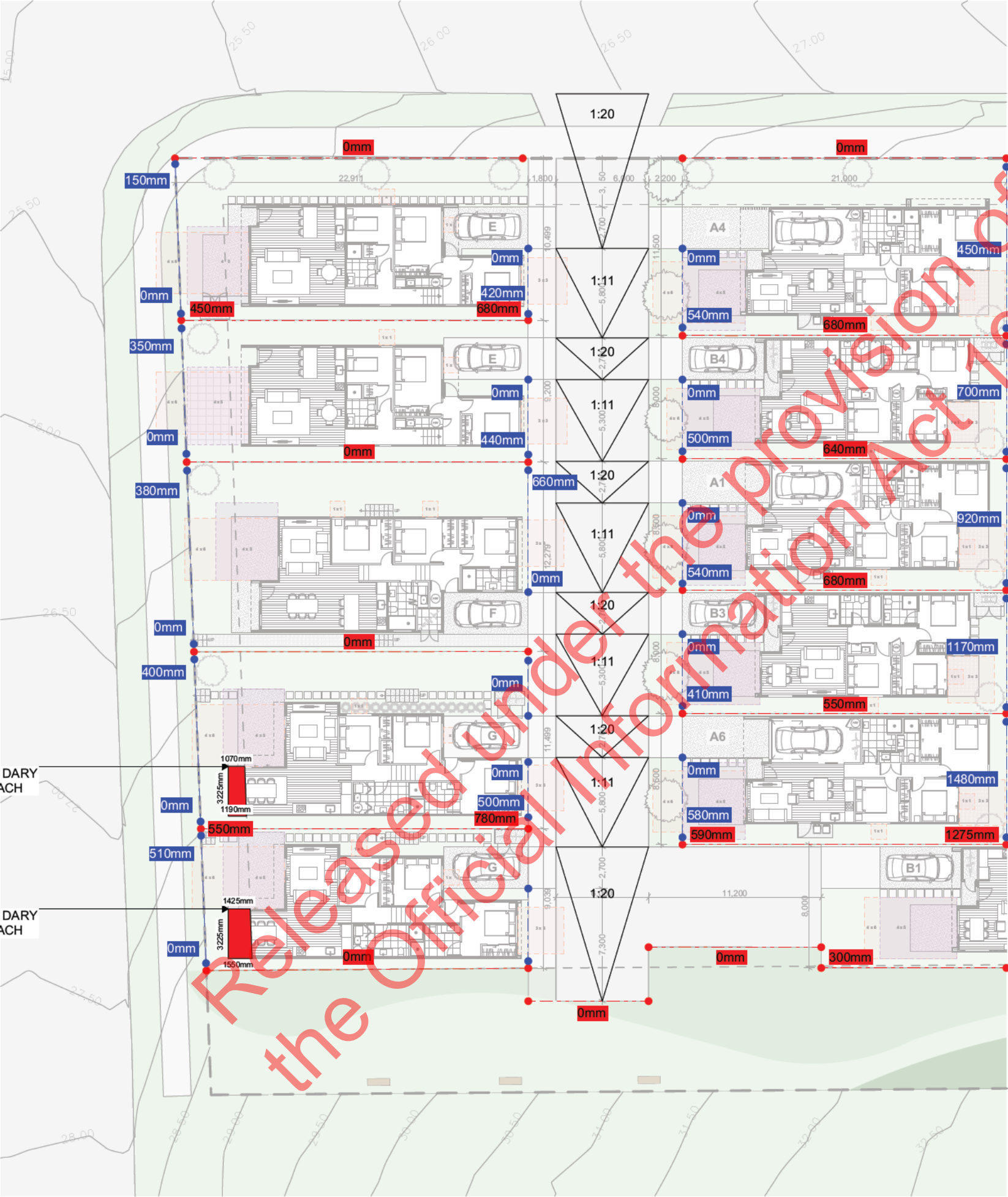
SCALE	A1 1:1000 A3 double	PROJECT NO	PN-0372
DATE	7/09/2021	102	01 WIP

CASA

Collingridge And Smith Architects (UK) Ltd (Beautiful Human Spaces)

Well 1 2 We can Street Remuera Auckland NEW ZEALAND 2010 09 22 2010

The information on this plan is for illustrative purposes only and is not to be used for any other purpose without the written consent of Collingridge And Smith Architects (UK) Ltd. The information on this plan is for illustrative purposes only and is not to be used for any other purpose without the written consent of Collingridge And Smith Architects (UK) Ltd.



3 METRE BOU DARY
SETBACK BREACH

3 METRE BOU DARY
SETBACK BREACH

NOTES

All survey information shown supplied from **CMIX**
CASA accept no liability for the accuracy of this
information

Retaining information is indicative only. CASA always
recommends that all earthwork and retaining calculations
are confirmed by a civil engineer



	NW - SE RETAINING
	NE - SW RETAINING
	JOAL GRADIENT

01	WIP	01	WIP
REV	DESCRIPTION	CHANGE NO	CHANGE NAME
01	150		

MYLAND PARTNERS

1 SELF'S ROAD, PAPATOETOE
AUCKLAND

JOAL 1 RETAINING


SCALE	A1 1:100, 1:150 A3 double	DATE	PN-0372
DATE	7/09/2021	202	01 WIP






NOTES

All survey information shown supplied from **CMIX**
CASA accept no liability for the accuracy of this information

Retaining information is indicative only. CASA always recommends that all earthwork and retaining calculations are confirmed by a civil engineer



	NW - SE RETAINING
	NE - SW RETAINING
	JOAL GRADIENT

01	WIP	Can enter Page		Works
REV	DESCR FROM	CHANGE TO	CHANGE NAME	DATE
01 110				




MYLAND PARTNERS

1 SELFS ROAD, PAPATOETOE
AUCKLAND

JOAL 2 RETAINING

SCALE	A1 1:100, 1:150 A3 double	NO 101	PN-0372
DATE	7/09/2021	204	01 WIP

All survey information shown supplied from **CVIX**
CASA accept no liability for the accuracy of this
information

	NW - SE RETAINING
	NE - SW RETAINING
	JOAL GRADIENT

01	Contents Page			Work in Progress
REV	DESCRIPTION	CHANGE ID	CHANGE NAME	DATE

1 SELFS ROAD, PAPATOETOE
AUCKLAND

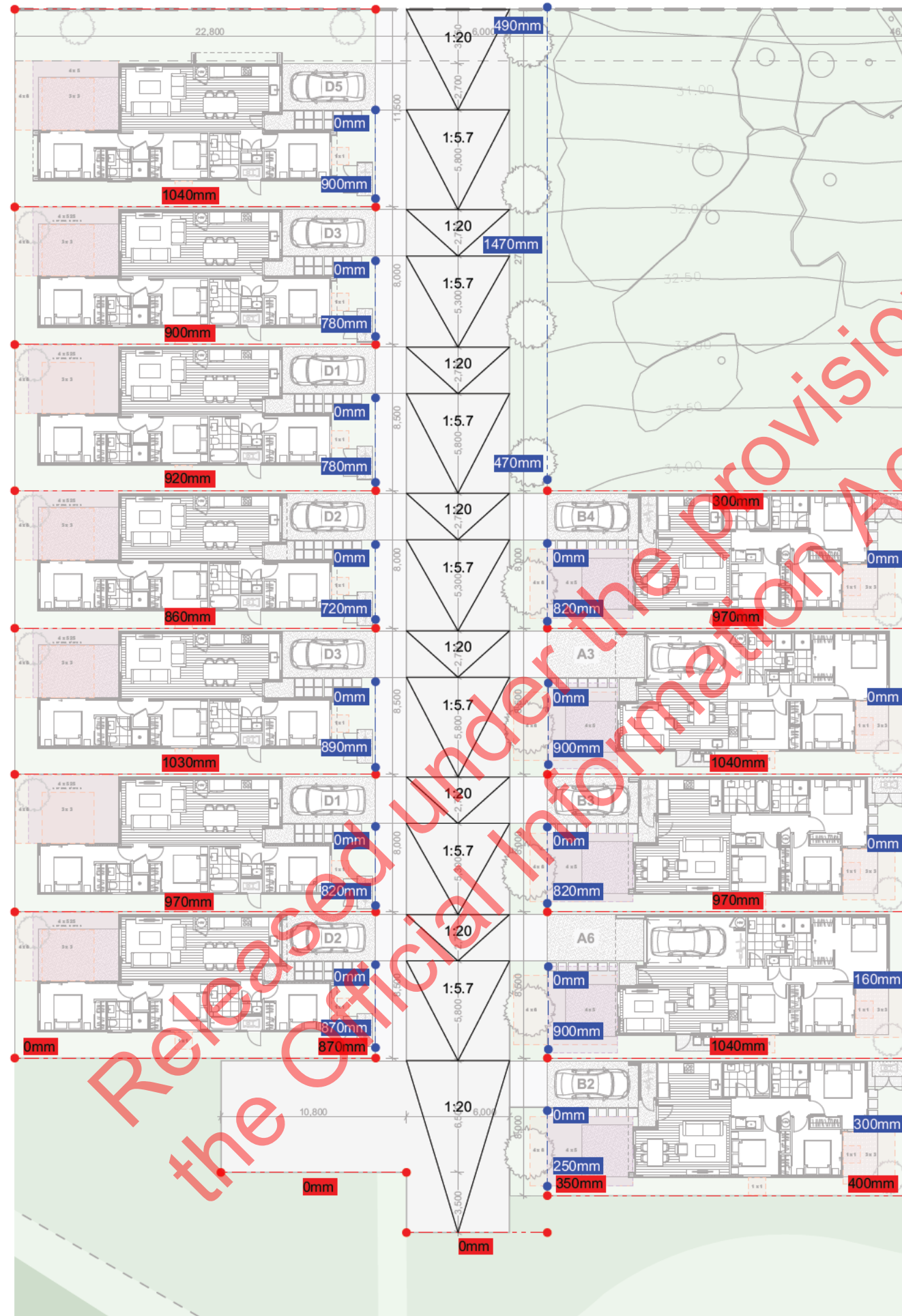
SCALE	A1 1:100, 1:150 A3 double	JOB NO.	PN-0372	
DRAWN	DP	SHEET	REVISION	
CHECKED			01 WIP	
DATE	7/09/2021			

