Preliminary Engineering Report

Scenic Rim Agricultural Industrial Precinct

5103/57-001

Prepared for

Kalfresh Pty Ltd

25 September 2023

Stantec

Contact Information

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Job title: Senior Principal Civil Engineer

Date Approved 25/09/2023

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8	20/01/2022	Update	BW	JOS
9	22/02/2023	Update for Submission	BW	JOS
10	25/09/2023	Update for Submission	BW	JOS

Executive Summary

Kalfresh Pty Ltd has commisioned Stantec (Qld) Pty Ltd (Stantec) to provide preliminary civil engineering advice to support the proposed Scenic Rim Agricultural Industrial Precinct (SRAIP) Development Approval application to create an agricultural industrial precinct at 6200-6206 Cunningham Highway, Kalbar, Scenic Rim. The proposed development is referenced as 'The Scenic Rim Agricultural Industrial Precinct (SRAIP)' and intends to create a formal hub for fresh and frozen food production in an agricultural region 84km south-west of Brisbane.

This report includes recommendations for the civil works required to create a developable land formation for the proposed industrial allotments and road corridors. The civil works proposed to facilitate the development includes bulk earthworks, roadworks, stormwater drainage, stormwater quantity management, stormwater quality management, water reticulation and sewerage infrastructure.

This report also includes preliminary stormwater calculations in relation to the composting facilities to the west of the main industrial development.

The preliminary engineering recommendations and design considerations documented by Stantec are summarised in this report.

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1 Introduction

Kalfresh Pty Ltd has commissioned the services of Stantec (Qld) Pty Ltd to prepare preliminary engineering advice to support the Development Approval application for the proposed Scenic Rim Agricultural Industrial Precinct (SRAIP) at 6200-6206 Cunningham Highway, Kalbar, 4 km west of Kalbar, and 84km south-west of Brisbane. This engineering review has been completed based upon the relevant Scenic Rim Regional Council Planning Scheme Policies and the RPS Plan Ref No. 142489-06T included within **Appendix A**.

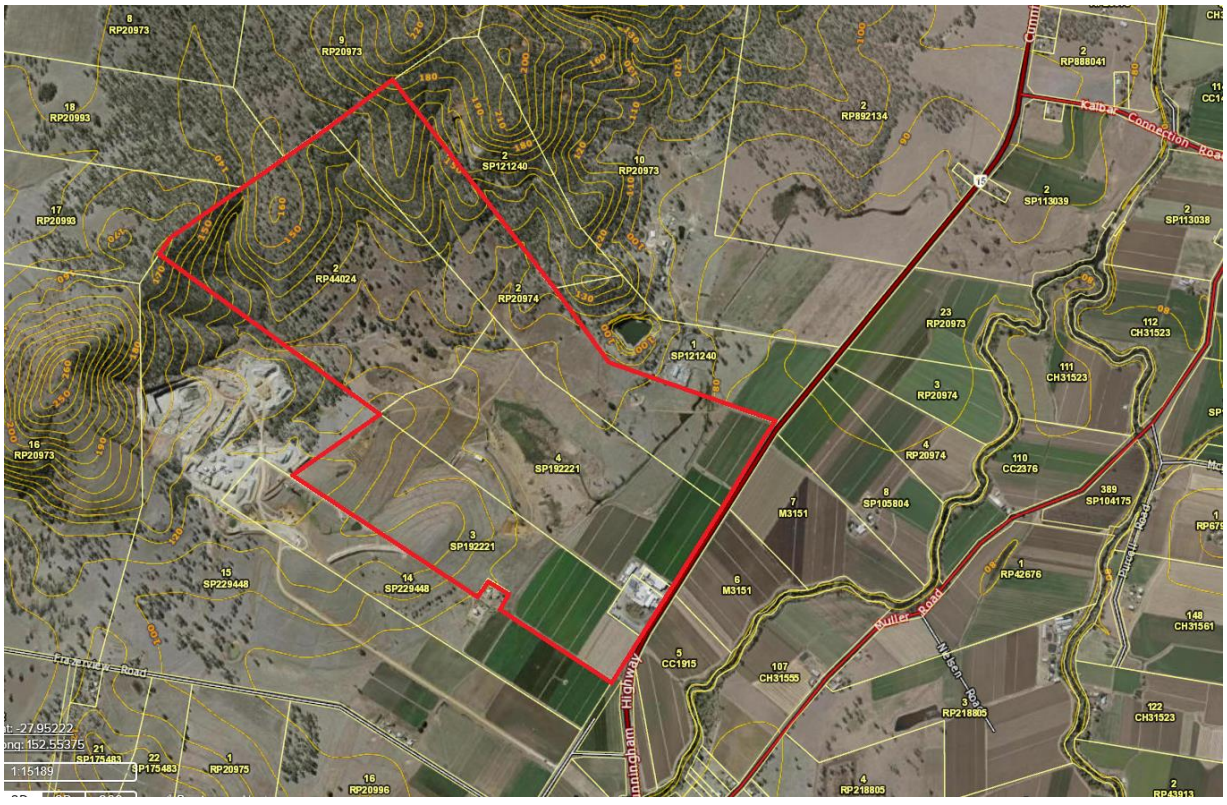
Kalfresh Pty Ltd proposes to create a fully integrated agricultural processing precinct (the SRAIP) at the existing Kalbar operating base. The SRAIP proposal provides approximately 40 hectares of developable land for rural industrial infrastructure primarily for the packing and production of high value secondary produce and the ancillary services and infrastructure required to operate such a precinct. The existing Kalfresh operations will remain on the site and be expanded to meet market demand.

It is proposed to reconfigure six existing allotments located at 6200-6206 Cunningham Highway, including:

- Lot 2 on SP192221;
- Lot 3 on SP192221;
- Lot 4 on SP192221;
- Lot 2 on RP 20974;
- Lot 1 on RP216694; and
- Lot 2 on RP44024.

The six existing allotments subject to this Development Approval application encompass a total site area of approximately 250 ha. The subject allotments are bounded by the Cunningham Highway to the east, agricultural lands to the north and south, and a quarry to the west. Figure 1-1 indicates the locality of the subject allotments.

Figure 1-1 Site Location



The proposed development area topography is relatively flat with a gradual fall towards the northern boundary at a grade of circa 1:300 (0.33%). The maximum ground elevation is 84.0m AHD at the southern boundary whilst the minimum ground elevation is 81.0m AHD at the northern boundary. There is an existing overland flow path running along the western extents of the proposed development area which will be reconfigured to cater for the 1% AEP flood event as part of the proposed works. The land towards the rear of the property, outside of the development footprint and on the opposite side of the overland flow path, rises sharply towards the western boundary.

Figure 1-2 below provides an overview of the proposed development area.

Figure 1-2 Development Site Area

2 Civil Works

2.1 Clearing & Site Preparation

The site development area currently consists of agricultural cropping land and the existing Kalfresh production facilities. The development of this site necessitates that the area is cleared completely of any existing vegetation including the removal of any unsuitable material identified prior to the commencement of bulk earthworks and civil works construction.

It is recommended that the early establishment of erosion and sediment control measures is carried out in conjunction with the commencement of clearing works in order to prevent the discharge of soils from the site and protect existing downstream infrastructure.

2.2 Earthworks

Bulk earthworks will be completed across the subject site to create a developable land formation in accordance with Stantec sketch 510357-001-CI-1010. This earthwork operation will include the stripping/ stockpiling of topsoil and reshaping of land to generally achieve the proposed site levels across the development. In addition, Stantec have prepared a bulk earthworks engineering set of drawings which are also included in this application.

Based upon Stantec's experience within the Scenic Rim region and surrounding areas, coupled with the elevated site levels, it has been assumed that the site is devoid of acid sulphate soils and contaminated land.

The preliminary earthworks design comprises of filling the site above the 1% AEP flood level (plus climate change allowance) with an additional 300mm freeboard provided. This will require additional material which is proposed to be obtained from the deepening of the flood diversion channel and from within on-site borrow pits. Hence, the haulage distance of fill material will be limited to within the existing allotment boundaries and haulage of material from outside the subject site will be minimal.

The earthworks design based upon the proposed development layout indicates that the earthworks operation will comprise approximately 489,000m^3 cut to fill onsite and 217,000m^3 of additional fill required which will be obtained from borrow pits within the subject site (locations indicated on drawing 510357-001-CI-1010).

The proposed earthworks profile has been created with the intent to minimize the amount of fill whilst ensuring the development can be appropriately serviced by a stormwater drainage network and also be resilient to the 1% AEP flood event.

All earthworks on the site will be carried out in accordance with Level 1 supervision and testing requirements, with any existing dams and/or unsound materials being removed and replaced under Level 1 supervision.

It is also recommended that prior to the de-commissioning of all sediment basins, all collected silt and unsuitable material should be removed from the site and the basin area rehabilitated using a high quality of fill material in order to ensure long-term stability to this area of the site.

The Stantec sketch 510357-001-CI-1010 included in **Appendix B** of this replot illustrates the proposed cut and fill zones.

2.3 Erosion & Sediment Control

In accordance with IECA Best Practise Guidelines and Scenic Rim Council standards, it is proposed that in conjunction with the Operational Works Application phase of development a detailed Soil Erosion and Sediment Control Plan will be prepared in order to address the specific measures to be implemented manage erosion onsite and limit sediment discharge offsite. During the construction phase, the Contractor is to have a certified erosion and sediment control plan on site at all times.

General measures to be implemented during the construction phase in order to prevent the erosion of sediment from the site are as follows:

- Contractor to achieve temporary, interim or permanent ground cover to disturbed earthworks areas as soon as practicable;
- Sediment filter fencing is to be located at the downstream end of all open earthworks to remove sediment from overland flow prior to discharging off site;
- Truck shake down areas shall be provided to remove any loose materials from vehicles prior to departure from the site;

- All sediment control structures must be maintained in an effective operational condition. These structures must not be allowed to accumulate sediment volumes in excess of forty percent of the sediment storage design capacity;
- If topsoil will be stripped and stockpiled, perimeter silt fences are to be installed around the stockpile areas to prevent the material discharging from the site;
- All sediment control structures are to be supplied and installed in accordance with Scenic Rim Regional Council planning scheme policies and IECA Best Practice Guidelines; and
- A sediment pond is to be constructed to suit the construction site profile and sized appropriately to capture the require volume of sediment laden runoff.

2.4 Roadworks

An internal road network will be created in order to provide access to each of the proposed industrial allotments and access and egress from the overall development. There are two proposed road profiles within the development, including:

- Road 1: consists of a 30.3m wide road reserve with an 14m carriageway which consists of 3.5m traffic lane and 3.5m parking bays.
- Road 2: consists of a 40m wide road reserve with 2 x 8m wide carriageways on either side of a 15m wide grass swale. The introduction of the grass swale between the 7m carriageways will used to capture major stormwater flows from the adjoining road and lots. The 8.0m carriageways consist of a 3.5m traffic lane, a 3.5m parking bay and a 1m shoulder adjacent the swale batter. 4.5m wide verges with 1.5m wide pathways are provided on each side.

These sections reflect a modified version of an 'Industrial Collector Street' profile as shown in Figure 9.7.A of IMEAQ Queensland Streets.

The main collector street traverses the centre of the site with a cul-de-sac provided at the south-west of the alignment to facilitate turning movements. This layout provides access to each lot whilst ensuring sufficient manoeuvrability for Class 10 (B-double) trucks within the industrial estate.

