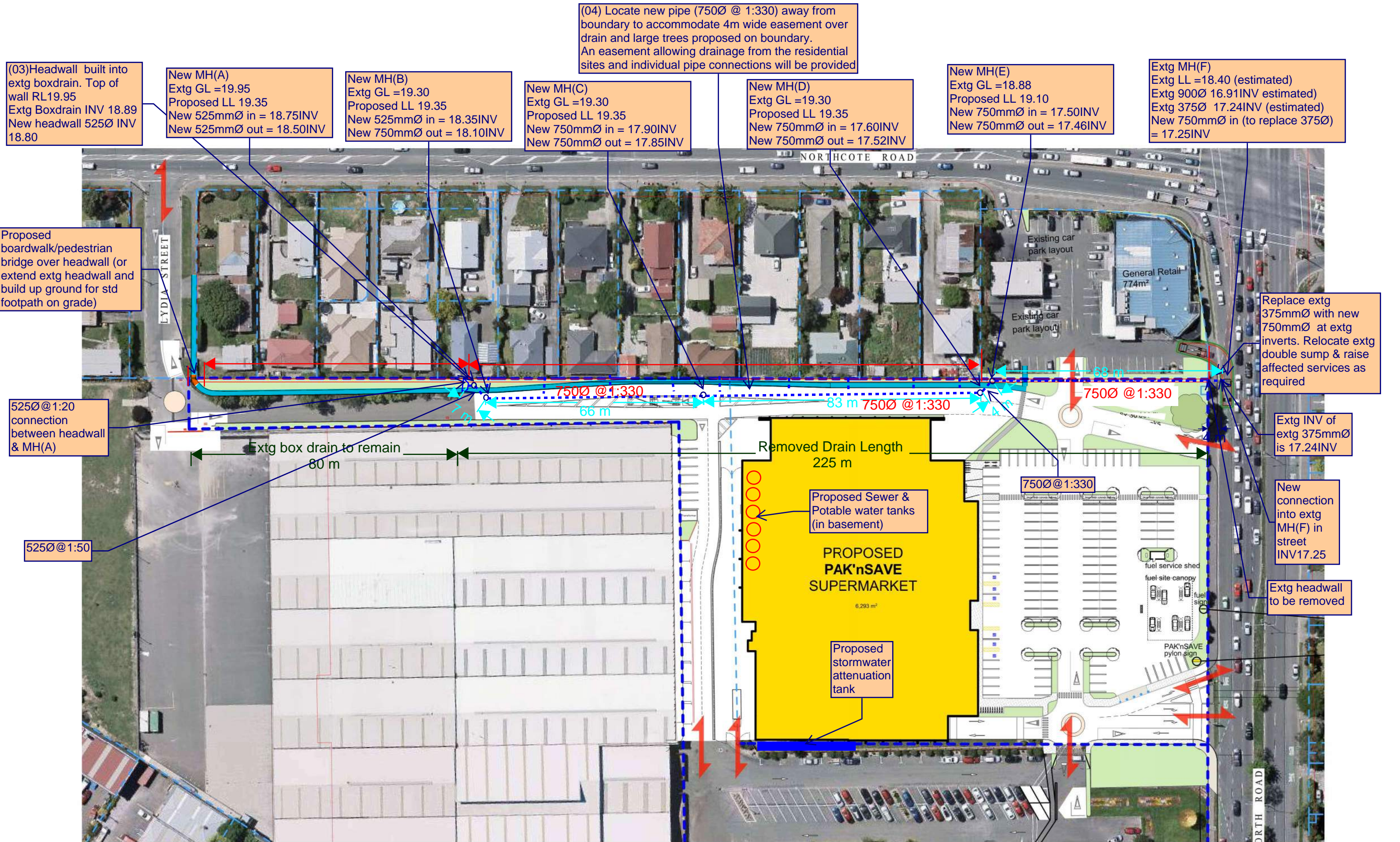




## Appendix S

# Lydia Street Drain Piping and Easement Plan





(04) Locate new pipe (750Ø @ 1:330) away from boundary to accommodate 4m wide easement over drain and large trees proposed on boundary. An easement allowing drainage from the residential sites and individual pipe connections will be provided

(03) Headwall built into extg boxdrain. Top of wall RL19.95  
Extg Boxdrain INV 18.89  
New headwall 525Ø INV 18.80