CASA

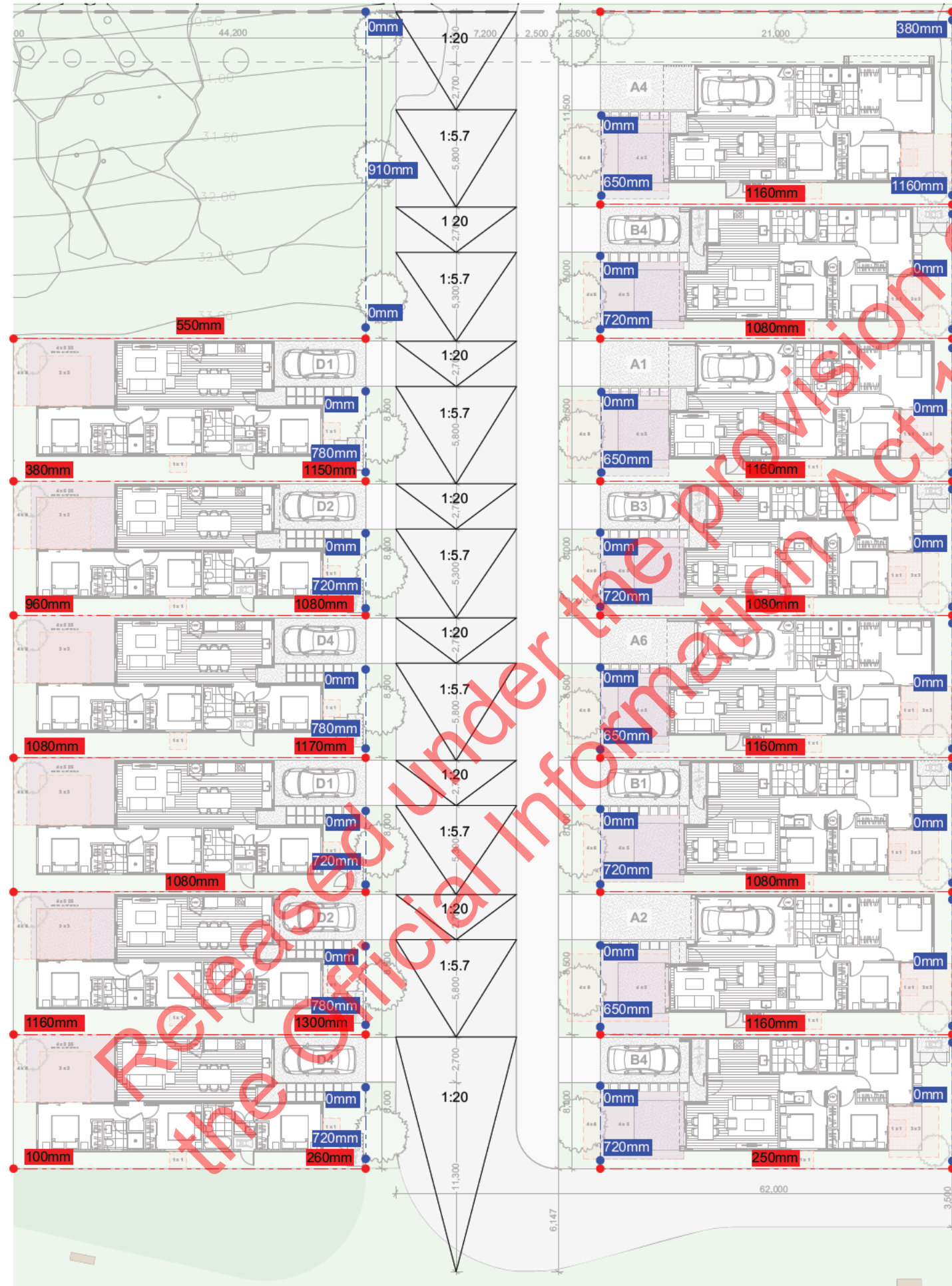
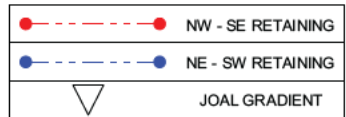
Cellingridge And Smith Architects (UJ) Ltd | Beautiful Human Spaces

Unit 11 2 Watson Street, Remuera Auckland NEW ZEALAND 1050 ☎: 09 332 2003

This contractor shall check and verify all dimensions, levels and angles on site prior to commencing any work. The copyright of these drawings and all plans thereof remain the property of CELLINGRIDGE AND SMITH ARCHITECTS (UK) LTD. Dimensions must not be scaled from these drawings.



All survey information shown supplied from **CNIX**
CASA accept no liability for the accuracy of this
information



1:150

01 WEP	Contents Page			Work in Progress
REV	DESCRIPTION	CHANGE ID	CHANGE NAME	DATE

式(2)を得る。

© 2004 by The McGraw-Hill Companies, Inc.

SCALE	A1 1100, 1150	A3 double	FIG NO	PN-0372
-------	---------------	-----------	--------	---------

ORIGIN	DP	SHEET	REVISION
--------	----	-------	----------

CHICKEN	208	01 WIP
DATE 7/09/2021		




CASA

Collingridge And Smith Architects (UK) Ltd | Beautiful Human Spaces

Unit 1, 2 Witton Street, Newcastle, Australia NSW 2050 Tel: 09 532 2056

The contractor shall check and verify all dimensions, levels and any notes in prior to commencing any work. The copyright of these drawings and any notes herein remain the property of COLLINGRIDGE AND SMITH ARCHITECTS (UK) LTD. Dimensions must not be used from these drawings.

All survey information shown supplied from **CNIX**
CASA accept no liability for the accuracy of this
information

	NW - SE RETAINING
	NE - SW RETAINING
	JOAL GRADIENT

01 WIP	Comments Page			Work in Progress
REV	DESCRIPTION	CHANGE ID	CHANGE NAME	DATE

END FILE

1 SELFS ROAD, PAPATOETOE
AUCKLAND

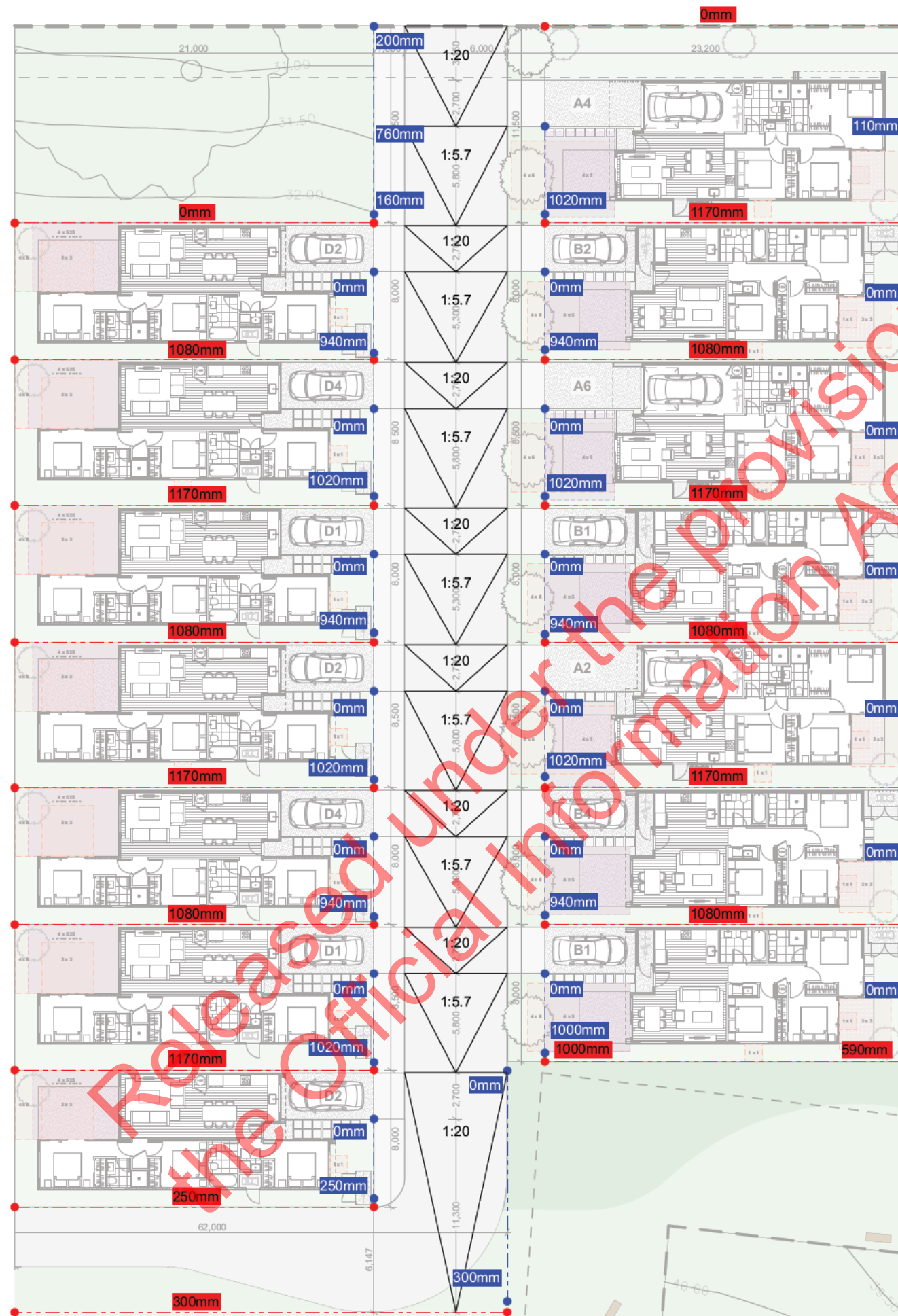
SCALE	A1 1:100, 1:150 A3 double	JOB NO	PN-0372	
DRAWN	DP	SHEET	REVISION	
CHECKED			01 WIP	
DATE	7/09/2021			