Provision for a future road connection towards the north-west of the site has also been facilitated within the layout. The proposed road will traverse the waterway channel via a weir structure. The design intention of the weir is to (a) allow safe crossing of the overland flow channel by vehicles accessing the north-west of the subject site, and (b) act as a flood mitigation device which restricts regional flows within the channel below the 10% AEP level. The weir will be constructed with 2 x 2400(W) x 300(H) RCBC culverts. These will be set at the IL of the waterway diversion channel to allow low flows within the channel to free-drain. A section of the weir is provided on Stantec sketch 510357-001-CI-1300.

Access to the development will be provided by a new intersection onto the Cunningham Highway located circa 460 m to the north-east of the existing access point. The intersection layout and geometry will be designed to TMR standards and will accommodate Class 10 (B-double) vehicles. A right-turning lane will be provided on the Cunningham Highway for vehicles entering the site. Within the site, no direct lot access will be permitted within 50 metres of the new Cunningham Highway intersection.

The 3 No. existing access points on to the Cunningham Highway currently utilised by Kalfresh will be decommissioned. The proposed access arrangement will provide significant road safety benefits to the surrounding road network.

2.5 Stormwater Quantity Management

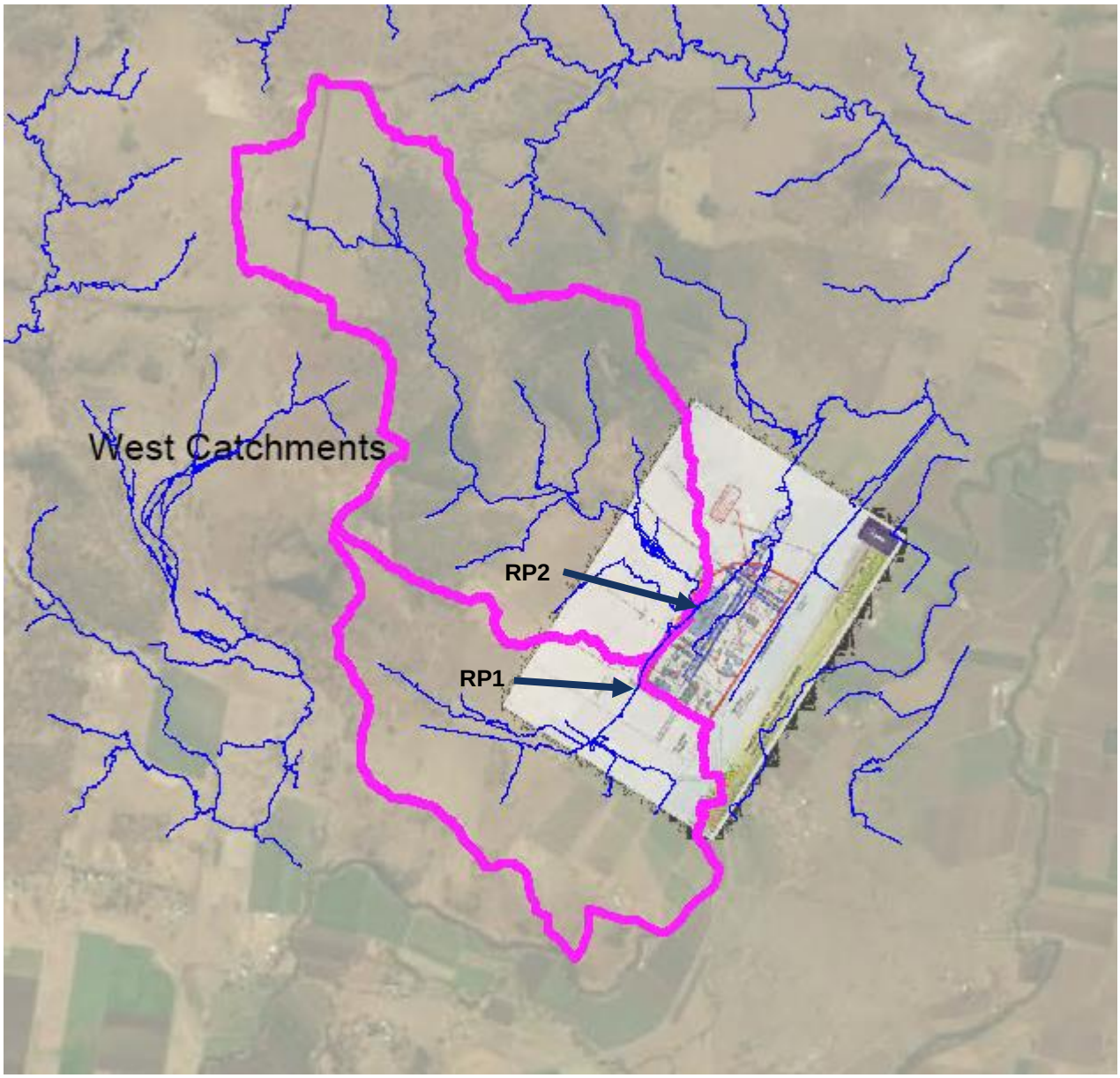
The stormwater quantity management strategies and outcomes for the proposed development are outlined by the Scenic Rim Agricultural Industrial Precinct Integrated Water Management Plan prepared by Stantec, and included in the submission under separate cover.

The objective of the stormwater management plan is to ensure that the effect of delivering the proposed development achieves a no worsening of post-development runoff compared to the runoff experience pre-development.

It has been identified that the subject site is located at the confluence of 2 No. existing stormwater catchments denoted RP1 & RP2 illustrated in Figure 2-1 below. Under existing conditions RP1 and RP2 are diverted around the existing Kalfresh facilities before discharging to Warrill Creek to the north east of the site via a series of local watercourses.

In order to achieve no worsening of stormwater discharge it is proposed that stormwater detention basins will be provided at the low point of each developed catchment to restrict runoff prior to outfall. The Integrated Water Management Plan outlines that the proposed strategy to achieve no-worsening of pre-development runoff is to detain the runoff generated from the developed site in the proposed flood conveyance channel running along the western boundary of the development pad. This conveyance channel will act as a detention basin and has largely been split into two sub-basins. These basin areas have been sized such that overall post-development peak flows discharging from the site are limited to or are less than the pre-development flows. Please refer to Section 4.1.3 of the Integrated Water Management Plan report for additional details on the proposed stormwater quantity (detention) management strategy.

Figure 2-1 Pre-Development Catchment Layout



All stormwater runoff within the site catchment shall be captured and directed into the stormwater detention basins via a mix of conventional piped network and open channel (grass swale) drainage infrastructure where the basins shall be constructed in accordance with the findings of the Integrated Water Management Plan.

The open channel or 'central road swale' has been sized to cater for peak flows from the 1 in 100 year ARI (with climate change factor allowed). The maximum water depth in the swale is 1.109m in the 1 in 10 year ARI and 1.479m in the 1 in 100 year ARI event.

The findings of the stormwater management plan recommend that the detention basins are constructed in accordance with the parameters outlined below:

Table 2-1 Proposed Detention Basin Properties

Parameter	Upstream Basin	Downstream Basin
Basin base area	285 m2 at 80.3m AHD	490 m^2 at 80m AHD
Basin top area	69,440 m^2 at 81.3m AHD	63,192 m^2 at 80.8m AHD
Basin height	1.3m	0.8m
Total Volume at top of basin	18,324 m^3	17,250 m^3
Low flow outlet	2 x 2.4m x 0.3m box culverts	2 x 0.9m x 0.3m box culverts
High flow outlet	Access road at 81.3m AHD, acting as a weir	Northern bund at 80.8m AHD, acting as a weir

The low flow outlets (RCBC's) and high-level spillway (weir) shall be provided as per the details above. The low flow outlet will be set at the base of each detention basin allowing each basin to empty completely following a storm event. To ensure compliance with the Water Plan (Moreton) 2007 all basins will discharge down completely with no retention storage provided.

The conceptual stormwater drainage layout which includes the developed catchment areas has been provided for information only and is illustrated in Stantec sketch 510357-001-CI-1300 included in **Appendix B** of this report. The conceptual stormwater drainage layout also includes and shows the water quality outlets coordinates and legal point of discharge.

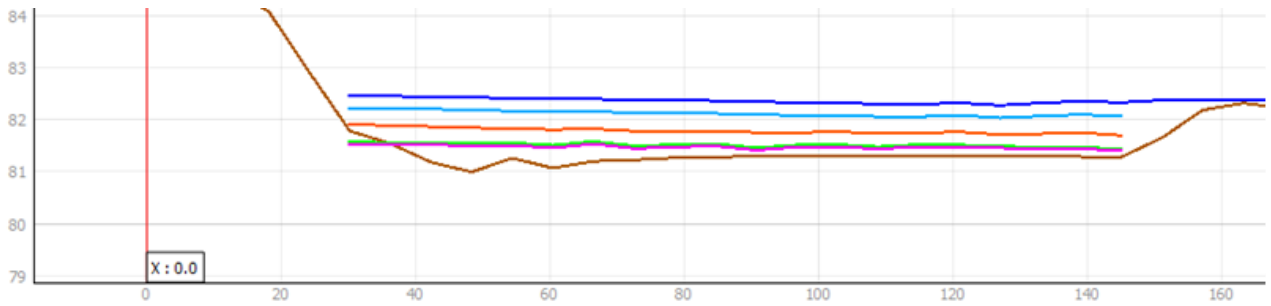
2.5.2 Weir Crossing Flood Characteristics

The flood events have also been modelled to simulate the flood heigh and velocity over the proposed stormwater weir crossing (Upstream Basin outlet) which provides road access to the north-west areas of the site. The summary of these results can be seen in Table 2-3 below. Additionally, the flood height can be seen below in figure 2-2 on a sample profile below for each of the respective storm events.

Table 2-2 Flood Event Heights and DV over Weir

Event	Flood Height (mAHD) Mean	DV (mean) m^2/s
100yCC	82.332	2.76
100Y	82.081	2.03
50Y	81.731	1.094
20Y	81.439	0.236
10Y	81.400	0.148

Figure 2-2 Sample Profile of Flow Heights over Weir



As shown, the weir overtops by 148mm during the 1 in 10 year ARI with a DV (depth velocity product) of 0.148. As per QUDM Table 7.4.3, a DV <0.3 m^2/s is considered safe to traverse. The depth of overtopping (and associated DV) in events exceeding a 1 in 20 ARI are **not** considered trafficable.

2.6 Stormwater Quality Management

The stormwater quality management strategies and outcomes for the proposed development are outlined by the Scenic Rim Agricultural Industrial Precinct Integrated Water Management Plan, included under Appendix L of the submission.

A stormwater management strategy has been prepared outlining the water treatment measures required to be implemented in order to treat stormwater runoff from the development and achieve the stormwater quality objectives required by State and Council Planning Policies.

The proposed stormwater management strategy comprises the construction of bio-retention systems to treat stormwater runoff so that the overall pollutant load reduction meets the individual pollutant load reduction target. Each allotment will be treated on an individual basis via a bio-retention system installed prior to the discharge point of each lot. The use of proprietary stormwater quality systems may also be utilised in lieu of a bio-basin subject to planning approval.

MUSIC modelling has been completed for the internal road network in order to verify that the proposed treatment trains and bio-retention basin parameters will achieve the required water quality objectives. Table 2-2 below outlined the proposed bio-retention basin properties.

Table 2-3 Proposed Bio-Retention Basin Properties

Parameter	Bio-retention Basin
Extended Detention Depth (m)	0.2
Saturated Hydraulic Conductivity (mm/hr)	200
Filter Depth (m)	0.4
Filter Area (m^2)	varies, refer Table 12 of Stantec IWMP Plan
TN Content of Filter Media (mg/kg)	400
Orthophosphate Content of Filter Media (mg/kg)	30
Total Filter Area Required	6,798 m^2

Further details of the MUSIC model are provided in the Integrated Water Management Plan report.