New MH(A)  
Extg GL =19.95  
Proposed LL 19.35  
New 525mmØ in = 18.75INV  
New 525mmØ out = 18.50INV

New MH(B)  
Extg GL =19.30  
Proposed LL 19.35  
New 525mmØ in = 18.35INV  
New 750mmØ out = 18.10INV

New MH(C)  
Extg GL =19.30  
Proposed LL 19.35  
New 750mmØ in = 17.90INV  
New 750mmØ out = 17.85INV

New MH(D)  
Extg GL =19.30  
Proposed LL 19.35  
New 750mmØ in = 17.60INV  
New 750mmØ out = 17.52INV

New MH(E)  
Extg GL =18.88  
Proposed LL 19.10  
New 750mmØ in = 17.50INV  
New 750mmØ out = 17.46INV

Extg MH(F)  
Extg LL =18.40 (estimated)  
Extg 900Ø 16.91INV estimated  
Extg 375Ø 17.24INV (estimated)  
New 750mmØ in (to replace 375Ø) = 17.25INV

Proposed boardwalk/pedestrian bridge over headwall (or extend extg headwall and build up ground for std footpath on grade)

525Ø@1:20 connection between headwall & MH(A)

525Ø@1:50

Extg box drain to remain 80 m

Removed Drain Length 225 m

Proposed Sewer & Potable water tanks (in basement)

PROPOSED PAK'nSAVE SUPERMARKET  
6,293 m²

Proposed stormwater attenuation tank

750Ø@1:330

fuel service shed  
fuel site canopy  
fuel sign  
PAK'nSAVE pylon sign

Replace extg 375mmØ with new 750mmØ with extg inverters. Relocate extg double sump & raise affected services as required

Extg INV of extg 375mmØ is 17.24INV

New connection into extg MH(F) in street INV17.25

Extg headwall to be removed

Key

- Proposed Boardwalk
- Proposed Asphalt or Concrete Footpath

.....