CASA

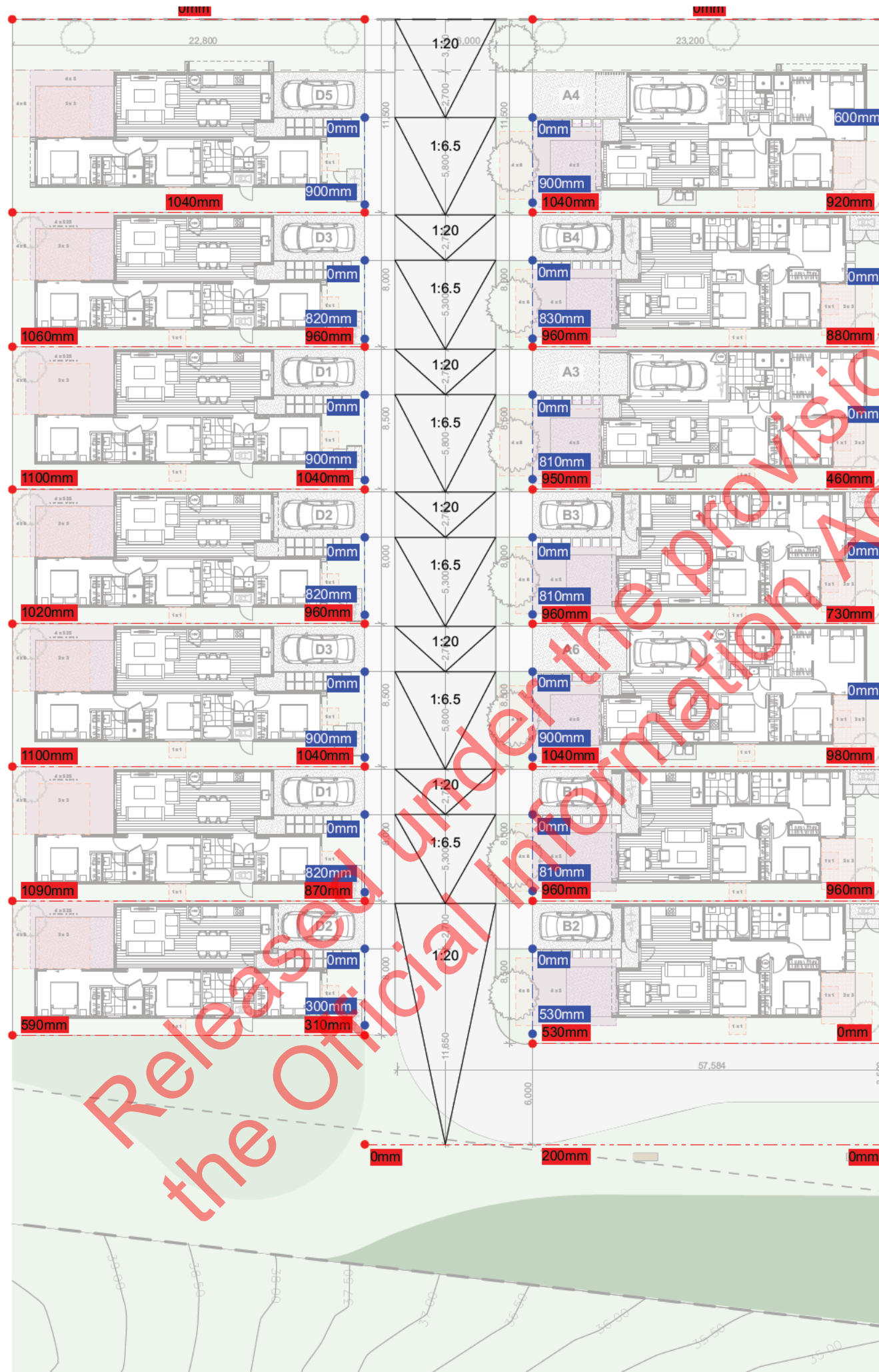
Cellingridge And Smith Architects (UJ) Ltd | Beautiful Human Spaces

Unit 11 2 Waton Street, Remuera Auckland NEW ZEALAND 1050 ☎: 09 332 2003

This contractor shall check and verify all dimensions, levels and angles on site prior to commencing any work. The copyright of these drawings and all plans thereof remains the property of CELLINGRIDGE AND SMITH ARCHITECTS (UJ) LTD. Dimensions must not be scaled from these drawings.



1:150



JOAL 6 INFORMATION 1:150

NOTES

All survey information shown supplied from CMIX
CASA accept no liability for the accuracy of this
information

Retaining information is indicative only. CASA always
recommends that all earthwork and retaining calculations
are confirmed by a civil engineer



	NW - SE RETAINING
	NE - SW RETAINING
	JOAL GRADIENT

RETAINING DIRECTION CHANGES
SHOWN ON JOAL 7 LAYOUT

RETAINING DIRECTION CHANGES
SHOWN ON JOAL 7 LAYOUT

DT	Rev	Drawn By	Checked By	Design	Program
REV	DESCR FROM	CHANGE IS	CHANGE NAME		DATE

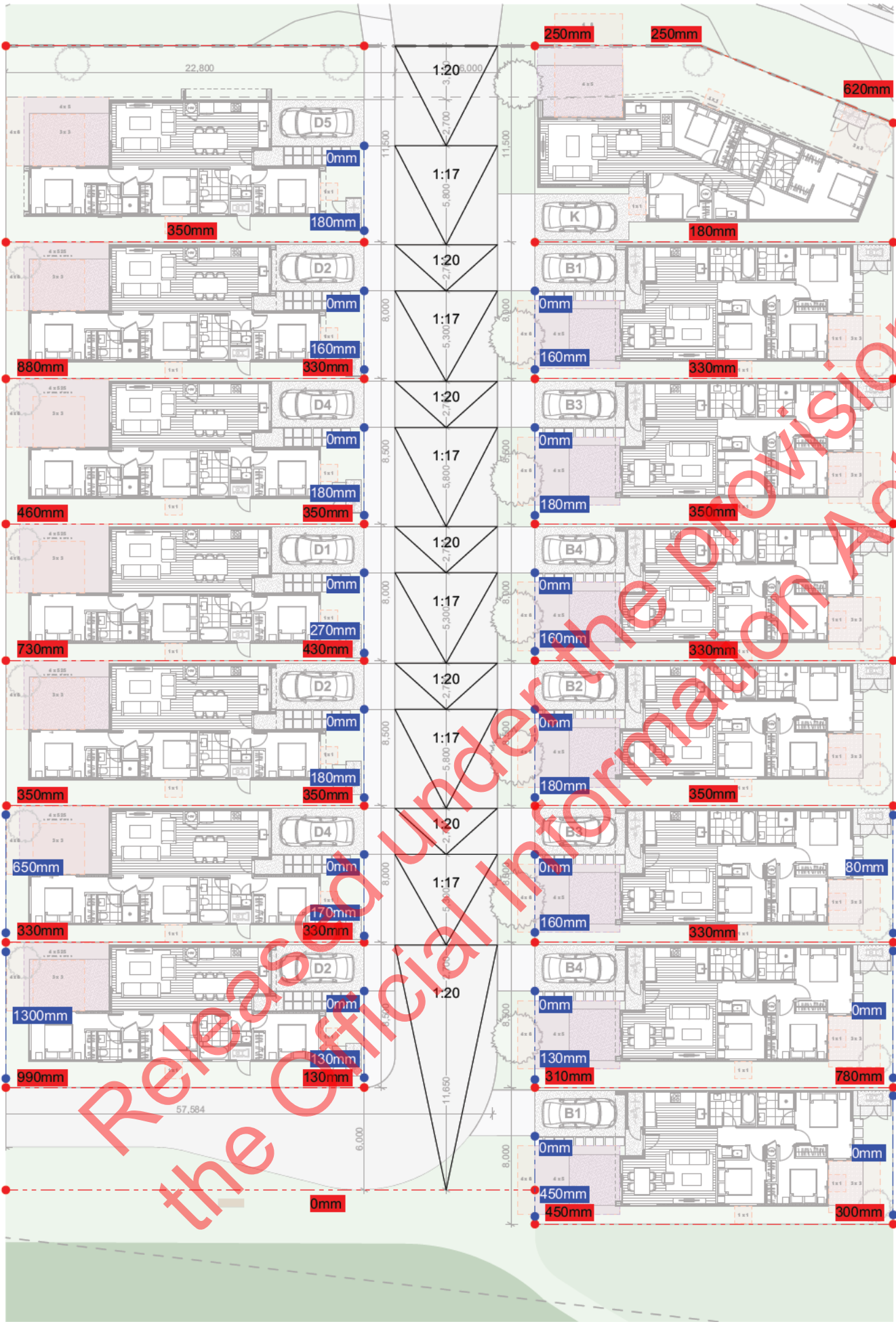
MYLAND PARTNERS

1 SELFS ROAD, PAPATOETOE
AUCKLAND

JOAL 6 RETAINING

SCALE	A1 1:100, 1:150 A3 double	NO	PN-0372
DATE	7/09/2021	212	01 WIP

CASA
Collingridge And Smith Architects (UK) Ltd (Beautiful Human Spaces)
Well 1, 2 Waiwaka Street, Remuera, Auckland, NEW ZEALAND 2010
The copyright in this drawing and all other documents forming part of this project is reserved by COLLINGRIDGE AND SMITH ARCHITECTS (UK) LTD. No part of this drawing may be reproduced without the written permission of the copyright owner.



JOAL 7 INFORMATION 1:150

NOTES

All survey information shown supplied from **CMIX**
CASA accept no liability for the accuracy of this information

Retaining information is indicative only. CASA always recommends that all earthwork and retaining calculations are confirmed by a civil engineer



	NW - SE RETAINING
	NE - SW RETAINING
	JOAL GRADIENT

01	WIP	01	WIP
REV	DESCRIPTION	CHANGE NO	CHANGE NAME
01	150		

MYLAND PARTNERS

1 SELFS ROAD, PAPATOETOE
AUCKLAND

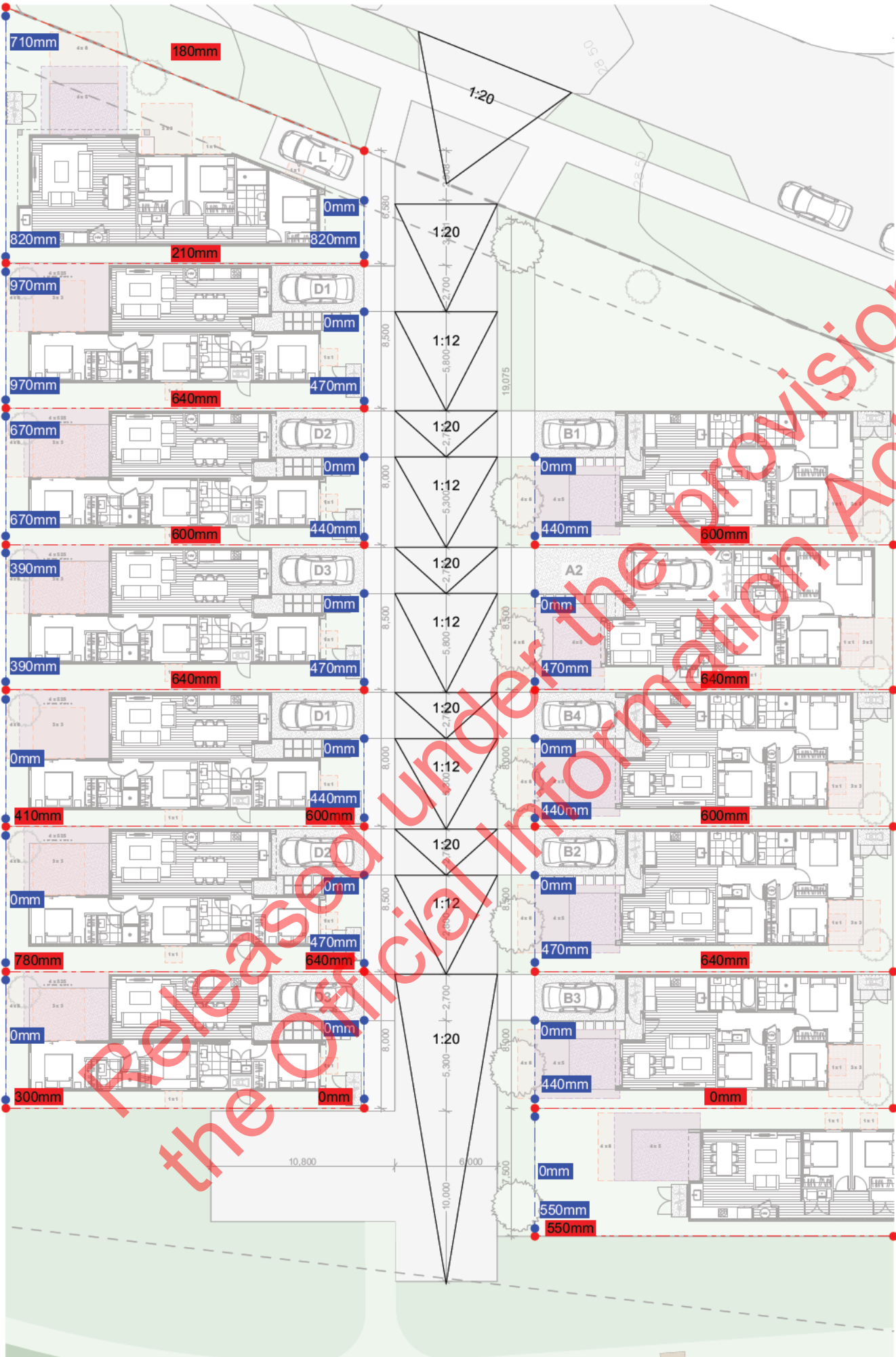
JOAL 7 RETAINING

SCALE	A1 1100, 1150 A3 double	NO	PN-0372
DATE	7/09/2021	214	01 WIP

CASA

Collingridge And Smith Architects (UK) Ltd (Beautiful Human Spaces)