2.7 Sewerage Reticulation

The proposed development will operate self-sufficiently in relation to sewerage reticulation, treatment and disposal. Therefore, no agreement or planning approval will be sought from Queensland Urban Utilities.

An internal sewerage network is to be constructed from NuSewer (PE) in accordance with the provisions of the SEQ Code. Where possible all allotments within the development have been graded such that they may be serviced by sewer located within the road reserve at the front of the allotments. A pressurized vacuum sewerage system may be installed should the depth of a gravity sewerage system become un-viable.

It is proposed the wastewater flows generated within the proposed development will be discharged to the on-site wastewater treatment plant (WWTP). Details of the on-site wastewater treatment plant are provided in Precise Environmental's 'Onsite Wastewater Management Report' which is included in this application under separate cover. The storage capacity of the WWTP is 200 kL, which has been sized using the Peak Wet Weather Flow (PWWF = 5 x ADWF = 5 x 40 kL = 200 kL).

The WWTP has been designed to treat sewerage to a Class B standard as per Queensland Water Recycling Guidelines (EPA 2005) and the Public Health Regulation 2005 (QLD). Treated sewerage will then be piped to the proposed irrigation area to the north-west of the industrial precinct.

The development will have a maximum of 800 staff working for the industry supplying and distributing vegetables. Sewerage generation estimates were based on the 'AS/NZS 1547:2000 Appendix 4.2D Typical Domestic Wastewater Flow Design Allowances (Rural Factories). This reference states that the maximum sewage generation rate is 50 L/d per staff member. Based on maximum rate, the average dry weather flow (ADWF) is 50 x 800 = 40,000 L/d = 0.46 L/s.

The conceptual sewer reticulation layout has been provided for information only and is illustrated in Stantec sketch 510357-001-CI-SK103 included in **Appendix D**. The conceptual sewer reticulation also includes the indicative wastewater treatment plant location in addition to the proposed irrigation area.

2.8 Water Reticulation

It is proposed that the development will be serviced by two watermains, consisting of:

- A conventional potable pressure water reticulation system treated to drinking standard; and
- A recycled watermain network for industrial and/or processing uses.

It is proposed that the internal water reticulation will be supplied by existing bores on the site. Kalfresh are currently in discussions with Department of Natural Resources, Mines and Energy in relation to securing alternative high priority water sources. Stantec understands that a high priority water license has been obtained by Kalfresh from SEQ Water for an allocation from the Warrill Creek. It is proposed that water from the Warril Creek will be pumped to a water storage dam on site before being treated and reticulated internally

Ultimately, it is intended that the proposed development will operate self-sufficiently in relation to potable water. Therefore, no agreement or planning approval will be sought from Queensland Urban Utilities.

The conceptual water reticulation layout has been provided for information only and is illustrated in Stantec sketch 510309-002-CI-SK100-102 included in **Appendix D**. The conceptual water reticulation also includes the indicative location of the water treatment plant in addition to the alignment from the site to the water intake point at the Warrill Creek. The sketches also show the proposed alignment of the raw water from the internal bored and the Warrile Creek, treated water and recycled water mains.

2.9 Composting Pad

Stantec have undertaken preliminary stormwater calculations in order to size the leachate ponds and stormwater basins required to capture runoff from the compost pads.

An overview of the concept stage stormwater functional layout plan for the compost pad area is provided in **Appendix C of this report .** The composting pad area will be bunded to divert overland flows from outside the pad around the perimeter.

3 Conclusion

From the investigations carried out it is considered that this site can be serviced by the proposed internal infrastructure and that the site may be suitably engineered in accordance with the relevant Scenic Rim Regional Council and Queensland State Government Planning Scheme policies, standards and guidelines to achieve the proposed development detailed by the RPS Plan of Subdivision.

Stantec therefore consider that the site is suitable for development in accordance with the proposed Development Approval application.

APPENDIX

A

PLAN OF SRAIP

Yield Breakdown	
Industry Allotments	**Overall**
4000m² -1HA	3
1HA- 2.99HA	10
3HA +	2
Digester and Energy Site	1
Total Industry Allotments	**16**
Infrastructure	
Private Infrastructure Lot	1
Total Infrastructure Allotments	**1**
Rural Allotments	
Lot 18	1
Lot 19	1
Lot 20	1
Total Rural Allotments	**3**
Total Allotments	**20**

Land Budget		
	Overall	
	Area	**%**
Overall Area	**145.216 ha**	**100.0%**
Saleable Area		
Industry Allotments	**29.756 ha**	**20.5%**
Rural Allotments	**104.224 ha**	**71.8%**
Digester and Energy Site	**5.120 ha**	**3.5%**
Road		
Private Road	**3.849 ha**	**2.7%**
Wagners Access Track (Part Lot 70)	**0.820 ha**	**0.6%**
Common Property		
Stormwater Infrastructure	**0.382 ha**	**0.3%**
Utilities	**0.098 ha**	**0.1%**
Cunningham Highway Frontage	**0.267 ha**	**0.2%**
Infrastucture		
Sewer Treatment Plant, Water Treatment and Fire Fighting	**0.700 ha**	**0.5%**
Overland Flow (Part of Rural Lot 18)	***12.037 ha***	
Overland Flow (Part of Rural Lot 20)	***7.101 ha***	

0 10 20 40 60 80 1 : 2,500 @ A1

KALFRESH
SCENIC RIM AGRICULTURAL INDUSTRIAL PRECINCT
6206 CUNNINGHAM HWY, KALBAR 4309 QLD

SRAIP CONCEPT LAYOUT PLAN

PLAN REF: 142489 – 05
Rev No: AC
DATE: 23 FEBRUARY 2023
CLIENT: KALFRESH
DRAWN BY: NV
CHECKED BY: JC / PHE

Legend
- Site Boundary
- Existing Contours (1 metre)
- Existing Boundaries
- Existing Easement
- Proposed Stormwater Infrastructure (Common Property)
- Proposed Overland Flow (Easements, Part of Lot 18 and Lot 20)
- Proposed Cunningham Highway Frontage Common Property (3 metres wide)
- Proposed Utilities Common Property (4 metres wide)
- Proposed Bio Basin
- Proposed Water Storage Dam
- Proposed Effluent Irrigation
- Proposed Composting Lot
- Lechate Pond
- Proposed Formalised Vehicular Access
- Proposed Plant & Equipment
- Proposed Windrow & Finished Product
- Proposed Stormwater Basin
- Proposed Wagner Quarry Access - *(not part of the SRAIP proposal and subject to separate development approval)*
- Significant Vegetation Area
- Existing Vehicular Access to Composting Area
- Access Easement for Wagners Road Alignment
- Access Easement to Lot 19 (Composter) within Lot 11 (Digester)
- Swale
- Volumetric Lot - Lot 80 (1 metre below ground surface)

Note:
All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Source Information:
Site boundaries: DCDB
Adjoining information: DCDB.
Contours: RPS Survey.
Aerial photography: RPS Survey.
Overland Flow Path: Aurecon.

URBAN DESIGN
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520 Wickham Street
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W rpsgroup.com

APPENDIX B

PRELIM ENGINEERING SKETCHES

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KALFRESH PTY LTD

SCENIC RIM AGRICULTURAL INDUSTRIAL PRECINCT

DATE PLOTTED: 21 February 2023 3:51 PM BY : PAULO ZOTTIS
CAD File: \\Ausflcfs02\data\5103-57\001 - CIVIL ENGINEERING\Drawings\510357-001-CI-1000.dwg

Stantec

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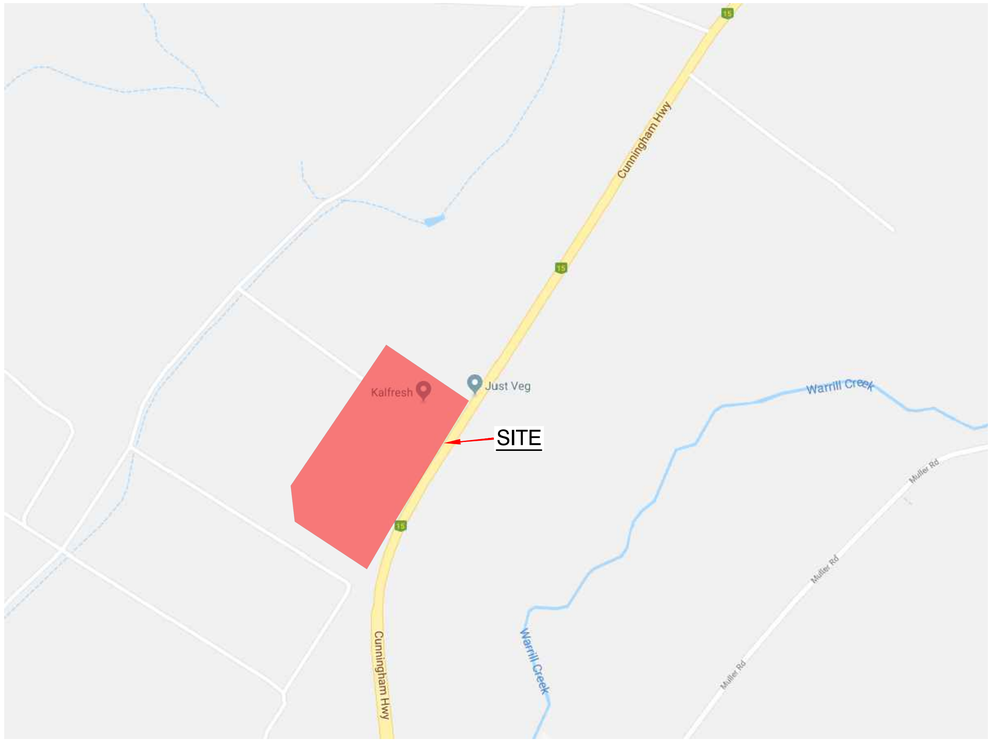
SCHEDULE OF DRAWINGS

DRAWING No.	DESCRIPTION
510357-001-CI-1000	COVER SHEET
GENERAL	
510357-001-CI-1001	DRAWING SCHEDULE AND LOCALITY PLAN
510357-001-CI-1010	BULK EARTHWORKS LAYOUT PLAN
510357-001-CI-1011	ROAD TYPICAL CROSS SECTIONS
510357-001-CI-1015	BULK EARTHWORKS SECTIONS SHEET 1
510357-001-CI-1016	BULK EARTHWORKS SECTIONS SHEET 2
ROADWORKS	
510357-001-CI-1100	MC01 LONGITUDINAL SECTION
510357-001-CI-1101	MC02 LONGITUDINAL SECTION - SHEET 01
510357-001-CI-1102	MC02 LONGITUDINAL SECTION - SHEET 02
STORMWATER DRAINAGE	
510357-001-CI-1300	STORMWATER LAYOUT PLAN
SEWER RETICULATION	
510357-001-CI-1500	SEWER RETICULATION LAYOUT PLAN
WATER RETICULATION	
510357-001-CI-1600	WATER RETICULATION LAYOUT PLAN