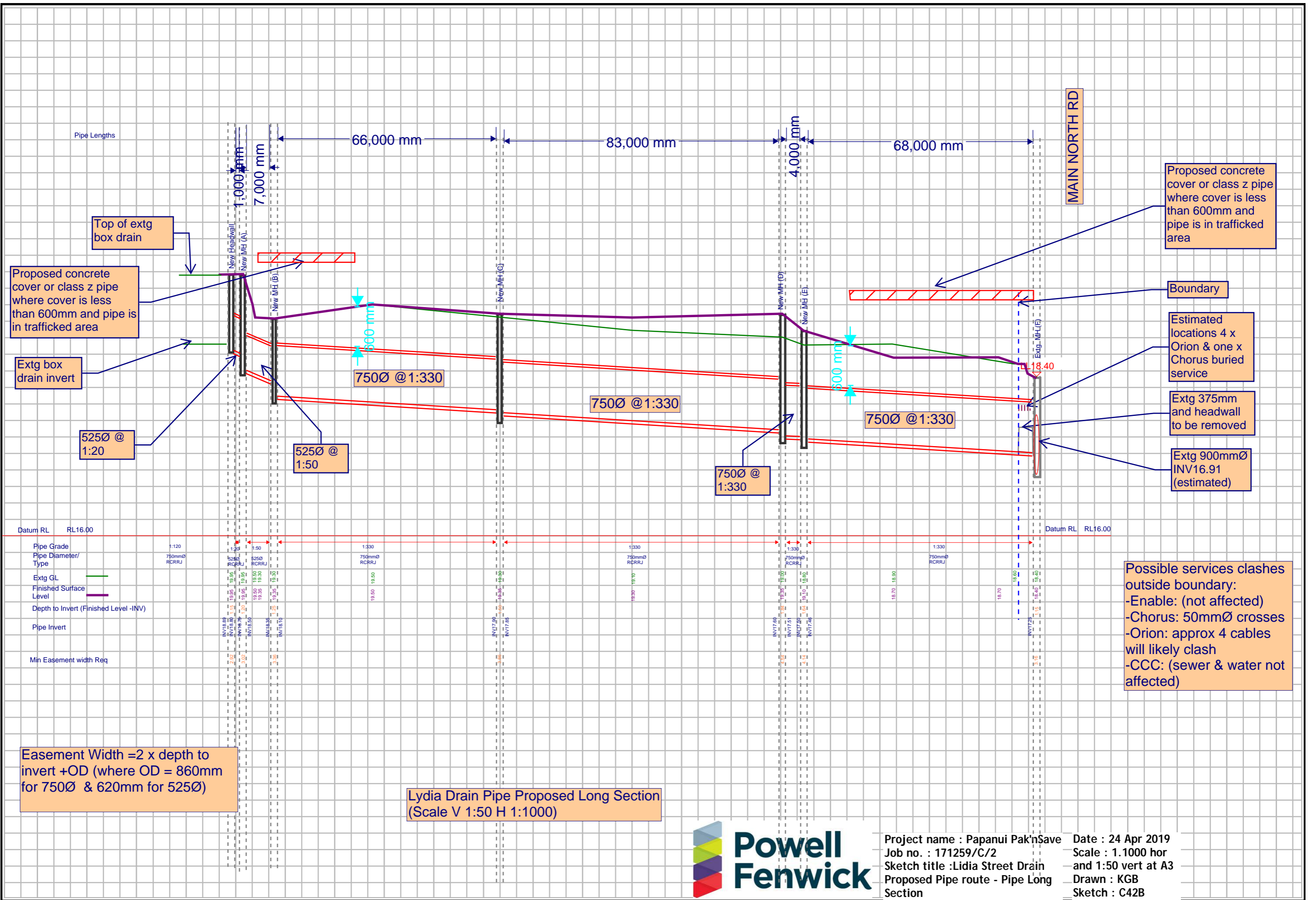
Proposed New Pipework

**Minimum Piping Option:** Removes 225 m (approx) of extg drain  
Total Extg Open Drain Length in Foodstuffs Site 305m  
(approx 75% of extg box drain in Foodstuffs' site removed)



Project name : Papanui Pak'nSave  
Job no. : 171259/C/2  
Sketch title : Piped Option to Lydia St Drain  
Date : 24 Apr 2019  
Scale : 1:1000 @ A3  
Drawn : KGB  
Sketch : C42A





Easement Width = 2 x depth to invert + OD (where OD = 860mm for 750Ø & 620mm for 525Ø)

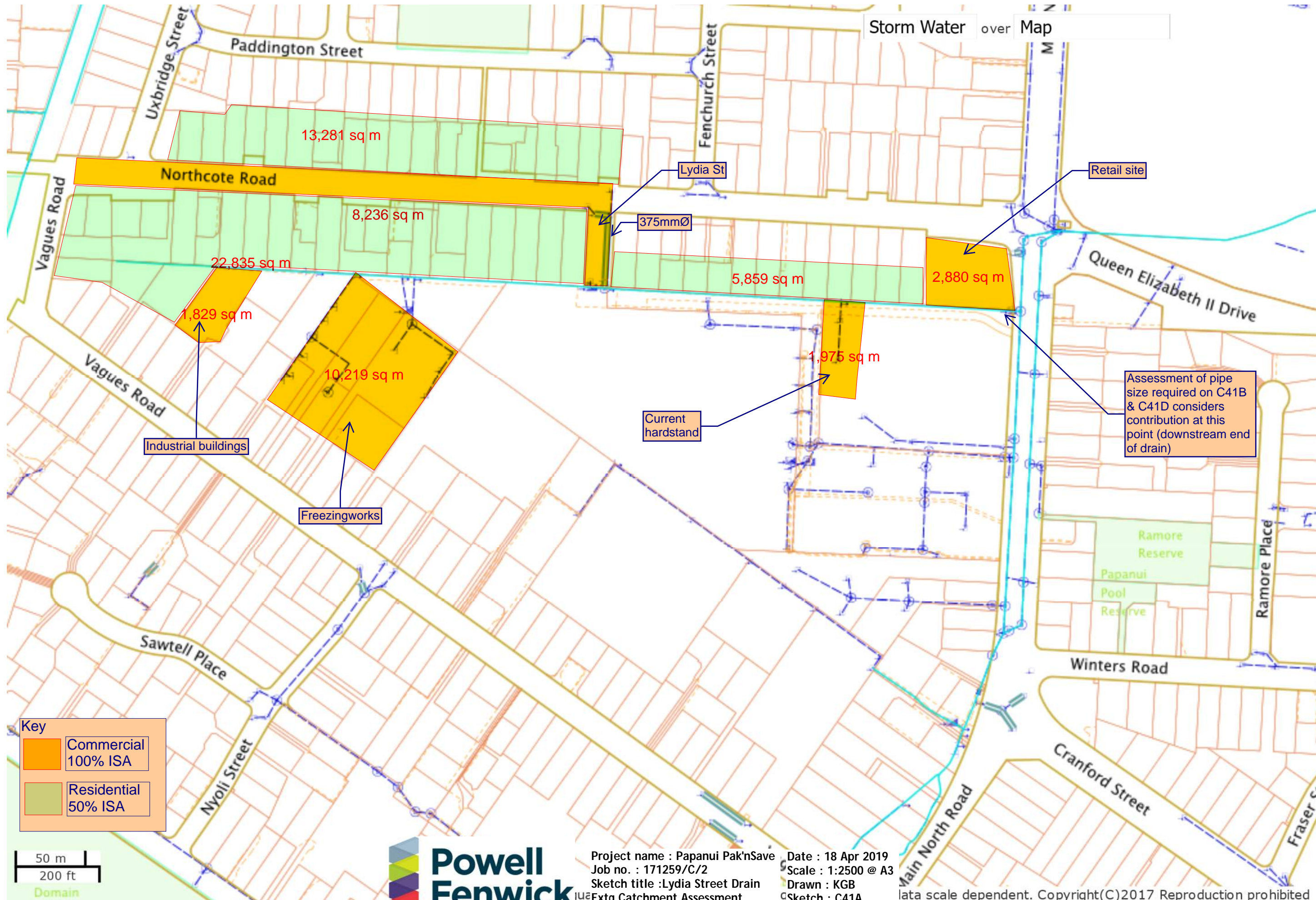
Lydia Drain Pipe Proposed Long Section (Scale V 1:50 H 1:1000)