Well 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000



JOAL 8 INFORMATION

1:150

NOTES

All survey information shown supplied from **CMIX**
CASA accept no liability for the accuracy of this information

Retaining information is indicative only. CASA always recommends that all earthwork and retaining calculations are confirmed by a civil engineer



	NW - SE RETAINING
	NE - SW RETAINING
	JOAL GRADIENT

01	Con			Work in
WIP	verts	Page		Program
REV	DESCR	PTION	CHANGE	DATE
	ID		CHANGE	
			NAME	

MYLAND PARTNERS

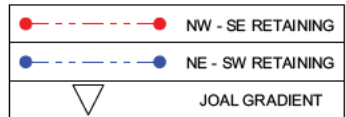
1 SELFS ROAD, PAPATOETOE
AUCKLAND

JOAL 8 RETAINING

SCALE	A1 1:100, 1:150 A3 double	NO. 101	PN-0372
DATE	7/09/2021	216	01 WIP

CASA
Collingridge And Smith Architects (UK) Ltd (Beautiful Human Spaces)
Well 1 2 We can Street Remuera Auckland NEW ZEALAND 2020 09 02 2021
The information shown on this drawing is for information only and is not to be used for any other purpose without the written consent of Collingridge And Smith Architects (UK) Ltd. The information shown on this drawing is for information only and is not to be used for any other purpose without the written consent of Collingridge And Smith Architects (UK) Ltd.

All survey information shown supplied from **CNIX**
CASA accept no liability for the accuracy of this
information



01 WIP	Comments Page			Work in Progress
REV	DESCRIPTION	CHANGE ID	CHANGE NAME	DATE

208 1752

式(2)證明

CRJW 503 7 15.0

SCALE	A1 1100, 1150 A3 double	JOB NO	PN-0372	
DRAWING	DP	SHOOT	218	NOTE ON
CHG REQD				
DATE	7/09/2021			01 WIP

CASA

Collingridge And Smith Architects (UK) Ltd | Beautiful Human Spaces

Unit 1, 2 Wilson Street, Riverside Auckland NEW ZEALAND 1010 T + 99 532 205
The copyright of this book and every all dimensions, books and images are prior to
commencing any work. The copyright of these drawings and all parts thereof remain the property of
COLLINGRIDGE AND SMITH ARCHITECTS (UK) LTD. Dimensions cannot be scaled from
the drawings

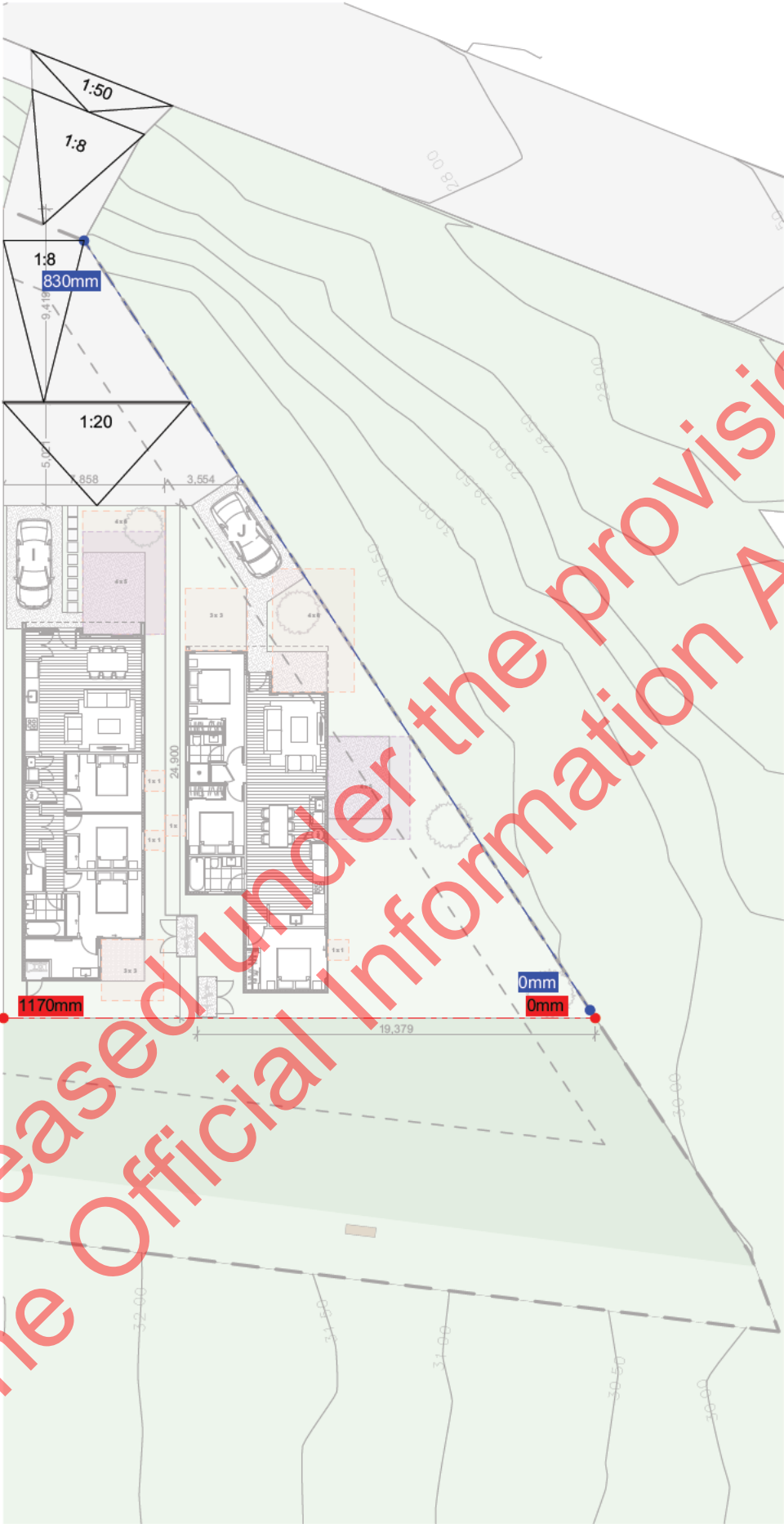
NOTES

All survey information shown supplied from CMIX
CASA accept no liability for the accuracy of this
information

Retaining information is indicative only. CASA always
recommends that all earthwork and retaining calculations
are confirmed by a civil engineer



	NW - SE RETAINING
	NE - SW RETAINING
	JOAL GRADIENT



Released under the provision of
the Official Information Act 1982

DT	Rev	Drawn	Check	Issue	By	Date
REV	DESCR FROM	CHANGE TO	CHANGE NAME			DATE

MYLAND PARTNERS

1 SELFS ROAD, PAPATOETOE
AUCKLAND

JOAL 10 RETAINING

SCALE	A1 1:100, 1:150 A3 double	NO. 101	PN-0372
DATE	7/09/2021	220	01 WIP

CASA

Collingridge And Smith Architects (UK) Ltd (Beautiful Human Spaces)

Unit 1, 2 Waihan Street, Remuera, Auckland, NEW ZEALAND 2010. Tel: 09 522 2554

The information on this plan is for information only. It is not to be used for any other purpose without the written consent of Collingridge And Smith Architects (UK) Ltd. The information is not to be used for any other purpose without the written consent of Collingridge And Smith Architects (UK) Ltd.



LEGEND:

RETAINING WALLS W DRAINAGE (H=HEIGHT, C=CHAINAGE, ARROWS SHOW FALL DIRECTION)

----- EARTHWORKS SECTIONS

--- EX. KERBLINES

rw top and bottom levels

EARTHWORKS EXTENT

PROPOSED PAVEMENTS

PROPOSED BUILDINGS

NEW PARCELS

EXISTING PARCELS

CUT(-) FILL(+)

4.0-3.0m
3.0-2.0m
2.0-1.0m
1.0-0.0m
0.0-1.0m
1.0-2.0m
2.0-3.0m
3.0-4.0m

CUT FILL VOLUMES

ITEM	UNITS	TOTAL	EW01
AREA	m ²	28,328	28,328
CUT	m ³	31,143	31,143
FILL	m ³	575	575
FILL + 15% BULK F.	m ³	661	661
CUTFILL BALANCE	m ³	-30,482	-30,482
EST. CUT EXPORT	TRUCKS	5,081	-
BULK CF VOLUME	m ³	31,718	31,718
MAX CUT DEPTH	m	3.1	3.1
MAX FILL HEIGHT	m	1.3	1.3
TOPSOIL TO STRIP	m ³	0	-
TOPSOIL TO PLACE	m ³	2,066	-
TOPSOIL BALANCE	m ³	2,066	-
TOPSOIL VOLUME	m ³	2,066	-
TOTAL EW VOLUME	m ³	33,785	-
EST. TOPSOIL IMPORT	TRUCKS	345	-

CUTFILL ANALYSIS NOTES:

A. Ex. Surf is existing ground level

B. Pr. Surf. is to Building, Pavement and Grass Subgrade

NOTES

1. ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERATOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER FOR CLARIFICATION

2. THE CONTRACTOR IS TO PEG INFRASTRUCTURE LOCATIONS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS.

3. UNDERFILL DRAINAGE IS TO BE INSTALLED AT THE DIRECTION OF THE ENGINEER. IF THE CONTRACTOR ENCOUNTERS SPRINGS OR OTHER SOURCES OF WATER, THEY ARE TO NOTIFY THE ENGINEER.

4. EARTHWORKS ARE NOT TO BE EXTENDED INTO ADJOINING SITES UNLESS THE ENGINEER HAS ISSUED SPECIFIC INSTRUCTIONS

5. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND PROTECTING EXISTING SERVICES AND DRAINAGE ON SITE

6. THE CONTRACTOR SHALL CLARIFY THE AREAS AND EXTENT OF CLEARING WITH THE ENGINEER BEFORE COMMENCEMENT AND CONFIRM THAT ALL NECESSARY CONSENTS ARE IN PLACE.