LOCALITY PLAN
NOT TO SCALE

Stantec
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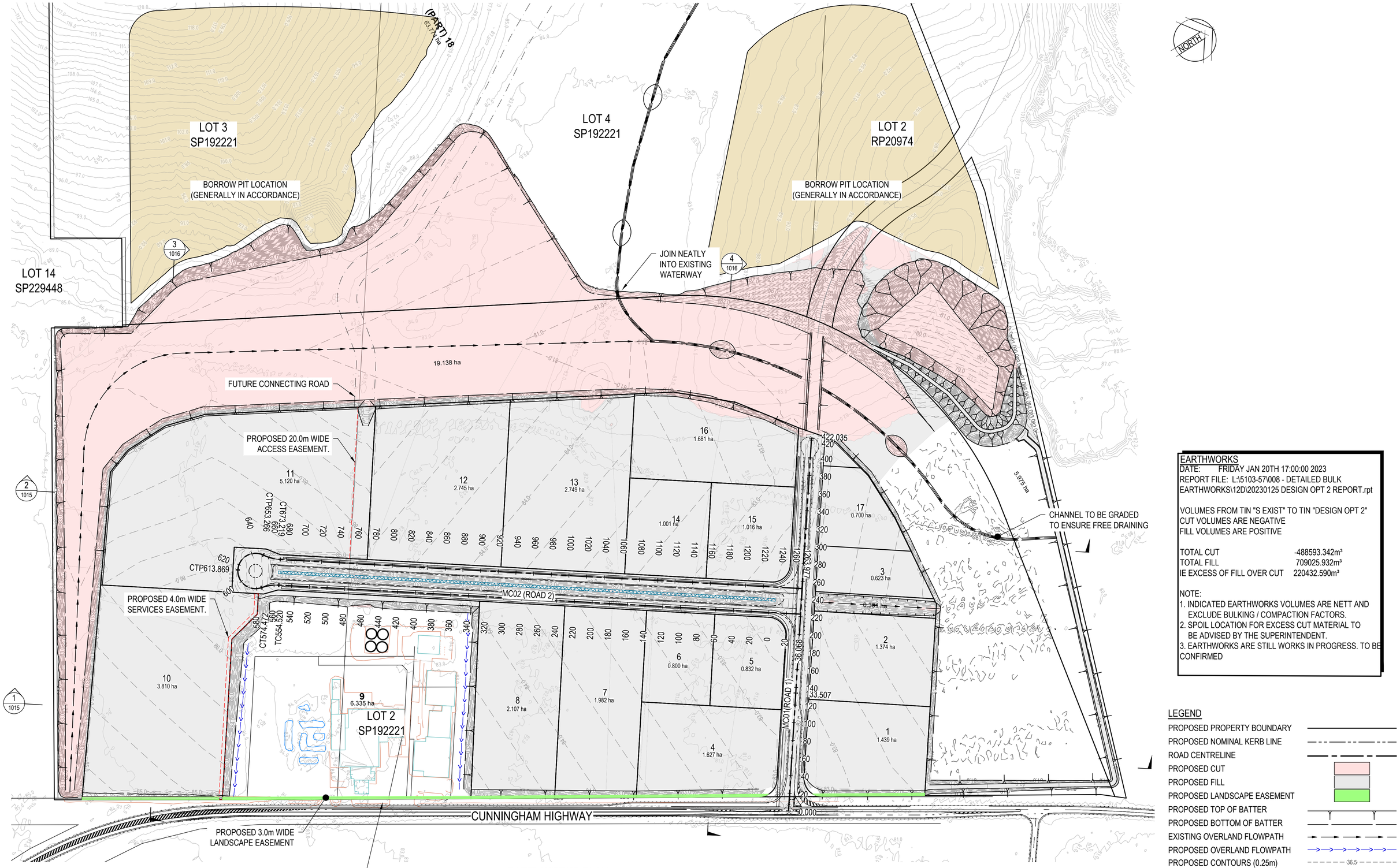
KALFRESH PTY LTD

DRAWING SCHEDULE AND LOCALITY PLAN

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-1001	3



EARTHWORKS PLAN
SCALE 1:2000

EARTHWORKS
DATE: FRIDAY JAN 20TH 17:00:00 2023
REPORT FILE: L:\5103-57\008 - DETAILED BULK EARTHWORKS\12D\20230125 DESIGN OPT 2 REPORT.rpt

VOLUMES FROM TIN "S EXIST" TO TIN "DESIGN OPT 2"
CUT VOLUMES ARE NEGATIVE
FILL VOLUMES ARE POSITIVE

TOTAL CUT	-488593.342m³
TOTAL FILL	709025.932m³
IE EXCESS OF FILL OVER CUT	220432.590m³

NOTE:
1. INDICATED EARTHWORKS VOLUMES ARE NETT AND EXCLUDE BULKING / COMPACTION FACTORS.
2. SPOIL LOCATION FOR EXCESS CUT MATERIAL TO BE ADVISED BY THE SUPERINTENDENT.
3. EARTHWORKS ARE STILL WORKS IN PROGRESS. TO BE CONFIRMED

LEGEND
- PROPOSED PROPERTY BOUNDARY
- PROPOSED NOMINAL KERB LINE
- ROAD CENTRELINE
- PROPOSED CUT
- PROPOSED FILL
- PROPOSED LANDSCAPE EASEMENT
- PROPOSED TOP OF BATTER
- PROPOSED BOTTOM OF BATTER
- EXISTING OVERLAND FLOWPATH
- PROPOSED OVERLAND FLOWPATH
- PROPOSED CONTOURS (0.25m) 36.5
- EXISTING CONTOURS (0.5m) 36.5

0 50 100 150 200m
SCALE 1:2000 @A1

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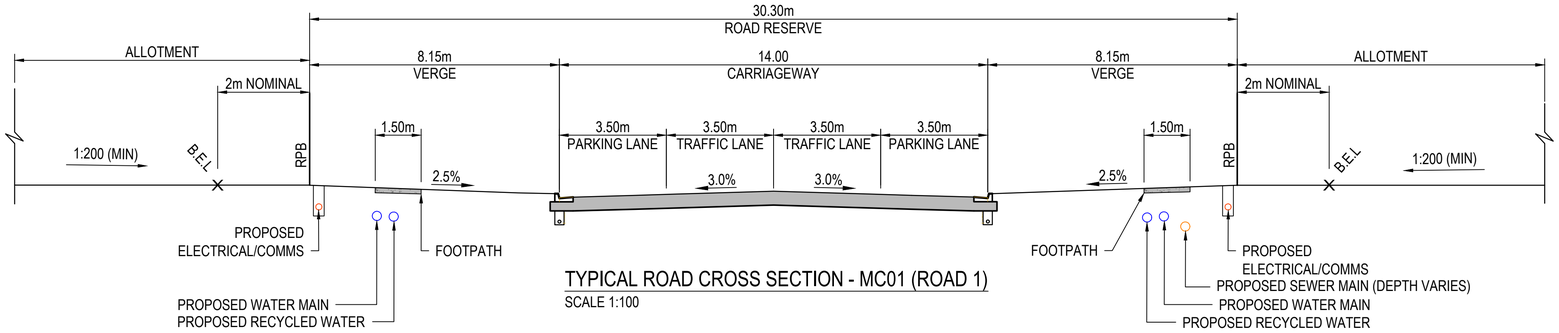
BULK EARTHWORKS LAYOUT PLAN

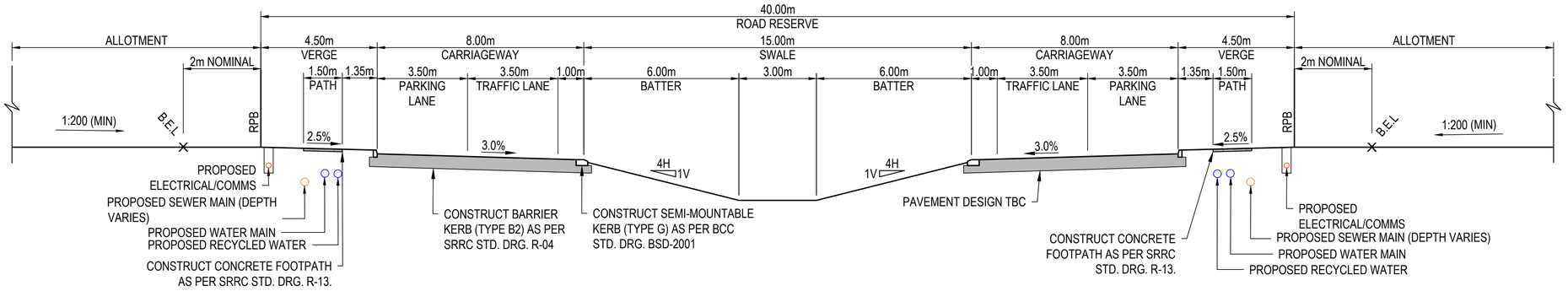
Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number: 510357-001-CI-1010
Revision: 4



TYPICAL ROAD CROSS SECTION - MC01 (ROAD 1)

SCALE 1:100



TYPICAL ROAD CROSS SECTION - MC02 (ROAD 2)

SCALE 1:100

0 1 2 4 6 8 10m

SCALE 1:100 @A1

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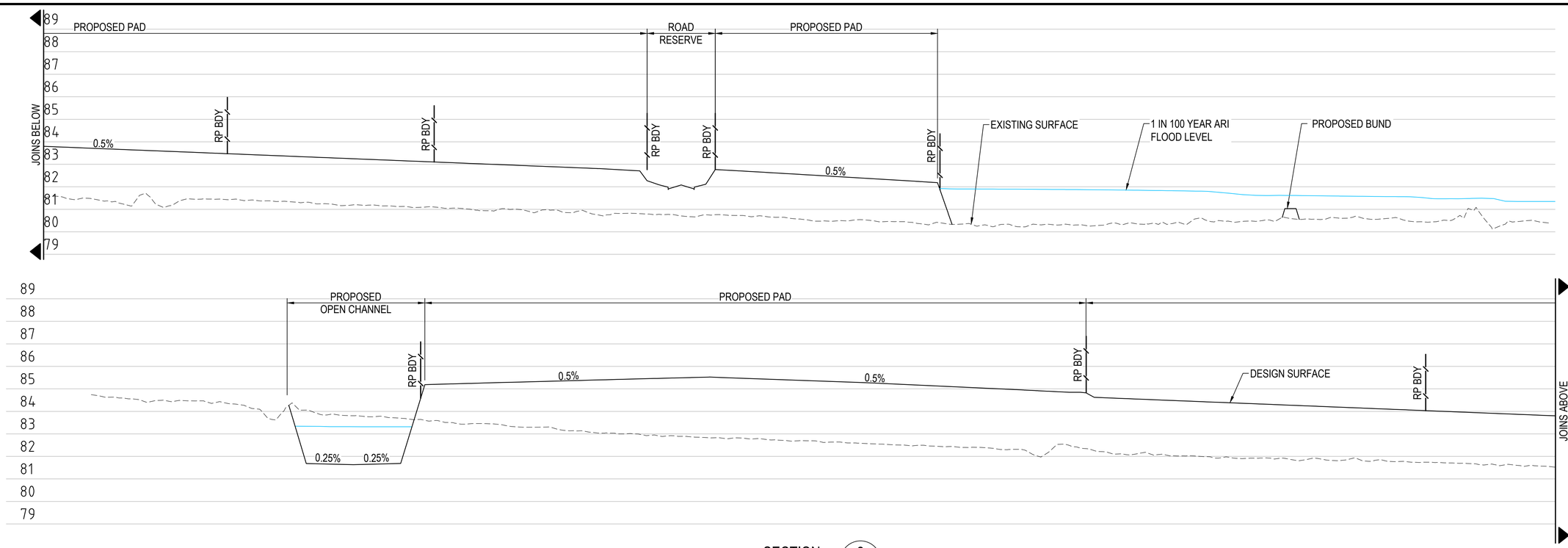
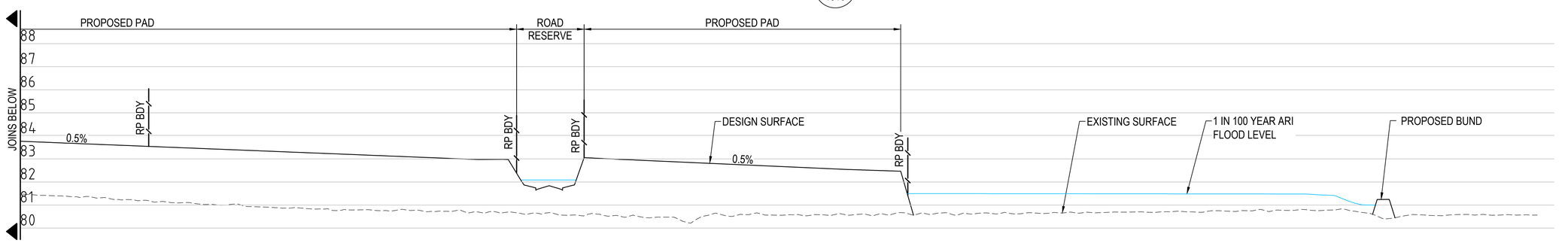
ROAD TYPICAL CROSS SECTIONS