Possible services clashes outside boundary:  
 -Enable: (not affected)  
 -Chorus: 50mmØ crosses  
 -Orion: approx 4 cables will likely clash  
 -CCC: (sewer & water not affected)



Project name : Papanui Pak'nSave  
 Job no. : 171259/C/2  
 Sketch title : Lidia Street Drain Proposed Pipe route - Pipe Long Section  
 Date : 24 Apr 2019  
 Scale : 1:1000 hor and 1:50 vert at A3  
 Drawn : KGB  
 Sketch : C42B





Scale dependent. Copyright(C)2017 Reproduction prohibited



Table 1 Catchment Discharging to Lidia Street Drain			
	Areas		
	Residential	Commercial	
	13281	8236	
	22835	1829	
	5859	10219	
		1975	
		2880	
Totals	41975	25139	67114 Total area (m <sup>2</sup> )
C	0.5	1	0.69 Catchment Runoff coefficient

Total Contributing area of Lidia Drain at Main North Road Boundary

Christchurch Rainfall Intensities (Spreadsheet includes 16%)

Table 2 CCC Intensities mm/hr (includes 16% climate change allowance)										
Return Period	Duration									
	10min	20min	30min	1hr	2hr	6hr	12hr	18hr	24hr	30hr
5yr	41.0	28.9	23.6	16.7	11.8	6.8	4.8	3.9	3.4	2.9
10yr	49.4	34.9	28.4	20.1	14.2	8.2	5.8	4.7	4.1	3.5
20yr	58.1	41.0	33.4	23.6	16.6	9.6	6.8	5.5	4.8	4.1
50yr	70.3	49.6	40.5	28.6	20.2	11.6	8.2	6.7	5.8	4.9

Table 3 Flow due to catchment										
Return Period	Duration									
	10min	20min	30min	1hr	2hr	6hr	12hr	18hr	24hr	30hr
5yr	525.3	370.3	302.4	214.0	151.2	86.6	61.1	49.8	43.2	36.9
10yr	633.0	447.2	363.9	257.5	181.9	104.4	73.7	60.1	52.0	44.5
20yr	744.4	525.3	428.0	302.4	212.7	122.7	86.6	70.6	61.1	52.3
50yr	900.7	635.5	518.9	366.4	258.8	148.6	104.9	85.6	74.1	63.3

Design Storm 10yr 10 minute

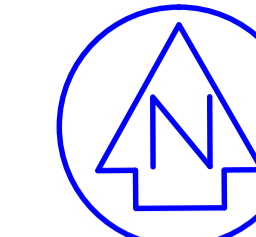
For infrastructure design design storm is:

The primary system must cater for the more frequent rainfall events including the 20% AEP storm. The secondary system must convey over-design events without inundation hazard to house floors and building platforms at least to the 2% AEP storm, including occasions when there are blockages in the primary drainage system.