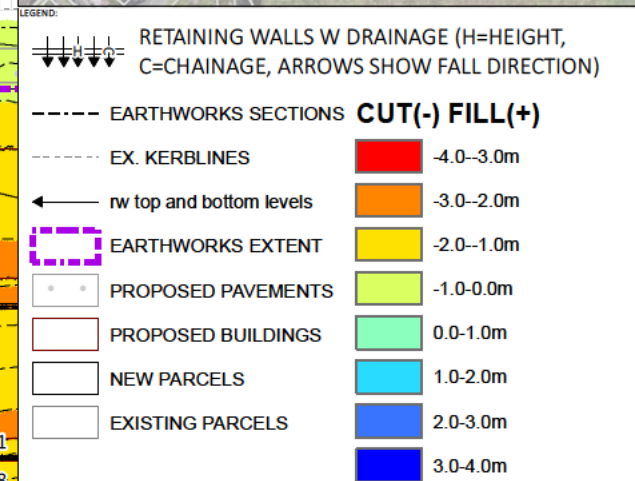
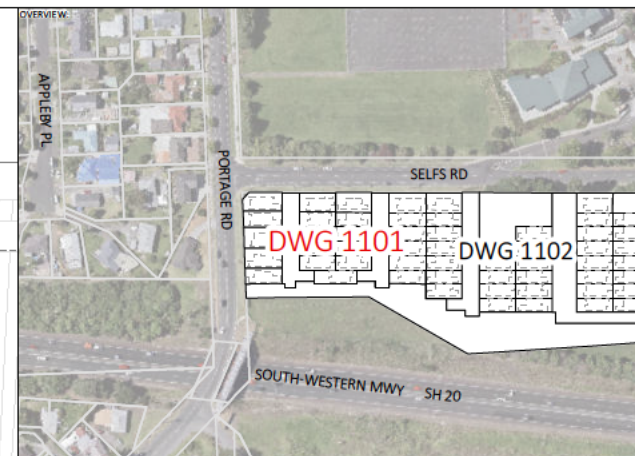
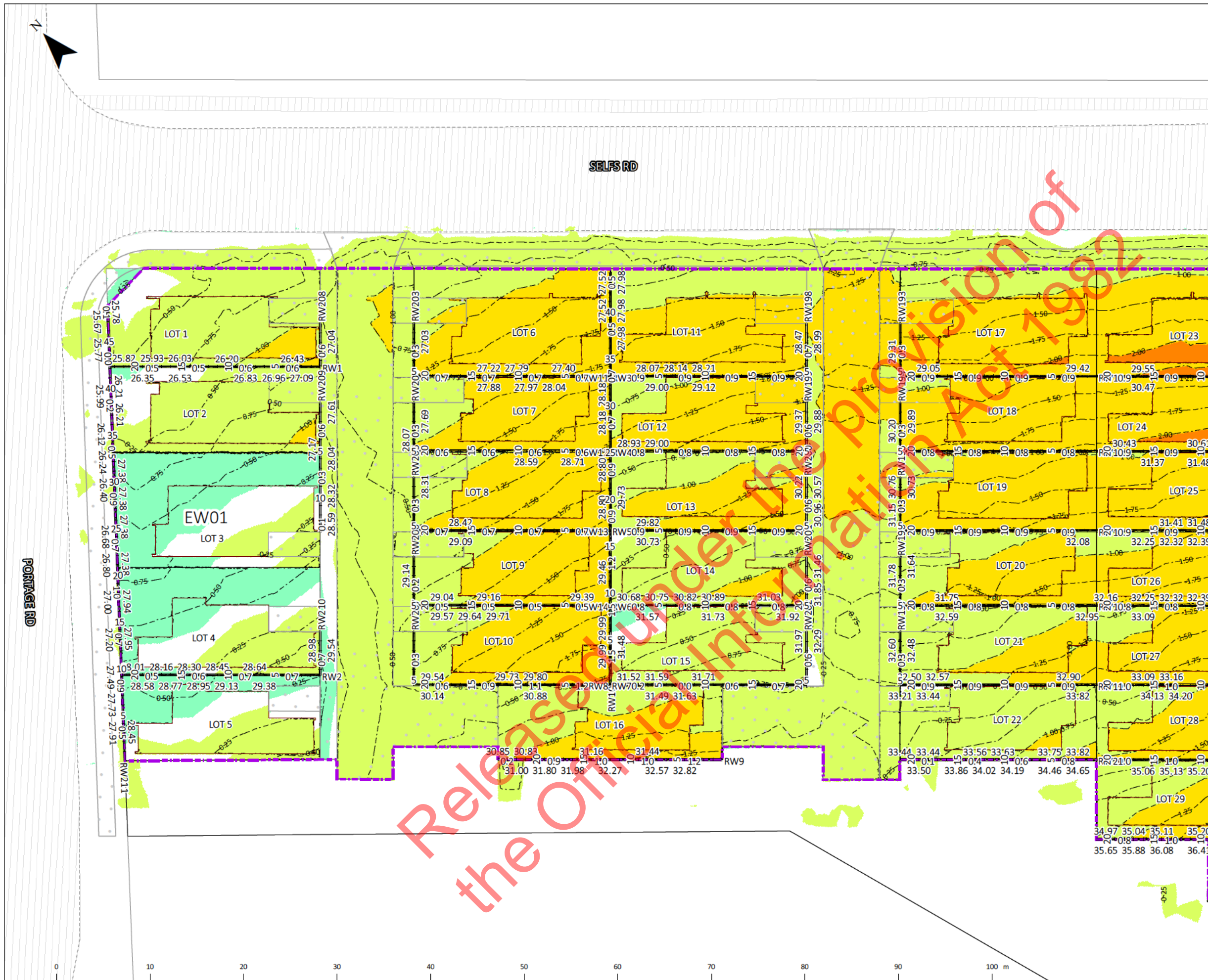
7. EARTHWORKS TOLERANCES ARE TO BE +25mm

8. ALL VOLUMES ARE SOLID MEASURE. NO BULKING FACTOR APPLIED

9. RETAINING WALL SETOUT - EXACT SETTING OUT POSITION OF RETAINING WALLS IN RELATION TO LOT BOUNDARIES AND BUILDINGS TO BE OBTAINED FROM ARCHITECT OR STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION COMMENCING.

DESIGNED: MO		PROJECT: 7 SELFS ROAD, MANGERE	TITLE: CUT FILL PLANS	STATUS: FOR RESOURCE CONSENT
DRAWN: MO				
RELEASED: SB				
REVISION	AMENDMENT	BY		DRAWING NO: 1100
				SCALE & SIZE: 1:2,000 A3
				REV: 25/06/2021

THIS DRAWING AND DESIGN IS THE PROPERTY OF CIVIX LIMITED. THIS DRAWING MAY NOT BE COPIED OR ALTERED WITHOUT WRITTEN APPROVAL FROM CIVIX LIMITED. NO LIABILITY IS ACCEPTED FOR UNAUTHORISED USE OF THIS DRAWING. LEVELS ARE IN TERMS OF LAND AND SURVEY DATUM. AREAS AND MEASUREMENTS ARE SUBJECT TO SURVEY.



CUT FILL VOLUMES

ITEM	UNITS	TOTAL	EW01
AREA	m ²	28,328	28,328
CUT	m ³	31,143	31,143
FILL	m ³	575	575
FILL + 15% BULK F.	m ³	661	661
CUTFILL BALANCE	m ³	-30,482	-30,482
EST. CUT EXPORT	TRUCKS	5,081	-
BULK CF VOLUME	m ³	31,718	31,718
MAX CUT DEPTH	m	3.1	3.1
MAX FILL HEIGHT	m	1.3	1.3
TOPSOIL TO STRIP	m ³	0	-
TOPSOIL TO PLACE	m ³	2,066	-
TOPSOIL BALANCE	m ³	2,066	-
TOPSOIL VOLUME	m ³	2,066	-
TOTAL EW VOLUME	m ³	33,785	-
EST. TOPSOIL IMPORT	TRUCKS	345	-

CUTFILL ANALYSIS NOTES:

A. Ex. Surf is existing ground level

B. Pr. Surf. is to Building, Pavement and Grass Subgrade

NOTES

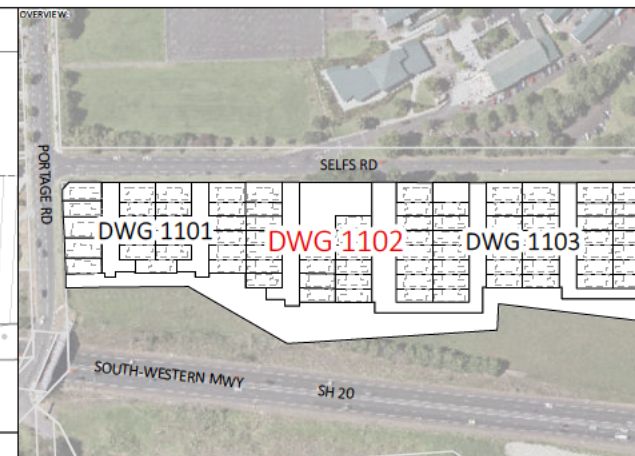
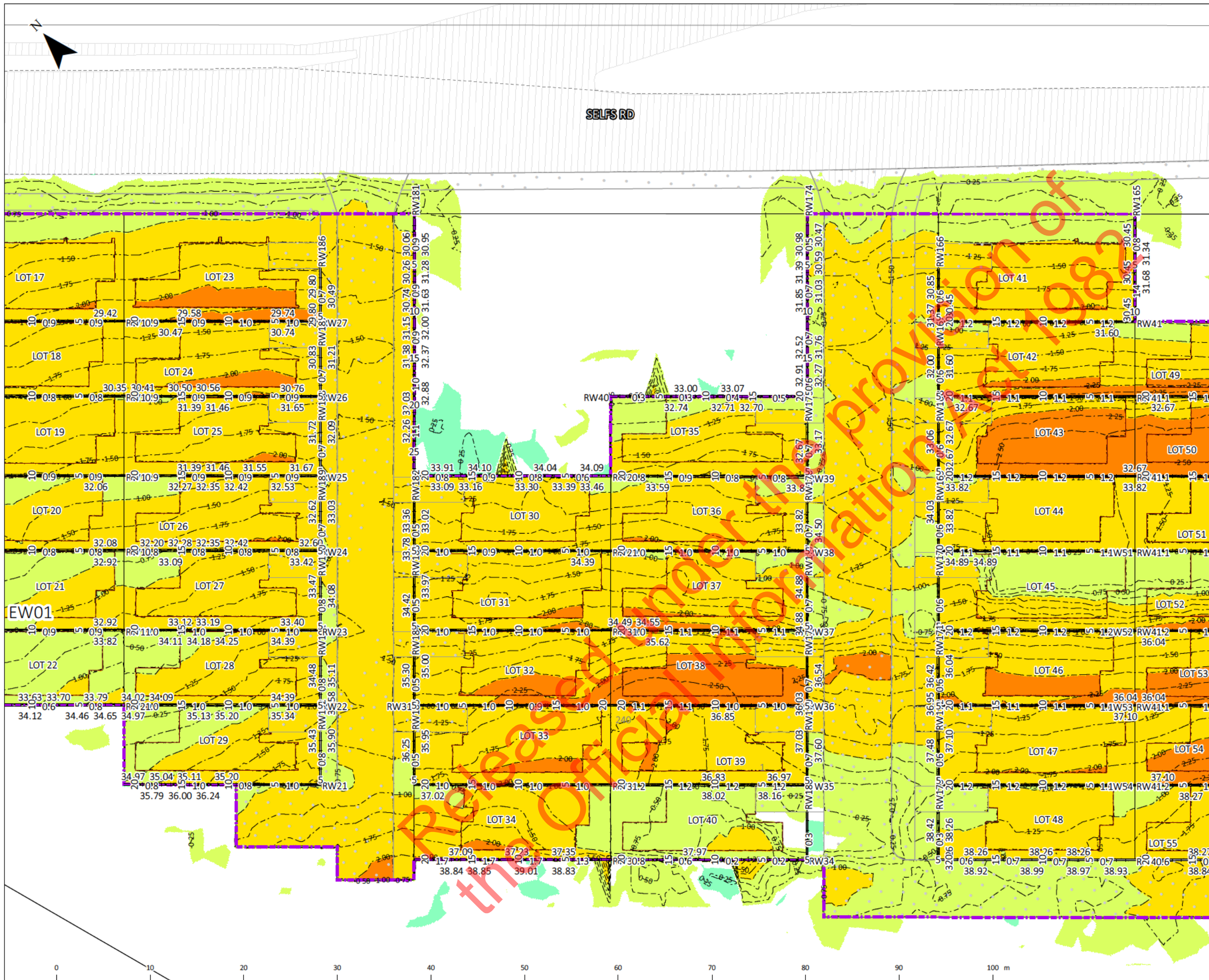
1. ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERATOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER FOR CLARIFICATION
2. THE CONTRACTOR IS TO PEG INFRASTRUCTURE LOCATIONS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS.
3. UNDERFILL DRAINAGE IS TO BE INSTALLED AT THE DIRECTION OF THE ENGINEER. IF THE CONTRACTOR ENCOUNTERS SPRINGS OR OTHER SOURCES OF WATER, THEY ARE TO NOTIFY THE ENGINEER.
4. EARTHWORKS ARE NOT TO BE EXTENDED INTO ADJOINING SITES UNLESS THE ENGINEER HAS ISSUED SPECIFIC INSTRUCTIONS
5. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND PROTECTING EXISTING SERVICES AND DRAINAGE ON SITE
6. THE CONTRACTOR SHALL CLARIFY THE AREAS AND EXTENT OF CLEARING WITH THE ENGINEER BEFORE COMMENCEMENT AND CONFIRM THAT ALL NECESSARY CONSENTS ARE IN PLACE.
7. EARTHWORKS TOLERANCES ARE TO BE +25mm
8. ALL VOLUMES ARE SOLID MEASURE NO BULKING FACTOR APPLIED
9. RETAINING WALL SETOUT - EXACT SETTING OUT POSITION OF RETAINING WALLS IN RELATION TO LOT BOUNDARIES AND BUILDINGS TO BE OBTAINED FROM ARCHITECT OR STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION COMMENCING.

DESIGNED:	DRAWN:	RELEASED:	BY:	PROJECT:	TITLE:	STATUS:
MO	MO	SB		7 SELFS ROAD, MANGERE	CUT FILL PLANS	FOR RESOURCE CONSENT
						DRAWING NO: 1101
						SCALE & SIZE: 1:400 A3
						REV: 25/06/2021
REVISION	AMENDMENT					



7 SELFS ROAD, MANGERE

CUT FILL PLANS



- LEGEND:
- RETAINING WALLS W DRAINAGE (H=HEIGHT, C=CHAINAGE, ARROWS SHOW FALL DIRECTION)
 - EARTHWORKS SECTIONS CUT(-) FILL(+)
 - EX. KERBLINES
 - rw top and bottom levels
 - EARTHWORKS EXTENT
 - PROPOSED PAVEMENTS
 - PROPOSED BUILDINGS
 - NEW PARCELS
 - EXISTING PARCELS
- | CUT/FILL | Color |
|------------|----------------|
| -4.0--3.0m | Red |
| -3.0--2.0m | Orange |
| -2.0--1.0m | Yellow |
| -1.0-0.0m | Light Green |
| 0.0-1.0m | Light Blue |
| 1.0-2.0m | Medium Blue |
| 2.0-3.0m | Dark Blue |
| 3.0-4.0m | Very Dark Blue |

CUT FILL VOLUMES

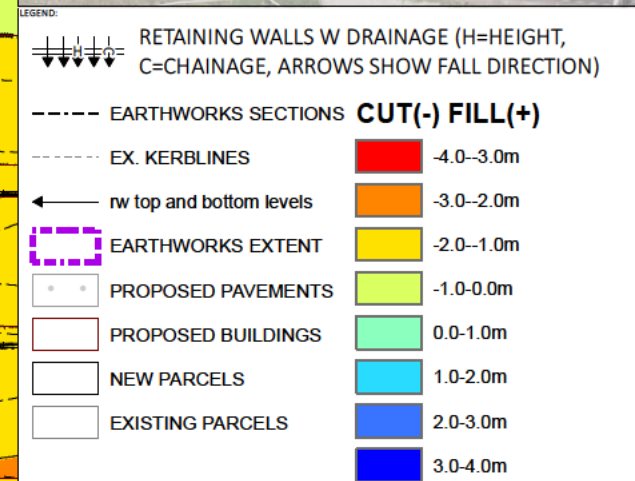
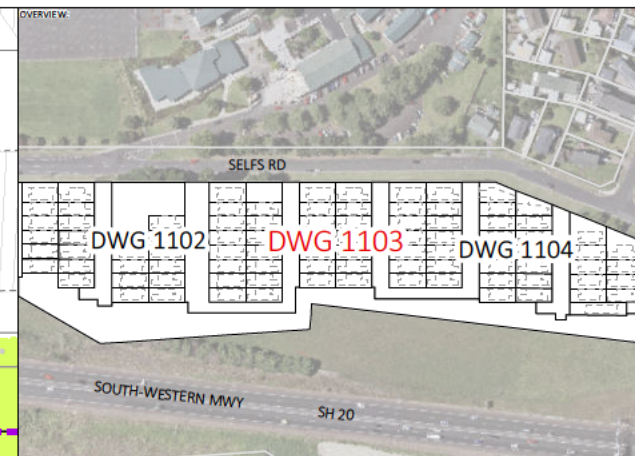
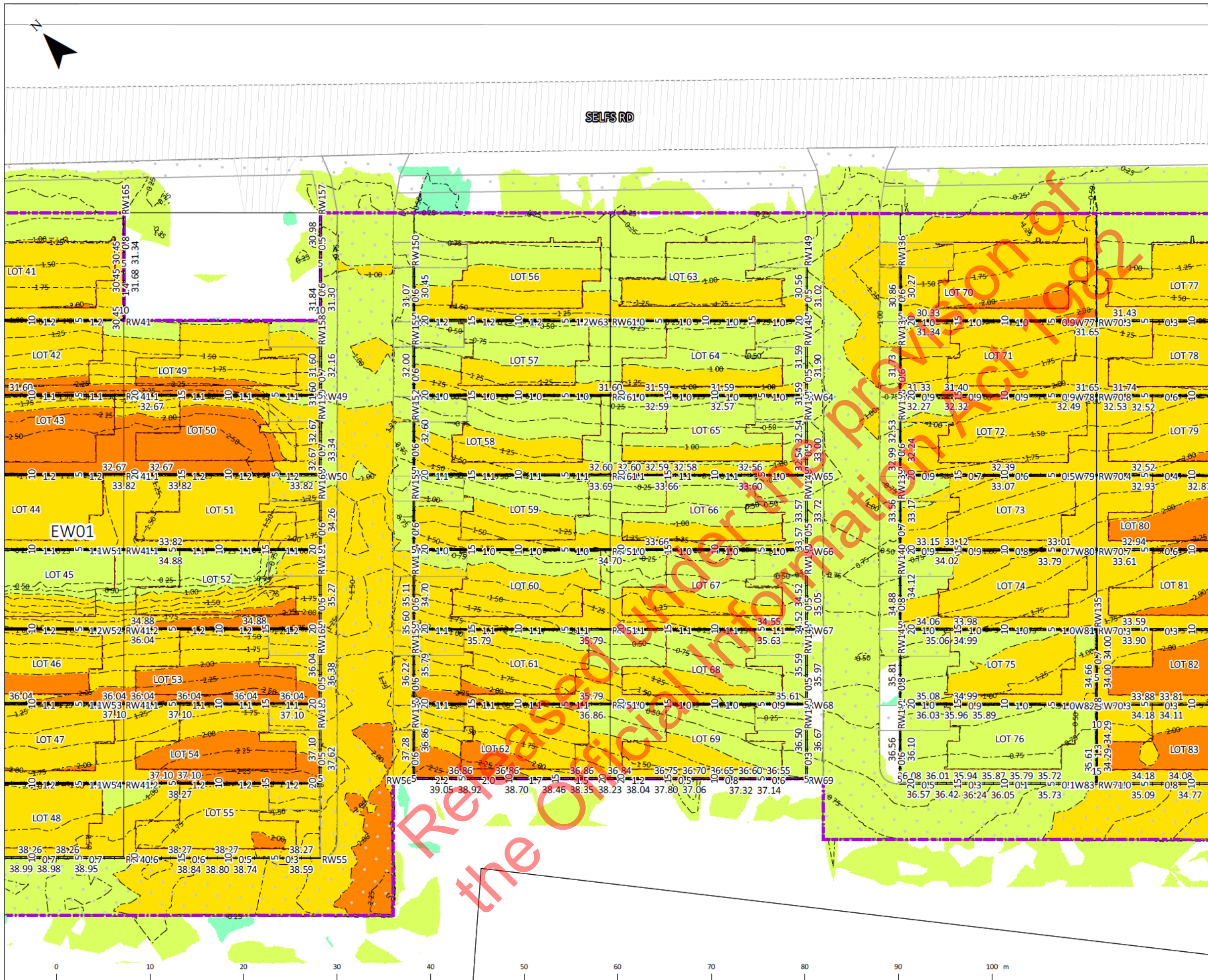
ITEM	UNITS	TOTAL	EW01
AREA	m ²	28,328	28,328
CUT	m ³	31,143	31,143
FILL	m ³	575	575
FILL + 15% BULK F.	m ³	661	661
CUTFILL BALANCE	m ³	-30,482	-30,482
EST. CUT EXPORT	TRUCKS	5,081	-
BULK CF VOLUME	m ³	31,718	31,718
MAX CUT DEPTH	m	3.1	3.1
MAX FILL HEIGHT	m	1.3	1.3
TOPSOIL TO STRIP	m ³	0	-
TOPSOIL TO PLACE	m ³	2,066	-
TOPSOIL BALANCE	m ³	2,066	-
TOPSOIL VOLUME	m ³	2,066	-
TOTAL EW VOLUME	m ³	33,785	-
EST. TOPSOIL IMPORT	TRUCKS	345	-