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-1011	4



SECTION 2 / 1010



SECTION 1 / 1010

0 1 2 4 6 8 10m
SCALE 1:100 VERTICAL

0 20 40 60 80 100m
SCALE 1:1000 HORIZONTAL

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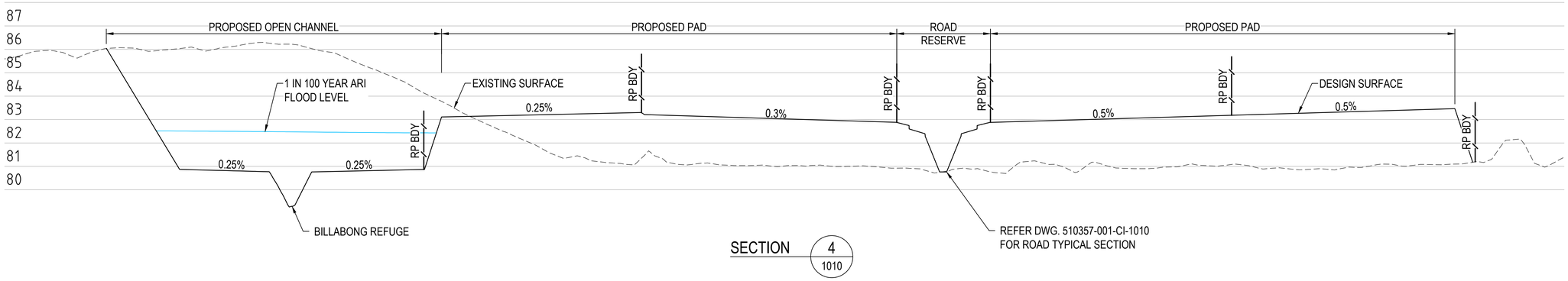
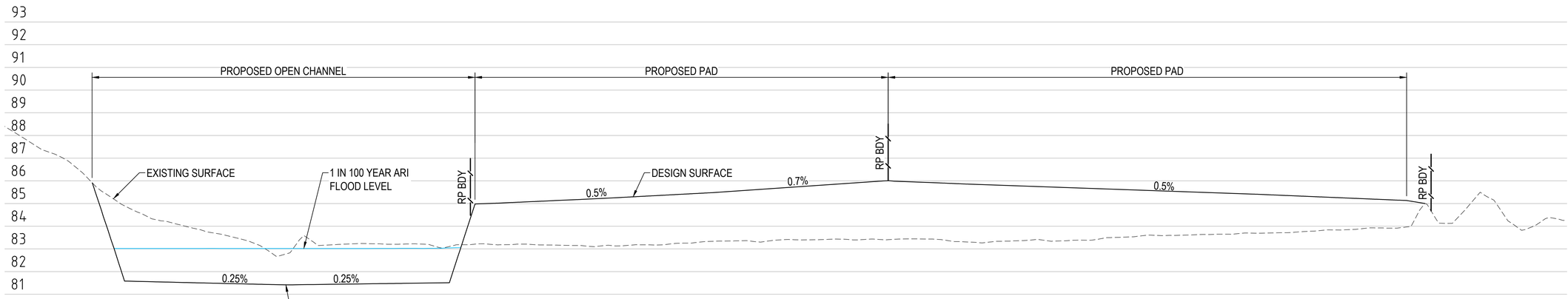
BULK EARTHWORKS SECTIONS
SHEET 1

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-1015	4



SECTION 4 / 1010



SECTION 3 / 1010

0 1 2 4 6 8 10m
SCALE 1:100 VERTICAL

0 20 40 60 80 100m
SCALE 1:1000 HORIZONTAL

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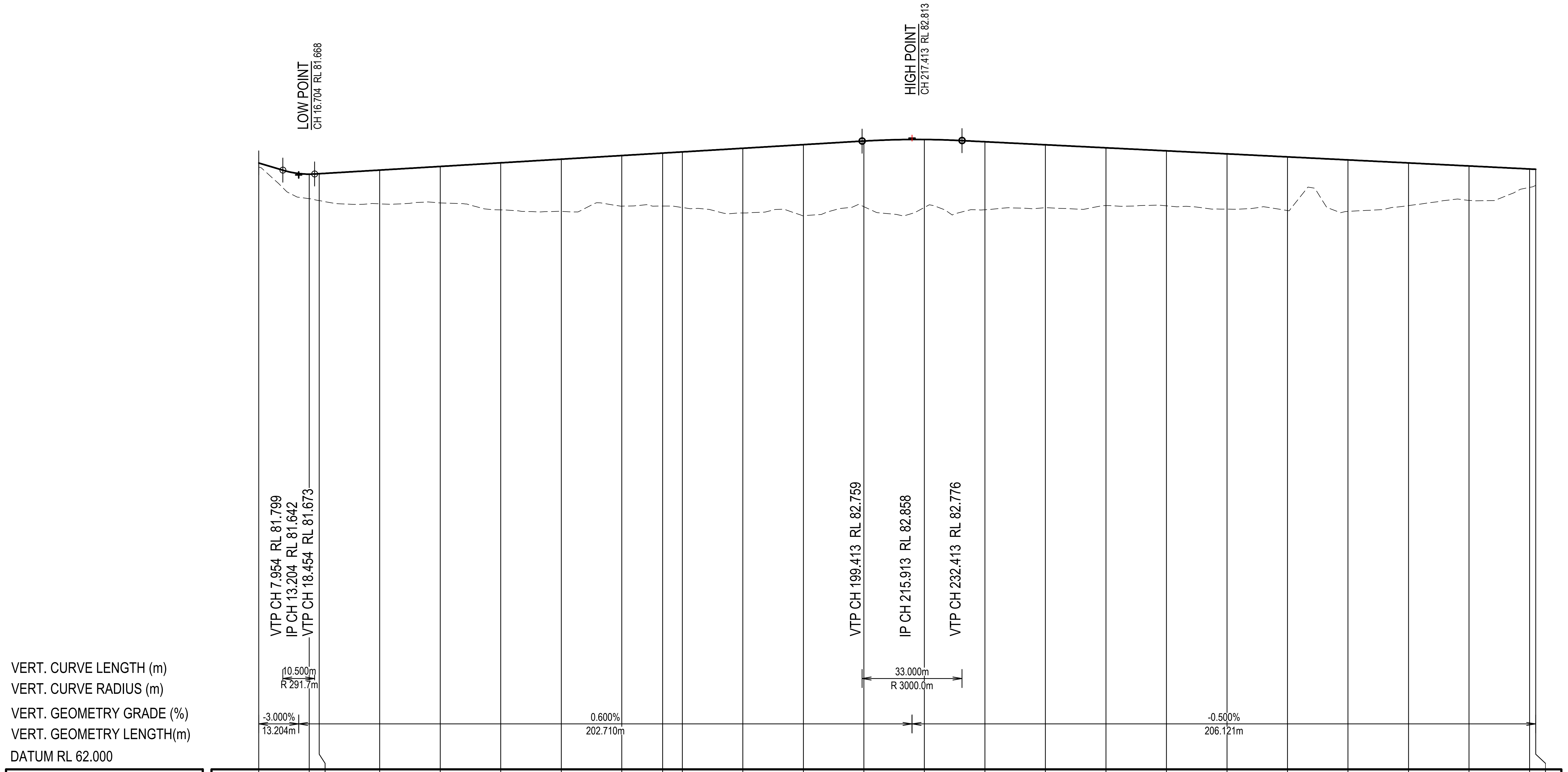
BULK EARTHWORKS SECTIONS
SHEET 2

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-1016	4

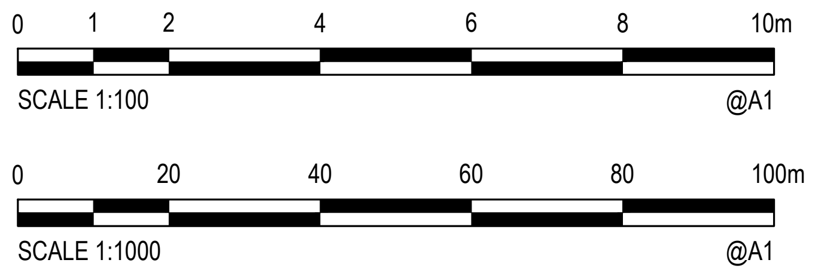
DATE PLOTTED: 22 February 2023 5:58 PM BY : PAULO ZOTTIS



HORZ. CURVE LENGTH (m) HORZ. CURVE RADIUS (m)																									
EXISTING SURFACE LEVELS ROAD CENTRELINE	82.038	81.668	81.683	81.803	81.923	82.043	82.163	82.283	82.364	82.403	82.523	82.643	82.763	82.812	82.738	82.638	82.538	82.438	82.338	82.238	82.138	82.038	81.938	81.838	81.828
CUT / FILL DEPTH TO EXISTING SURFACE	0.004	0.663	0.733	0.940	1.009	1.337	1.488	1.414	1.481	1.561	1.838	2.032	1.833	1.885	1.868	1.682	1.492	1.380	1.369	1.299 0.719	1.387	1.335	1.305	1.013	0.962
DESIGN LEVELS ROAD CENTRELINE	81.884	80.855	80.793	80.686	80.717	80.489	80.437	80.611	80.612	80.565	80.387	80.293	80.592	80.570	80.492	80.559	80.628	80.620	80.511	80.466	80.436	80.628	80.798	81.230	81.296
CONTROL LINE CHAINAGE ROAD CENTRELINE	0.000	16.704	20.000	40.000	60.000	80.000	100.000	120.000	133.507	140.000	160.000	180.000	200.000	220.000	240.000	260.000	280.000	300.000	320.000	340.000	360.000	380.000	400.000	420.000	422.035