Have not calculated time of concentration but likely to be less than 10mins & certainly not less than 20

Time of concentration assessment

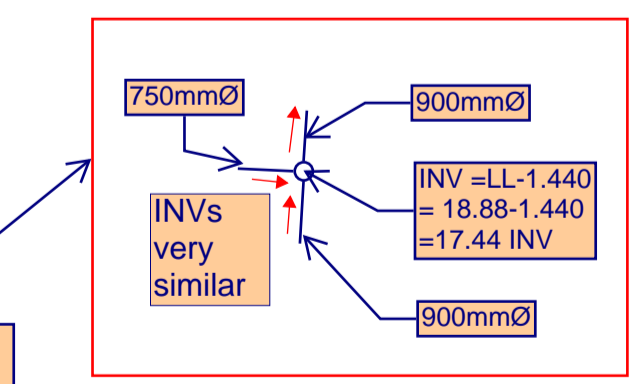
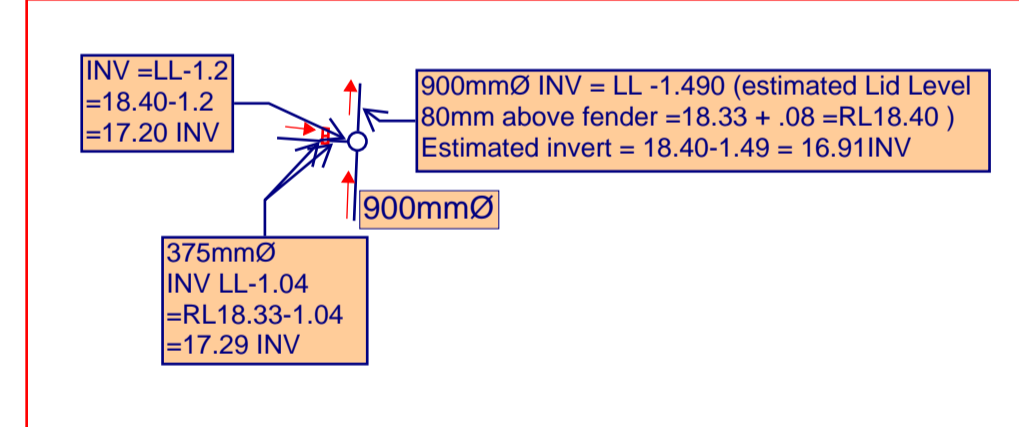
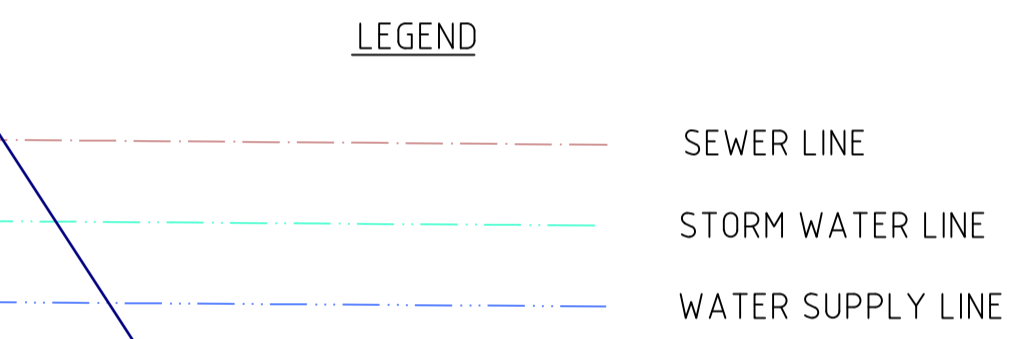