CUTFILL ANALYSIS NOTES:

- A. Ex. Surf is existing ground level
B. Pr. Surf. is to Building, Pavement and Grass Subgrade

- NOTES
- ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERATOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER FOR CLARIFICATION
 - THE CONTRACTOR IS TO PEG INFRASTRUCTURE LOCATIONS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS.
 - UNDERFILL DRAINAGE IS TO BE INSTALLED AT THE DIRECTION OF THE ENGINEER. IF THE CONTRACTOR ENCOUNTERS SPRINGS OR OTHER SOURCES OF WATER, THEY ARE TO NOTIFY THE ENGINEER.
 - EARTHWORKS ARE NOT TO BE EXTENDED INTO ADJOINING SITES UNLESS THE ENGINEER HAS ISSUED SPECIFIC INSTRUCTIONS
 - THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND PROTECTING EXISTING SERVICES AND DRAINAGE ON SITE
 - THE CONTRACTOR SHALL CLARIFY THE AREAS AND EXTENT OF CLEARING WITH THE ENGINEER BEFORE COMMENCEMENT AND CONFIRM THAT ALL NECESSARY CONSENTS ARE IN PLACE.
 - EARTHWORKS TOLERANCES ARE TO BE +25mm
 - ALL VOLUMES ARE SOLID MEASURE NO BULKING FACTOR APPLIED
 - RETAINING WALL SETOUT - EXACT SETTING OUT POSITION OF RETAINING WALLS IN RELATION TO LOT BOUNDARIES AND BUILDINGS TO BE OBTAINED FROM ARCHITECT OR STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION COMMENCING.

DESIGNED: MO		PROJECT: 7 SELFS ROAD, MANGERE	TITLE: CUT FILL PLANS	STATUS: FOR RESOURCE CONSENT
DRAWN: MO				
RELEASED: SB				
REVISION	AMENDMENT	BY		DRAWING NO: 1102
				SCALE & SIZE: 1:400 A3
				REV: 25/06/2021



CUT FILL ANALYSIS NOTES:

A. Ex. Surf is existing ground level

B. Pr. Surf. is to Building, Pavement and Grass Subgrade

NOTES

1. ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERATOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER FOR CLARIFICATION

2. THE CONTRACTOR IS TO PEG INFRASTRUCTURE LOCATIONS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS.

3. UNDERFILL DRAINAGE IS TO BE INSTALLED AT THE DIRECTION OF THE ENGINEER. IF THE CONTRACTOR ENCOUNTERS SPRINGS OR OTHER SOURCES OF WATER, THEY ARE TO NOTIFY THE ENGINEER.

4. EARTHWORKS ARE NOT TO BE EXTENDED INTO ADJOINING SITES UNLESS THE ENGINEER HAS ISSUED SPECIFIC INSTRUCTIONS

5. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND PROTECTING EXISTING SERVICES AND DRAINAGE ON SITE

6. THE CONTRACTOR SHALL CLARIFY THE AREAS AND EXTENT OF CLEARING WITH THE ENGINEER BEFORE COMMENCEMENT AND CONFIRM THAT ALL NECESSARY CONSENTS ARE IN PLACE.

7. EARTHWORKS TOLERANCES ARE TO BE +25mm

8. ALL VOLUMES ARE SOLID MEASURE NO BULKING FACTOR APPLIED

9. RETAINING WALL SETOUT - EXACT SETTING OUT POSITION OF RETAINING WALLS IN RELATION TO LOT BOUNDARIES AND BUILDINGS TO BE OBTAINED FROM ARCHITECT OR STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION COMMENCING.

REVISION	AMENDMENT	DESIGNED:	DRAWN:	RELEASED:	BY	PROJECT:	TITLE:	STATUS:
		MO	MO	SB		7 SELFS ROAD, MANGERE	CUT FILL PLANS	FOR RESOURCE CONSENT
								DRAWING NO: 1103
								SCALE & SIZE: 1:400 A3
								REV: 25/06/2021



7 SELFS ROAD, MANGERE

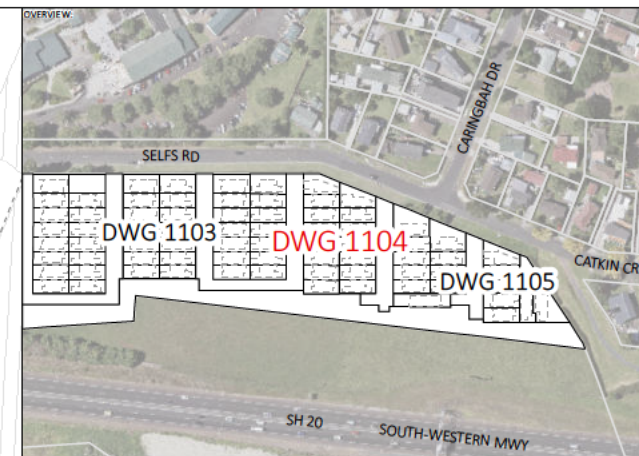
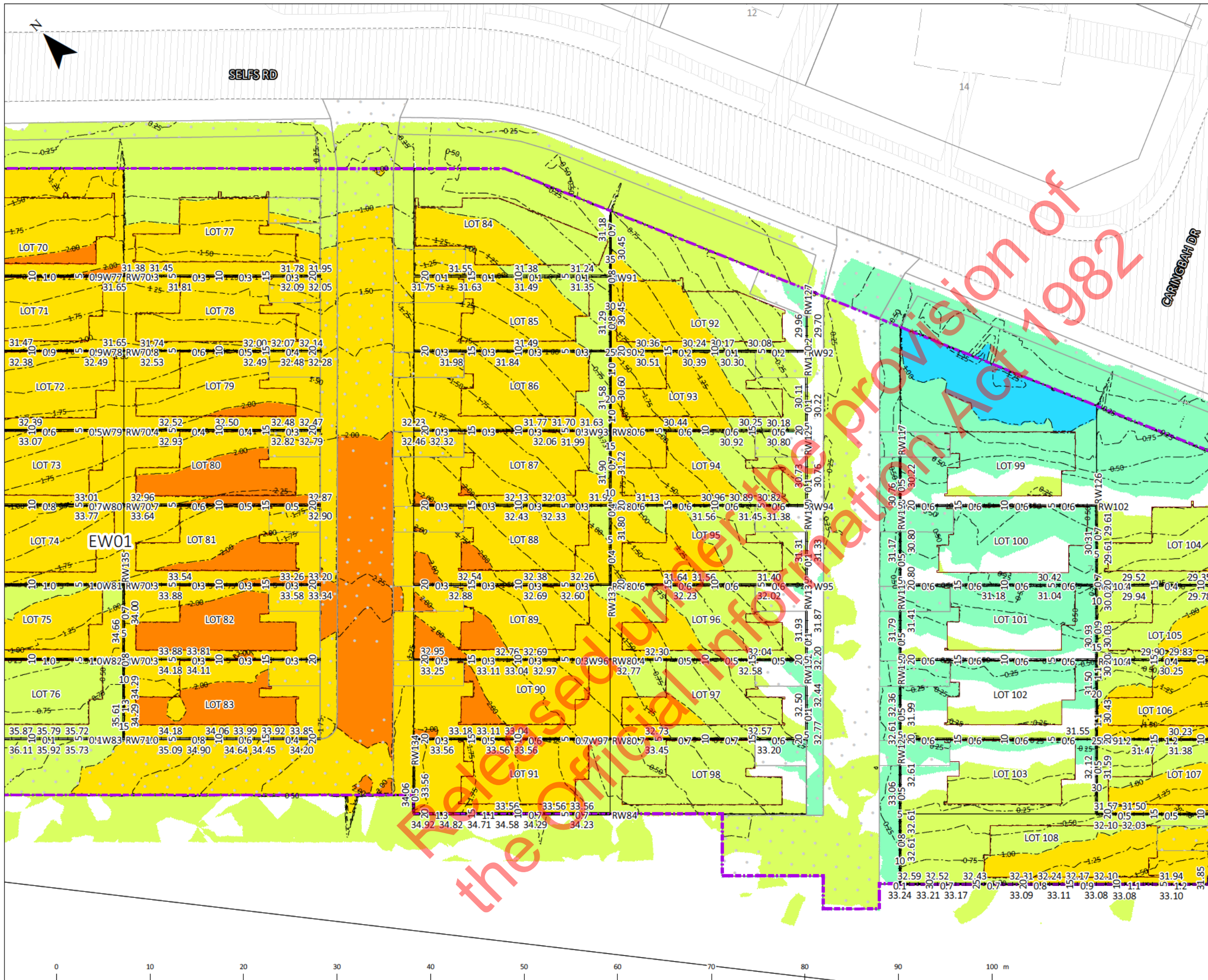
CUT FILL PLANS

FOR RESOURCE CONSENT

DRAWING NO: 1103

SCALE & SIZE: 1:400 A3

REV: 25/06/2021



LEGEND:

	RETAINING WALLS W DRAINAGE (H=HEIGHT, C=CHAINAGE, ARROWS SHOW FALL DIRECTION)
	EARTHWORKS SECTIONS
	EX. KERBLINES
	rw top and bottom levels
	EARTHWORKS EXTENT
	PROPOSED PAVEMENTS
	PROPOSED BUILDINGS
	NEW PARCELS
	EXISTING PARCELS

CUT	FILL
-4.0--3.0m	-4.0--3.0m
-3.0--2.0m	-3.0--2.0m
-2.0--1.0m	-2.0--1.0m
-1.0-0.0m	-1.0-0.0m
0.0-1.0m	0.0-1.0m
1.0-2.0m	1.0-2.0m
2.0-3.0m	2.0-3.0m
3.0-4.0m	3.0-4.0m

CUT FILL VOLUMES			
ITEM	UNITS	TOTAL	EW01
AREA	m ²	28,328	28,328
CUT	m ³	31,143	31,143
FILL	m ³	575	575
FILL + 15% BULK F.	m ³	661	661
CUT/FILL BALANCE	m ³	-30,482	-30,482
EST. CUT EXPORT	TRUCKS	5,081	-
BULK CF VOLUME	m ³	31,718	31,718
MAX CUT DEPTH	m	3.1	3.1
MAX FILL HEIGHT	m	1.3	1.3
TOPSOIL TO STRIP	m ³	0	-
TOPSOIL TO PLACE	m ³	2,066	-
TOPSOIL BALANCE	m ³	2,066	-
TOPSOIL VOLUME	m ³	2,066	-
TOTAL EW VOLUME	m ³	33,785	-
EST. TOPSOIL IMPORT	TRUCKS	345	-

CUT/FILL ANALYSIS NOTES:

A. Ex. Surf is existing ground level

B. Pr. Surf. is to Building, Pavement and Grass Subgrade

NOTES

1. ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERATOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER FOR CLARIFICATION

2. THE CONTRACTOR IS TO PEG INFRASTRUCTURE LOCATIONS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS.

3. UNDERFILL DRAINAGE IS TO BE INSTALLED AT THE DIRECTION OF THE ENGINEER. IF THE CONTRACTOR ENCOUNTERS SPRINGS OR OTHER SOURCES OF WATER, THEY ARE TO NOTIFY THE ENGINEER.