MC01 - ROAD 1

SCALE: H 1:1000
V 1:100



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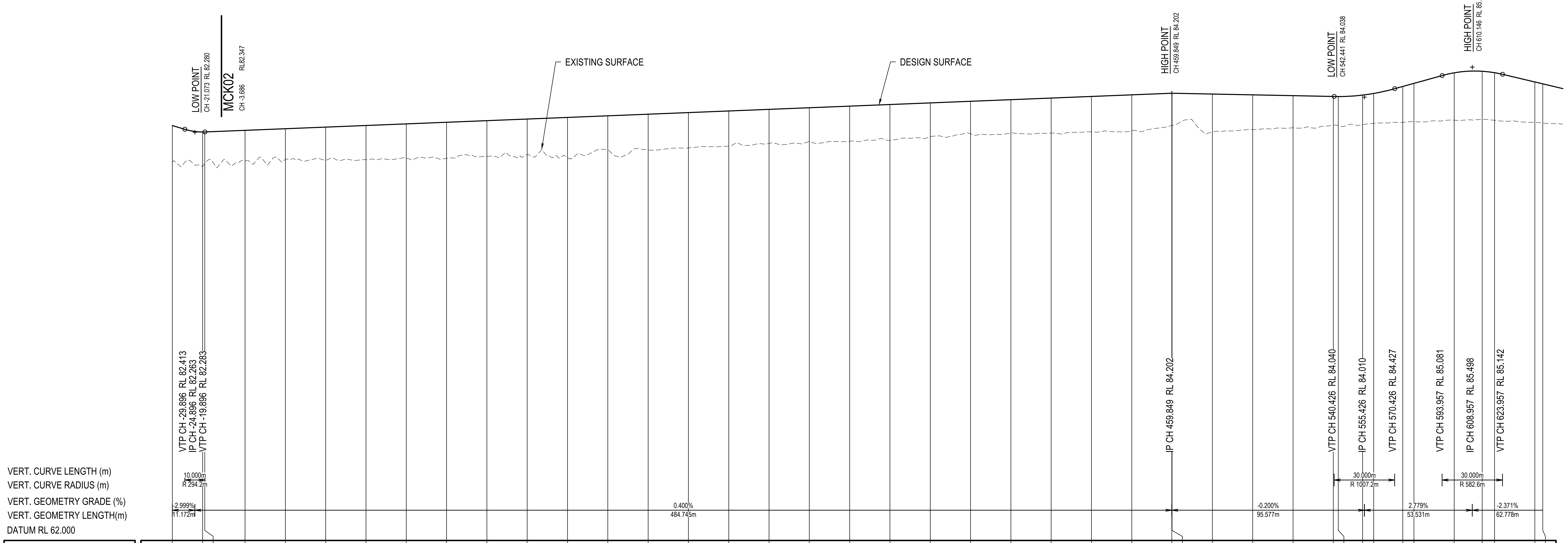
MC01 LONGITUDINAL SECTION

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-1100	3

XREF's:
CAD File: \\Ausflcfs02\data\5103-57\001 - CIVIL ENGINEERING\Drawings\510357-001-CI-1100-1102.dwg

DATE PLOTTED: 22 February 2023 5:45 PM BY : PAULO ZOTTIS



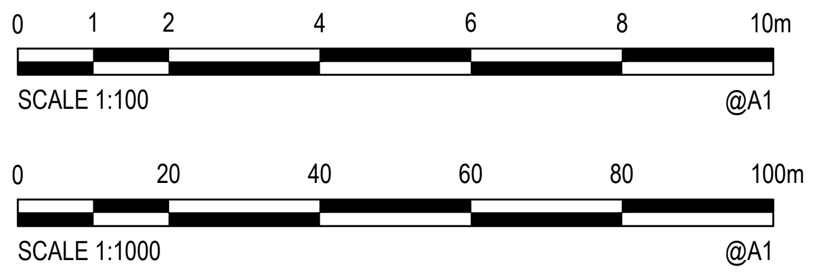
CONTROL LINE CHAINAGE ROAD CENTRELINE	-36.068	-21.073	-20.000	0.000	20.000	40.000	60.000	80.000	100.000	120.000	140.000	160.000	180.000	200.000
HORZ. CURVE LENGTH (m) HORZ. CURVE RADIUS (m)														
EXISTING SURFACE LEVELS ROAD CENTRELINE	80.784	80.564	80.697	80.855	80.921	80.868	80.907	80.985	80.976	81.070	81.170	81.007	81.374	81.390
CUT / FILL DEPTH TO EXISTING SURFACE	1.814	1.716	1.586	1.507	1.521	1.655	1.695	1.697	1.787	1.772	1.752	1.995	1.709	1.772
DESIGN LEVELS ROAD CENTRELINE	82.598	82.280	82.282	82.362	82.442	82.522	82.602	82.682	82.762	82.842	82.922	83.002	83.082	83.162

CONTROL LINE CHAINAGE ROAD CENTRELINE	220.000	240.000	260.000	280.000	300.000	320.000	340.000	360.000	380.000	400.000	420.000	440.000	459.849	460.000
HORZ. CURVE LENGTH (m) HORZ. CURVE RADIUS (m)														
EXISTING SURFACE LEVELS ROAD CENTRELINE	81.489	81.573	81.713	81.801	81.821	81.861	82.040	82.184	82.237	82.224	82.281	82.334	82.600	82.604
CUT / FILL DEPTH TO EXISTING SURFACE	1.753	1.749	1.689	1.682	1.741	1.781	1.682	1.618	1.645	1.738	1.761	1.788	1.602	1.598
DESIGN LEVELS ROAD CENTRELINE	83.242	83.322	83.402	83.482	83.562	83.642	83.722	83.802	83.882	83.962	84.042	84.122	84.202	84.201

CONTROL LINE CHAINAGE ROAD CENTRELINE	480.000	500.000	520.000	540.000	542.441	554.520	560.000	574.472	580.000	600.000	613.869	620.000	640.000	643.932
HORZ. CURVE LENGTH (m) HORZ. CURVE RADIUS (m)						19.952m R -50.000m		39.397m R 20.000m			39.397m R 20.000m			
EXISTING SURFACE LEVELS ROAD CENTRELINE	82.277	82.399	82.488	82.612	82.599	82.643	82.709	82.754	82.788	82.867	82.903	82.860	82.754	82.724
CUT / FILL DEPTH TO EXISTING SURFACE	1.884	1.723	1.593	1.429	1.439	1.468	1.482	1.785	1.906	2.351	2.391	2.363	2.008	1.945
DESIGN LEVELS ROAD CENTRELINE	84.161	84.121	84.081	84.041	84.038	84.111	84.192	84.540	84.693	85.218	85.294	85.223	84.762	84.669

MC02 - ROAD 2

SCALE: H 1:1000
V 1:100



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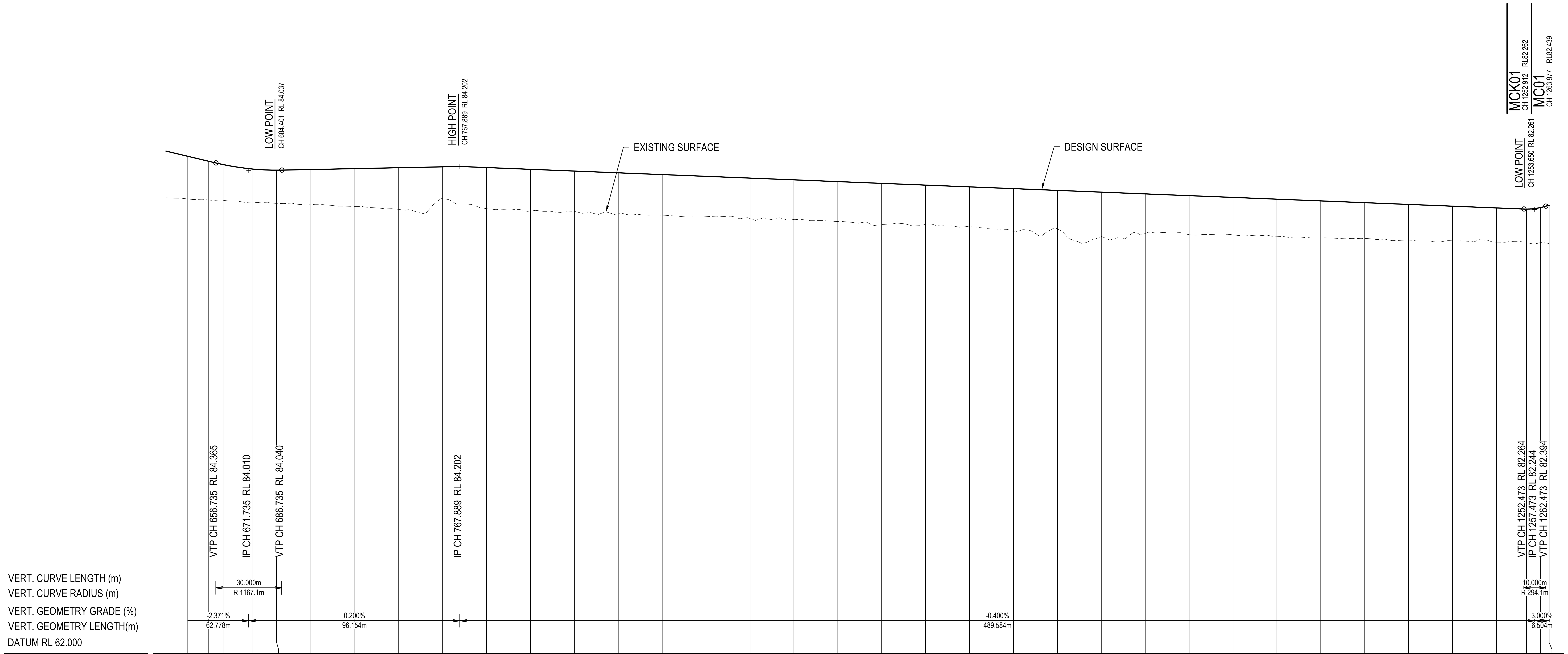
MC02 LONGITUDINAL SECTION - SHEET 01

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-1101	3

XREF's:
CAD File: \\Ausflcfs02\data\5103-57\001 - CIVIL ENGINEERING\Drawings\510357-001-CI-1100-1102.dwg

DATE PLOTTED: 22 February 2023 5:45 PM BY : PAULO ZOTTIS



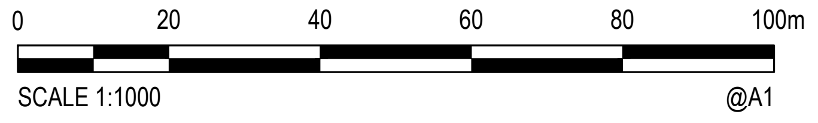
HORZ. CURVE LENGTH (m) HORZ. CURVE RADIUS (m)	39.397m R 20.000m		19.953m R -50.000m										
EXISTING SURFACE LEVELS ROAD CENTRELINE	82.724	82.677	82.664	82.585	82.571	82.523	82.478	82.375	82.249	82.732	82.505	82.283	82.175
CUT / FILL DEPTH TO EXISTING SURFACE	1.945	1.771	1.628	1.506	1.475	1.514	1.588	1.732	1.898	1.454	1.697	1.871	1.898
DESIGN LEVELS ROAD CENTRELINE	84.669	84.448	84.292	84.091	84.046	84.037	84.066	84.106	84.146	84.186	84.202	84.154	84.074
CONTROL LINE CHAINAGE ROAD CENTRELINE	643.932	653.266	660.000	673.219	680.000	684.401	700.000	720.000	740.000	760.000	767.889	780.000	800.000

HORZ. CURVE LENGTH (m) HORZ. CURVE RADIUS (m)													
EXISTING SURFACE LEVELS ROAD CENTRELINE	82.155	82.046	81.986	81.915	81.833	81.790	81.694	81.560	81.570	81.464	81.241	81.360	81.008
CUT / FILL DEPTH TO EXISTING SURFACE	1.838	1.868	1.847	1.839	1.841	1.803	1.819	1.873	1.784	1.809	1.952	1.753	2.026
DESIGN LEVELS ROAD CENTRELINE	83.994	83.914	83.834	83.754	83.674	83.594	83.514	83.434	83.354	83.274	83.194	83.114	83.034
CONTROL LINE CHAINAGE ROAD CENTRELINE	820.000	840.000	860.000	880.000	900.000	920.000	940.000	960.000	980.000	1000.000	1020.000	1040.000	1060.000