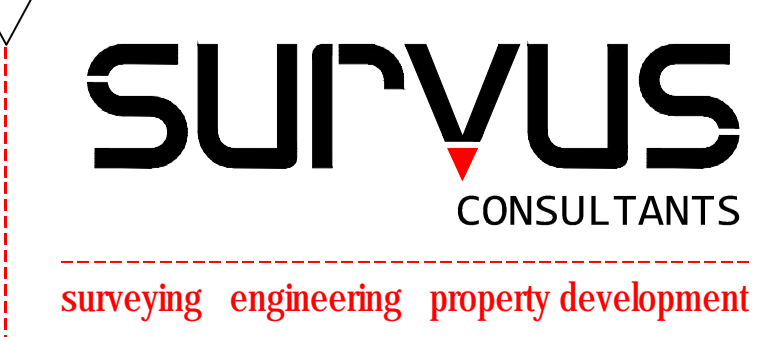
- NOTES :**
- THIS SURVEY HAS NOT INCLUDED SITE MARKING OF THE BOUNDARY POSITIONS UNLESS OTHERWISE INDICATED.
  - SOME UNDERGROUND DRAINAGE INFORMATION IS SHOWN ON THIS PLAN AND HAS BEEN SOURCED FROM COUNCIL DRAINAGE RECORDS. THE ACCURACY OF THIS INFORMATION IS NOT GUARANTEED AND THE LOCATION OF THE PIPEWORK REQUIRES ONSITE VERIFICATION.
  - THE SITE DATUM FOR THIS SURVEY IS:  
IRON SPIKE FLUSH IN SEAL  
REDUCED LEVEL: 18.86m  
ORIGIN OF LEVELS: BM133 (EKRJ)  
REDUCED LEVEL: 20.52m  
DATUM: CDD MARCH 2016
  - "SPOT HEIGHT" POSITIONS ARE SHOWN IN THE FOLLOWING FORMAT X AND ARE EXPRESSED IN METRES IN TERMS OF THE SITE DATUM FOR THE SURVEY. THE HEIGHTS OF THESE POSITIONS HAVE AN ACCURACY RELATIVE TO THE SITE DATUM AS FOLLOWS:  
    - X HARD SURFACES eg CONCRETE, ASPHALT +/- 0.030m @ 95% CONFIDENCE LEVEL.
    - X SOFT SURFACES eg GRASS +/- 0.050m @ 95% CONFIDENCE LEVEL.
  - CADASTRAL BOUNDARIES BEARINGS AND DISTANCES HAVE BEEN SOURCED FROM DP's 21207 & 479583 & SO's 19085 & 19672.
  - HEIGHTS SHOWN ON THE KERB LINES ARE ON TOP OF KERB.
  - HEIGHTS SHOWN FOR MANHOLES & SUMPS ARE ON TOP OF THOSE FEATURES.



-No surveyed INV has been provided for the existing 375mmØ RCRRJ ( internal dia, measured 380mm approx)  
-estimated invert= RL18.63-1.230 (measured 27 Sep 2018) 1.1=17.40 INV



**Powell Fenwick**  
Project name : Papanui Pak'nSave Date : 18 Apr 2019  
Job no. : 171259/C/2 Scale : 1:1000 @ A3  
Sketch title : Extg Lydia Drain - Foodstuffs Site Relevant Inverts Drawn : KGB  
Sketch : C41C



4 Meadow Street, PO Box 5558, Papanui, Christchurch  
P 03 352 5599 AMBERLEY 03 314 9200  
F 03 352 5527 ASHBURTON 03 307 7021  
TOLL FREE 0508 787 887 DARFIELD 03 318 8151

REV	DATE	REVISION DETAILS	DESIGNED	VERIFIED
A	21/05/18	SITE SURVEY	S SMITH	

PROJECT		INFORMATION ONLY	
FOODSTUFFS S.I LTD - 171 MAIN NORTH ROAD		PROJECT NO 13836	
TITLE SITE SURVEY		SCALE 1:500 (A1)	SIZE A1
DATE		DRAWING NO SS-01	REV A
SHEET 1 OF 2			