4. EARTHWORKS ARE NOT TO BE EXTENDED INTO ADJOINING SITES UNLESS THE ENGINEER HAS ISSUED SPECIFIC INSTRUCTIONS

5. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND PROTECTING EXISTING SERVICES AND DRAINAGE ON SITE

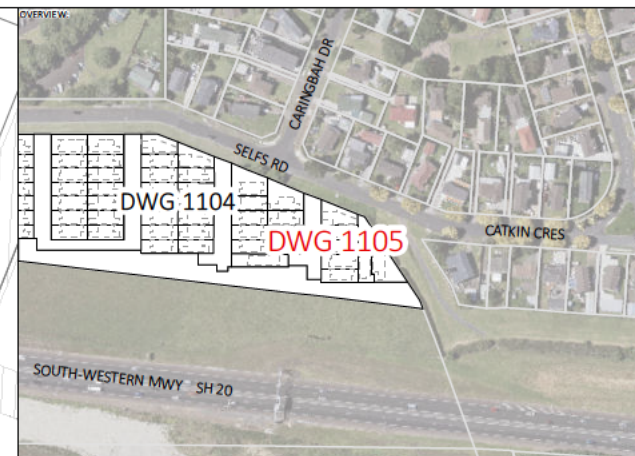
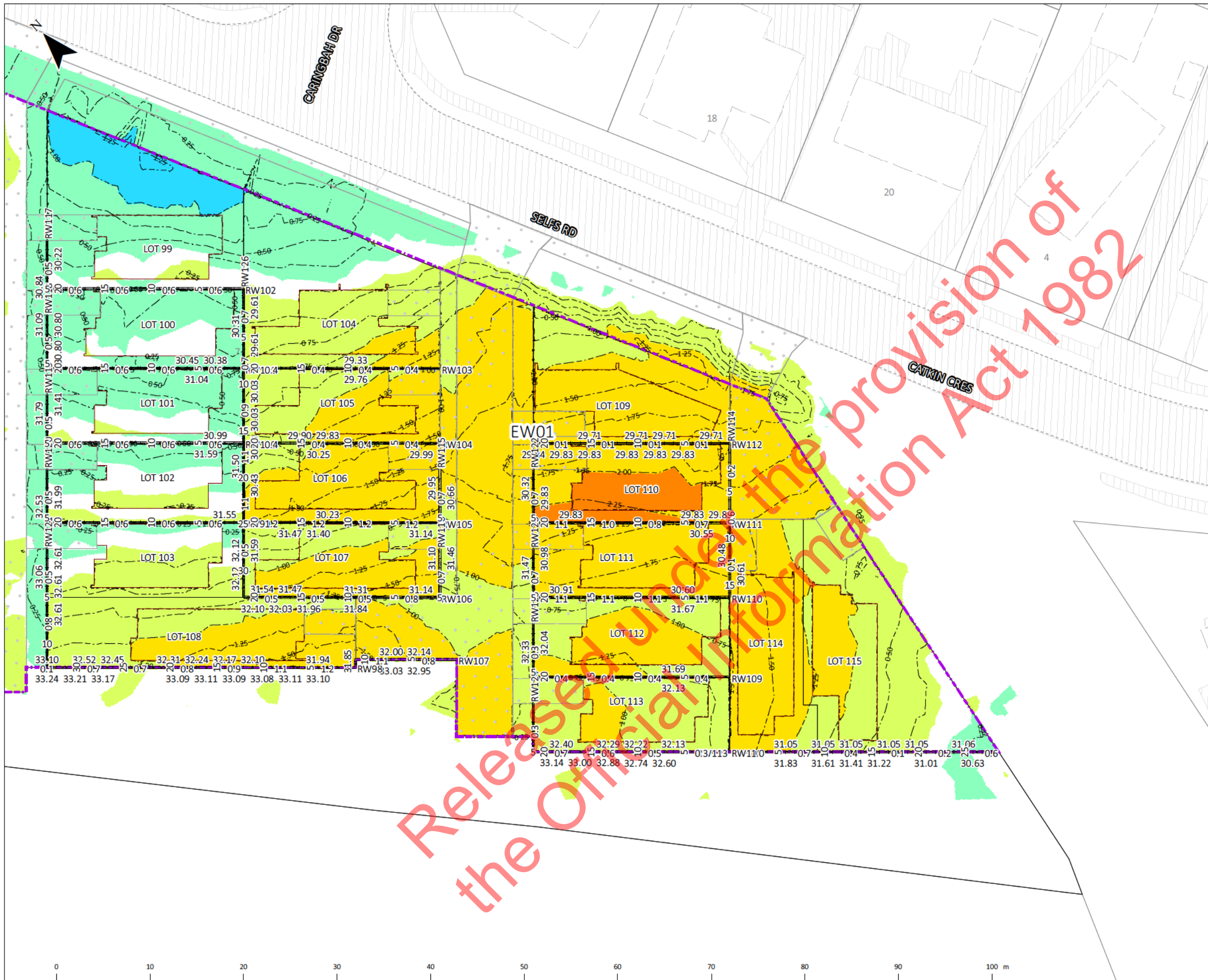
6. THE CONTRACTOR SHALL CLARIFY THE AREAS AND EXTENT OF CLEARING WITH THE ENGINEER BEFORE COMMENCEMENT AND CONFIRM THAT ALL NECESSARY CONSENTS ARE IN PLACE.

7. EARTHWORKS TOLERANCES ARE TO BE +25mm

8. ALL VOLUMES ARE SOLID MEASURE NO BULKING FACTOR APPLIED

9. RETAINING WALL SETOUT - EXACT SETTING OUT POSITION OF RETAINING WALLS IN RELATION TO LOT BOUNDARIES AND BUILDINGS TO BE OBTAINED FROM ARCHITECT OR STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION COMMENCING.

DESIGNED: MO		7 SELFS ROAD, MANGERE	CUT FILL PLANS	STATUS: FOR RESOURCE CONSENT
DRAWN: MO				
RELEASED: SB				
REVISION	AMENDMENT	BY	SCALE & SIZE: 1:400 A3	REV: 25/06/2021



LEGEND:

	RETAINING WALLS W DRAINAGE (H=HEIGHT, C=CHAINAGE, ARROWS SHOW FALL DIRECTION)
	EARTHWORKS SECTIONS
	EX. KERBLINES
	rw top and bottom levels
	EARTHWORKS EXTENT
	PROPOSED PAVEMENTS
	PROPOSED BUILDINGS
	NEW PARCELS
	EXISTING PARCELS

	CUT(-) FILL(+)

CUT FILL VOLUMES

ITEM	UNITS	TOTAL	EW01
AREA	m ²	28,328	28,328
CUT	m ³	31,143	31,143
FILL	m ³	575	575
FILL + 15% BULK F.	m ³	661	661
CUT/FILL BALANCE	m ³	-30,482	-30,482
EST. CUT EXPORT	TRUCKS	5,081	-
BULK CF VOLUME	m ³	31,718	31,718
MAX CUT DEPTH	m	3.1	3.1
MAX FILL HEIGHT	m	1.3	1.3
TOPSOIL TO STRIP	m ³	0	-
TOPSOIL TO PLACE	m ³	2,066	-
TOPSOIL BALANCE	m ³	2,066	-
TOPSOIL VOLUME	m ³	2,066	-
TOTAL EW VOLUME	m ³	33,785	-
EST. TOPSOIL IMPORT	TRUCKS	345	-

CUT/FILL ANALYSIS NOTES:

- A. Ex. Surf. is existing ground level
B. Pr. Surf. is to Building, Pavement and Grass Subgrade

- NOTES
1. ALL WORK TO COMPLY WITH COUNCIL AND PUBLIC NETWORK OPERATOR STANDARDS. ANY AMBIGUITY BETWEEN DRAWINGS AND STANDARDS TO BE REPORTED TO THE ENGINEER FOR CLARIFICATION
 2. THE CONTRACTOR IS TO PEG INFRASTRUCTURE LOCATIONS AND EARTHWORKS LEVELS PRIOR TO ORDERING MATERIALS.
 3. UNDERFILL DRAINAGE IS TO BE INSTALLED AT THE DIRECTION OF THE ENGINEER. IF THE CONTRACTOR ENCOUNTERS SPRINGS OR OTHER SOURCES OF WATER, THEY ARE TO NOTIFY THE ENGINEER.
 4. EARTHWORKS ARE NOT TO BE EXTENDED INTO ADJOINING SITES UNLESS THE ENGINEER HAS ISSUED SPECIFIC INSTRUCTIONS
 5. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND PROTECTING EXISTING SERVICES AND DRAINAGE ON SITE
 6. THE CONTRACTOR SHALL CLARIFY THE AREAS AND EXTENT OF CLEARING WITH THE ENGINEER BEFORE COMMENCEMENT AND CONFIRM THAT ALL NECESSARY CONSENTS ARE IN PLACE.
 7. EARTHWORKS TOLERANCES ARE TO BE +25mm
 8. ALL VOLUMES ARE SOLID MEASURE. NO BULKING FACTOR APPLIED
 9. RETAINING WALL SETOUT - EXACT SETTING OUT POSITION OF RETAINING WALLS IN RELATION TO LOT BOUNDARIES AND BUILDINGS TO BE OBTAINED FROM ARCHITECT OR STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION COMMENCING.

DESIGNED: MO		PROJECT: 7 SELFS ROAD, MANGERE	TITLE: CUT FILL PLANS	STATUS: FOR RESOURCE CONSENT	
DRAWN: MO				DRAWING NO: 1105	
RELEASED: SB				SCALE & SIZE: 1:400 A3	
REVISION	AMENDMENT	BY			REV: 25/06/2021

Appendix B: Nearby geotechnical investigations

Released under the provision of
the Official Information Act 1982



LEGEND
T+T Pre 2011 (TT Sites)
Investigation Type
Hand Auger Borehole Location
Hand Auger
Geotechnics (TT Sites)
Investigation Type
Scala Penetrometer Location
NZGD
Investigation Type
Machine Borehole
1m Contour
5m Contour
Property Boundary

A3 SCALE: 1:2,500

0 25 50 75 100 125 (m)

1. Property Boundary, Street Name, Street Number sourced from the LINZ Data Service and licensed for re-use under the Creative Commons Attribution 3.0 New Zealand licence.

2. World Imagery Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Created On:	08/04/2021	 Tonkin+Taylor 105 Carlton Gore Road, Newmarket, Auckland www.tonkintaylor.co.nz
Created By:	ALangbein	
Approved By:		
TT Proj Ref:	1016494	
TT Map Ref:	TTMAPREF1433463001.902	

FIGURE No.