HORZ. CURVE LENGTH (m) HORZ. CURVE RADIUS (m)												
EXISTING SURFACE LEVELS ROAD CENTRELINE	81.153	81.095	81.087	81.002	80.948	80.921	80.851	80.815	80.726	80.751	80.732	80.694
CUT / FILL DEPTH TO EXISTING SURFACE	1.800	1.779	1.707	1.711	1.686	1.632	1.622	1.579	1.588	1.510	1.598	1.745
DESIGN LEVELS ROAD CENTRELINE	82.954	82.874	82.794	82.714	82.634	82.554	82.474	82.394	82.314	82.261	82.330	82.439
CONTROL LINE CHAINAGE ROAD CENTRELINE	1080.000	1100.000	1120.000	1140.000	1160.000	1180.000	1200.000	1220.000	1240.000	1253.650	1260.000	1263.977

MC02 - ROAD 2

SCALE: H 1:1000
V 1:100



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MC02 LONGITUDINAL SECTION - SHEET 02

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-1102	3

XREF's:
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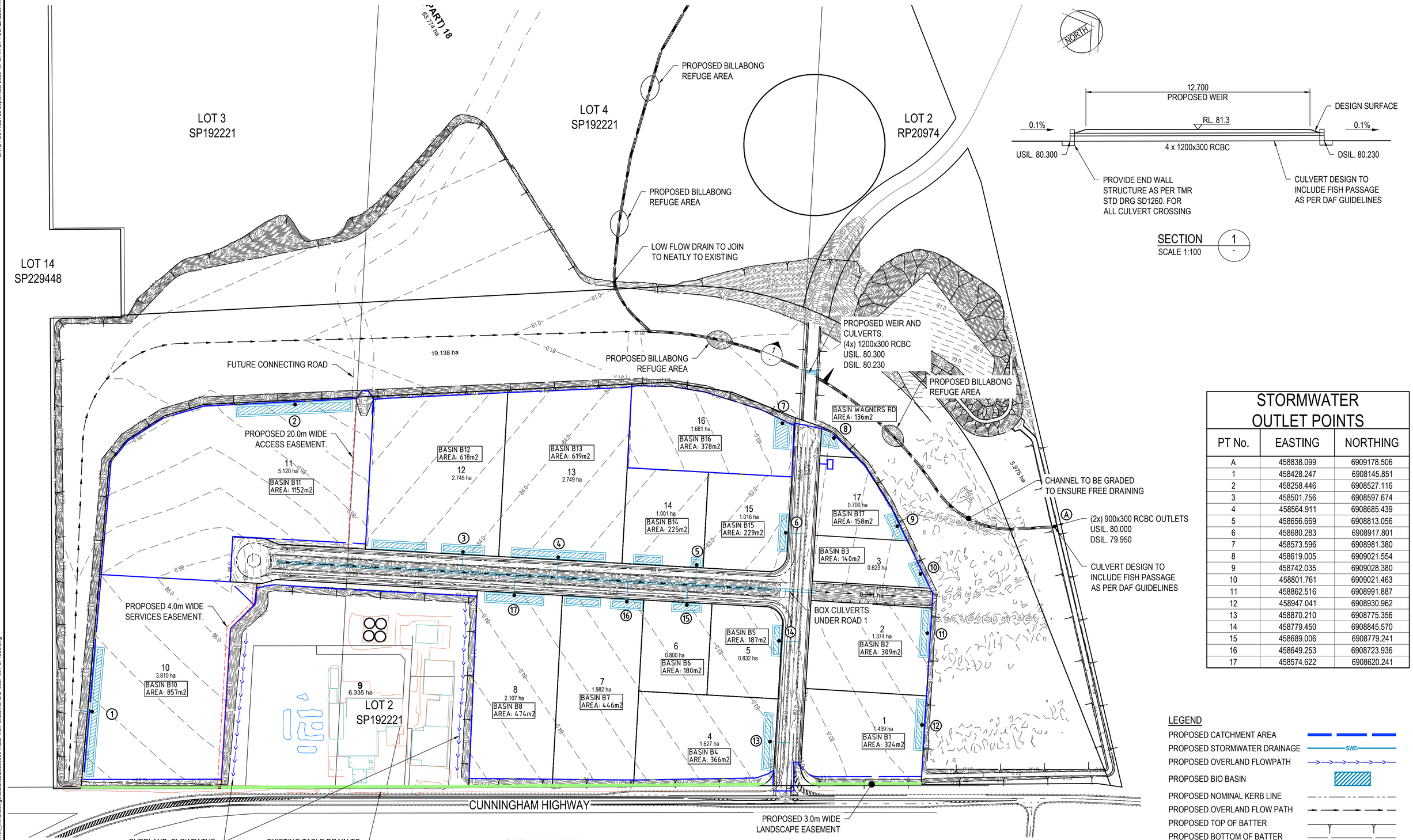

SECTION 1
SCALE 1:100

STORMWATER OUTLET POINTS

PT No.	EASTING	NORTHING
A	458838.099	6909178.506
1	458428.247	6908145.851
2	458258.446	6908527.116
3	458501.756	6908597.674
4	458564.911	6908685.439
5	458656.669	6908813.056
6	458680.283	6908917.801
7	458573.596	6908981.380
8	458619.005	6909021.554
9	458742.035	6909028.380
10	458801.761	6909021.463
11	458862.516	6908991.887
12	458947.041	6908930.962
13	458870.210	6908775.356
14	458779.450	6908845.570
15	458689.006	6908779.241
16	458649.253	6908723.936
17	458574.622	6908620.241

LEGEND

- PROPOSED CATCHMENT AREA
- PROPOSED STORMWATER DRAINAGE (SWD)
- PROPOSED OVERLAND FLOWPATH
- PROPOSED BIO BASIN
- PROPOSED NOMINAL KERB LINE
- PROPOSED OVERLAND FLOW PATH
- PROPOSED TOP OF BATTER
- PROPOSED BOTTOM OF BATTER
- PROPOSED CONTOURS (0.25m) (36.5)

STORMWATER PLAN
SCALE 1:2000

0 1 2 4 6 8 10m
SCALE 1:100 @A1

0 50 100 150 200m
SCALE 1:2000 @A1

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STORMWATER PLAN

DATUM	Date	Scale	Size
AHD	25/09/2023	AS SHOWN	A1

Drawing Number: 510357-001-CI-1300
Revision: 5

LOT 3
SP192221

LOT 4
SP192221

LOT 2
RP20974

LOT 14
SP229448

(PART) 18
63.774 ha

NORTH

19.138 ha

FUTURE CONNECTING ROAD

PROPOSED 20.0m WIDE
ACCESS EASEMENT.

PROPOSED 4.0m WIDE
SERVICES EASEMENT.

CTP653.266

CT6732.219

CTP613.869

CT574.472

TC554.520

9
6.335 ha

LOT 2
SP192221

5.975 ha

0.384 ha

INDICATIVE WASTE WATER
TREATMENT PLANT LOCATION

CUNNINGHAM HIGHWAY

PROPOSED 3.0m WIDE
LANDSCAPE EASEMENT

SEWER RETICULATION PLAN
SCALE 1:2000

0 50 100 150 200m
SCALE 1:2000 @A1

LEGEND
- PROPOSED PROPERTY BOUNDARY
- EXISTING PROPERTY BOUNDARY
- PROPOSED SEWER MAIN — S — S —
- PROPOSED NOMINAL KERB LINE
- PROPOSED CONTOURS (0.25m) — 36.5 —

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SEWER RETICULATION LAYOUT PLAN

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-1500	4

LOT 3
SP192221

LOT 4
SP192221

LOT 2
RP20974

LOT 14
SP229448

(PART) 18
63.774 ha

NORTH

PROVIDE END CAP TO PIPES
FOR FUTURE CONNECTIONS

FUTURE CONNECTING ROAD

19.138 ha

PROPOSED 20.0m WIDE
ACCESS EASEMENT.

INDICATIVE WATER
TREATMENT PLANT LOCATION

PROPOSED 4.0m WIDE
SERVICES EASEMENT.

9
6.335 ha
LOT 2
SP192221

0.384 ha

CUNNINGHAM HIGHWAY

PROPOSED 3.0m WIDE
LANDSCAPE EASEMENT

CTP613.869
CTP663.266
CT673.219
CT574.472
TC554.520

LEGEND

- STAGE BOUNDARY
- EXISTING PROPERTY BOUNDARY
- PROPOSED WATER MAIN — W
- PROPOSED RECYCLE WATER MAIN — RW
- PROPOSED WATER METER
- EXISTING WATER — W
- EXISTING STORMWATER — SWD
- EXISTING ELECTRICAL/TELSTRA/GAS — E/T/G
- PROPOSED CONTOURS (0.25m) — 36.5

WATER RETICULATION PLAN

SCALE 1:2000

0 50 100 150 200m
SCALE 1:2000 @A1

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KALFRESH PTY LTD

WATER RETICULATION LAYOUT PLAN

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

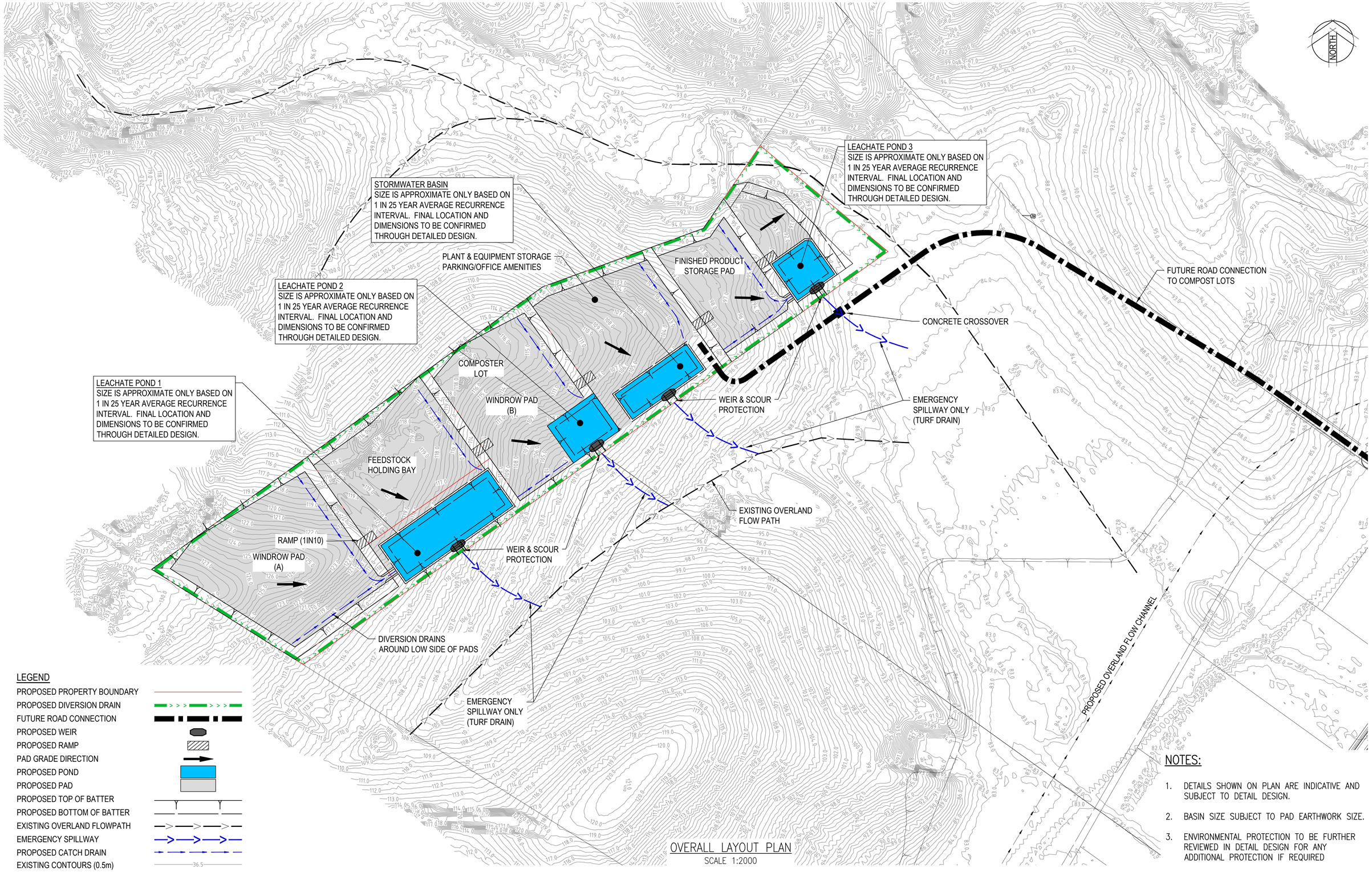
Drawing Number	Revision
510357-001-CI-1600	3