Schedule / Memorandum

DAVIS O'GLYNE

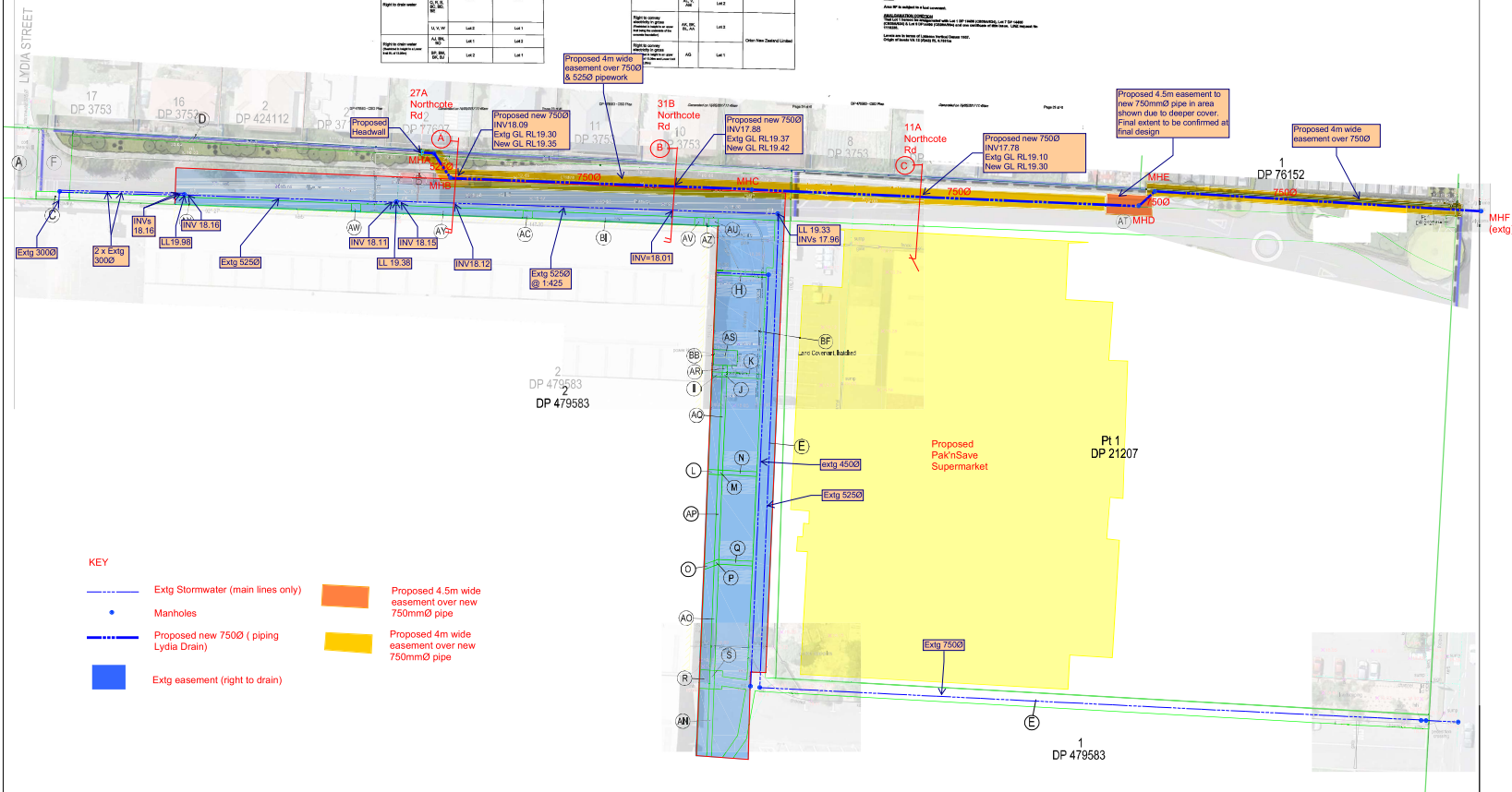
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Right of way (R.O.W.)	A	L&1	L&1
Proposed new 750mm	F	L&1	L&2
Right of way (R.O.W.)	G	L&1	L&2
Right of way (R.O.W.)	H	L&1	L&2
Right of way (R.O.W.)	I	L&1	L&2
Right of way (R.O.W.)	J	L&1	L&2
Right of way (R.O.W.)	K	L&1	L&2
Right of way (R.O.W.)	L	L&1	L&2
Right of way (R.O.W.)	M	L&1	L&2
Right of way (R.O.W.)	N	L&1	L&2
Right of way (R.O.W.)	O	L&1	L&2
Right of way (R.O.W.)	P	L&1	L&2
Right of way (R.O.W.)	Q	L&1	L&2
Right of way (R.O.W.)	R	L&1	L&2
Right of way (R.O.W.)	S	L&1	L&2