APPENDIX

C

COMPOST PAD STORMWATER LAYOUT

DATE PLOTTED: 26 September 2023 4:10 PM BY: MURPHY, JAMIE



LEGEND

- PROPOSED PROPERTY BOUNDARY
- PROPOSED DIVERSION DRAIN
- FUTURE ROAD CONNECTION
- PROPOSED WEIR
- PROPOSED RAMP
- PAD GRADE DIRECTION
- PROPOSED POND
- PROPOSED PAD
- PROPOSED TOP OF BATTER
- PROPOSED BOTTOM OF BATTER
- EXISTING OVERLAND FLOWPATH
- EMERGENCY SPILLWAY
- PROPOSED CATCH DRAIN
- EXISTING CONTOURS (0.5m) 36.5

OVERALL LAYOUT PLAN
SCALE 1:2000

NOTES:

1. DETAILS SHOWN ON PLAN ARE INDICATIVE AND SUBJECT TO DETAIL DESIGN.
2. BASIN SIZE SUBJECT TO PAD EARTHWORK SIZE.
3. ENVIRONMENTAL PROTECTION TO BE FURTHER REVIEWED IN DETAIL DESIGN FOR ANY ADDITIONAL PROTECTION IF REQUIRED

XREFs: XR-DSGN; XR-510357-007-DSGN; XR-CONT-EXIST; XR-SURVEY
CAD File: \\Au2035-ppfss01\shared_projects\304701591\technical\acad\007 - COMPOST PAD\510357-007-SK001.dwg

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NOT FOR CONSTRUCTION

0 20 40 60 80 100 120 140 160m
SCALE IN METRES (1:2000 BEFORE REDUCTION)

KALFRESH PTY LTD
SCENIC RIM
AGRICULTURAL INDUSTRIAL PRECINCT

PROPOSED COMPOSTER FUNCTIONAL LAYOUT PLAN

Date	Scale	Size
26-09-2023	1:2000	A1

510357-007-SK001 (Drawing Number)
2 (Revision)

APPENDIX

D

WATER AND WASTEWATER RETICULATION SCHEMATICS

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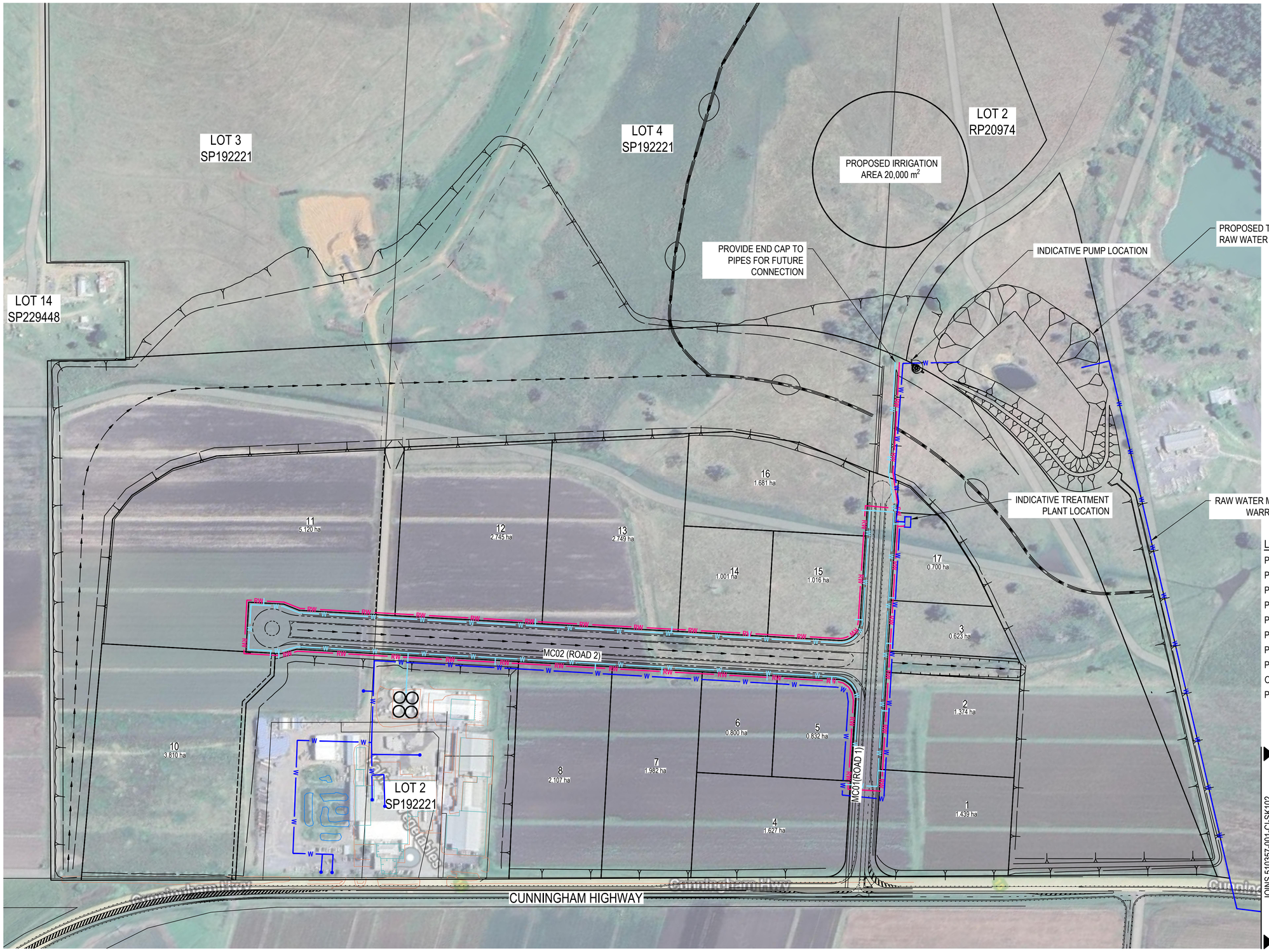

NORTH

LEGEND

- PROPOSED PROPERTY BOUNDARY
- PROPOSED NOMINAL KERB LINE
- PROPOSED RAW WATER MAIN ALIGNMENT
- PROPOSED TREATED WATER MAIN
- PROPOSED RECYCLE WATER MAIN
- PROPOSED WATER METER
- PROPOSED TOP OF BATTER
- PROPOSED BOTTOM OF BATTER
- OVERLAND FLOW PATH
- PROPOSED PUMP

LAYOUT PLAN

SCALE 1:2000

0 50 100 150 200m

SCALE 1:2000 @A1

NOTE:

REFER TO DRAWING 510357-001-CI-SK101
FOR TYPICAL SERVICES CROSS SECTIONS.

Stantec
Stantec Australia Pty Ltd | ABN 17 007 820 322
Level 6, Springfield Tower, 145 Sinnathamby Boulevard
Springfield Central QLD 4300
Tel: 07 3381 0111
Web: www.stantec.com/au

KALFRESH PTY LTD

SITE WATER SUPPLY AND RETICULATION PLAN

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-SK100	1

PROPOSED IRRIGATION AREA 20,000 m²

PROVIDE END CAP TO PIPES FOR FUTURE CONNECTION

PROPOSED TURKEY'S NEXT RAW WATER STORAGE

RAW WATER MAIN FROM WARRILL CREEK

INDICATIVE PUMP LOCATION

INDICATIVE TREATMENT PLANT LOCATION

JOINS 510357-001-CI-SK101

CUNNINGHAM HIGHWAY

Cunningham Hwy

INDICATIVE PUMP LOCATION

RAW WATER MAIN FROM WARRILL CREEK

WARRILL CREEK

Warrill Creek

Muller Rd

NORTH

LEGEND

- PROPOSED PROPERTY BOUNDARY
- PROPOSED NOMINAL KERB LINE
- PROPOSED RAW WATER MAIN ALIGNMENT (W)
- PROPOSED TREATED WATER MAIN (W)
- PROPOSED RECYCLE WATER MAIN (RW)
- PROPOSED WATER METER
- PROPOSED TOP OF BATTER
- PROPOSED BOTTOM OF BATTER
- OVERLAND FLOW PATH
- PROPOSED PUMP

LAYOUT PLAN

SCALE 1:4000

NOTE:
REFER TO DRAWING 510357-001-CI-SK101
FOR TYPICAL SERVICES CROSS SECTIONS.

0 100 200 300 400m
SCALE 1:4000 @A1

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KALFRESH PTY LTD

SITE WATER SUPPLY AND RETICULATION PLAN

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-SK102	1

458407.13E , 6909261.724 N

458247.13E , 6909181.724 N

458407.13E , 6909181.724 N

458327.13E , 6909181.724 N

LOT 3
SP192221

LOT 4
SP192221

LOT 2
RP20974

PROPOSED IRRIGATION
AREA 20,000 m^2

LOT 14
SP229448

PROPOSED TURKEY'S NEXT
RAW WATER STORAGE

PROVIDE END CAP TO
PIPES FOR FUTURE
CONNECTION

16
1.681 ha

11
5.120 ha

12
2.745 ha

13
2.749 ha

14
1.001 ha

15
1.016 ha

17
0.700 ha

458687.74 E , 6908964.30 N

INDICATIVE WASTE
WATER TREATMENT
PLANT LOCATION WITH
APPROXIMATELY 40
KL/DAY VOLUME.
STORAGE CAPACITY TO
BE 200 KL

3
0.623 ha

MC02 (ROAD 2)

2
1.374 ha

6
0.800 ha

5
0.832 ha

10
3.810 ha

8
2.107 ha

7
1.982 ha

MC01 (ROAD 1)

LOT 2
SP192221

1
1.439 ha

4
1.627 ha

CUNNINGHAM HIGHWAY

NORTH

LEGEND

- PROPOSED PROPERTY BOUNDARY
- PROPOSED NOMINAL KERB LINE
- PROPOSED SEWER MAIN (S)
- PROPOSED EFFLUENT MAIN (S)
- PROPOSED TOP OF BATTER
- PROPOSED BOTTOM OF BATTER
- OVERLAND FLOW PATH

LAYOUT PLAN

SCALE 1:2000

0 50 100 150 200m

SCALE 1:2000 @A1

NOTE:

REFER TO DRAWING 510357-001-CI-SK101
FOR TYPICAL SERVICES CROSS SECTIONS.

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KALFRESH PTY LTD

SITE SEWER RETICULATION PLAN

Datum	Date	Scale	Size
AHD	3/12/2019	AS SHOWN	A1

Drawing Number	Revision
510357-001-CI-SK103	1