Schedule / Memorandum

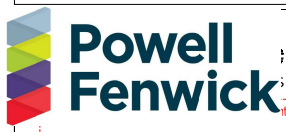
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Right of way (R.O.W.)	CS	L&1	L&1
Right of way (R.O.W.)	DS	L&1	L&1
Right of way (R.O.W.)	ES	L&1	L&1
Right of way (R.O.W.)	FS	L&1	L&1
Right of way (R.O.W.)	GS	L&1	L&1
Right of way (R.O.W.)	HS	L&1	L&1
Right of way (R.O.W.)	IS	L&1	L&1
Right of way (R.O.W.)	JS	L&1	L&1
Right of way (R.O.W.)	KS	L&1	L&1
Right of way (R.O.W.)	LS	L&1	L&1
Right of way (R.O.W.)	MS	L&1	L&1
Right of way (R.O.W.)	NS	L&1	L&1
Right of way (R.O.W.)	OS	L&1	L&1
Right of way (R.O.W.)	PS	L&1	L&1
Right of way (R.O.W.)	QS	L&1	L&1
Right of way (R.O.W.)	RS	L&1	L&1
Right of way (R.O.W.)	SS	L&1	L&1
Right of way (R.O.W.)	TS	L&1	L&1
Right of way (R.O.W.)	US	L&1	L&1
Right of way (R.O.W.)	VS	L&1	L&1
Right of way (R.O.W.)	WS	L&1	L&1
Right of way (R.O.W.)	XS	L&1	L&1
Right of way (R.O.W.)	YS	L&1	L&1
Right of way (R.O.W.)	ZS	L&1	L&1

Schedule / Memorandum

Right of way (R.O.W.)	Class	Manhole Number	Manhole Location
Right of way (R.O.W.)	AA	L&1	L&1
Right of way (R.O.W.)	AB	L&1	L&1
Right of way (R.O.W.)	AC	L&1	L&1
Right of way (R.O.W.)	AD	L&1	L&1
Right of way (R.O.W.)	AE	L&1	L&1
Right of way (R.O.W.)	AF	L&1	L&1
Right of way (R.O.W.)	AG	L&1	L&1
Right of way (R.O.W.)	AH	L&1	L&1
Right of way (R.O.W.)	AI	L&1	L&1
Right of way (R.O.W.)	AJ	L&1	L&1
Right of way (R.O.W.)	AK	L&1	L&1
Right of way (R.O.W.)	AL	L&1	L&1
Right of way (R.O.W.)	AM	L&1	L&1
Right of way (R.O.W.)	AN	L&1	L&1
Right of way (R.O.W.)	AO	L&1	L&1
Right of way (R.O.W.)	AP	L&1	L&1
Right of way (R.O.W.)	AQ	L&1	L&1
Right of way (R.O.W.)	AR	L&1	L&1
Right of way (R.O.W.)	AS	L&1	L&1
Right of way (R.O.W.)	AT	L&1	L&1
Right of way (R.O.W.)	AU	L&1	L&1
Right of way (R.O.W.)	AV	L&1	L&1
Right of way (R.O.W.)	AW	L&1	L&1
Right of way (R.O.W.)	AX	L&1	L&1
Right of way (R.O.W.)	AY	L&1	L&1
Right of way (R.O.W.)	AZ	L&1	L&1



- KEY**
- Extg Stormwater (main lines only)
  - Manholes
  - Proposed new 7500 ( piping Lydia Drain)
  - Extg easement (right to drain)
  - Proposed 4.5m wide easement over new 750mmØ pipe
  - Proposed 4m wide easement over new 750mmØ pipe



Project name : Papanui Pak'nSave  
 Job no. : 171259/C/1  
 Sketch title : Proposed Drainage Easement over new 750Ø  
 Date : 03 May 2019  
 Scale : 1:500 @ A1  
 Drawn : KGB  
 Sketch : C45A

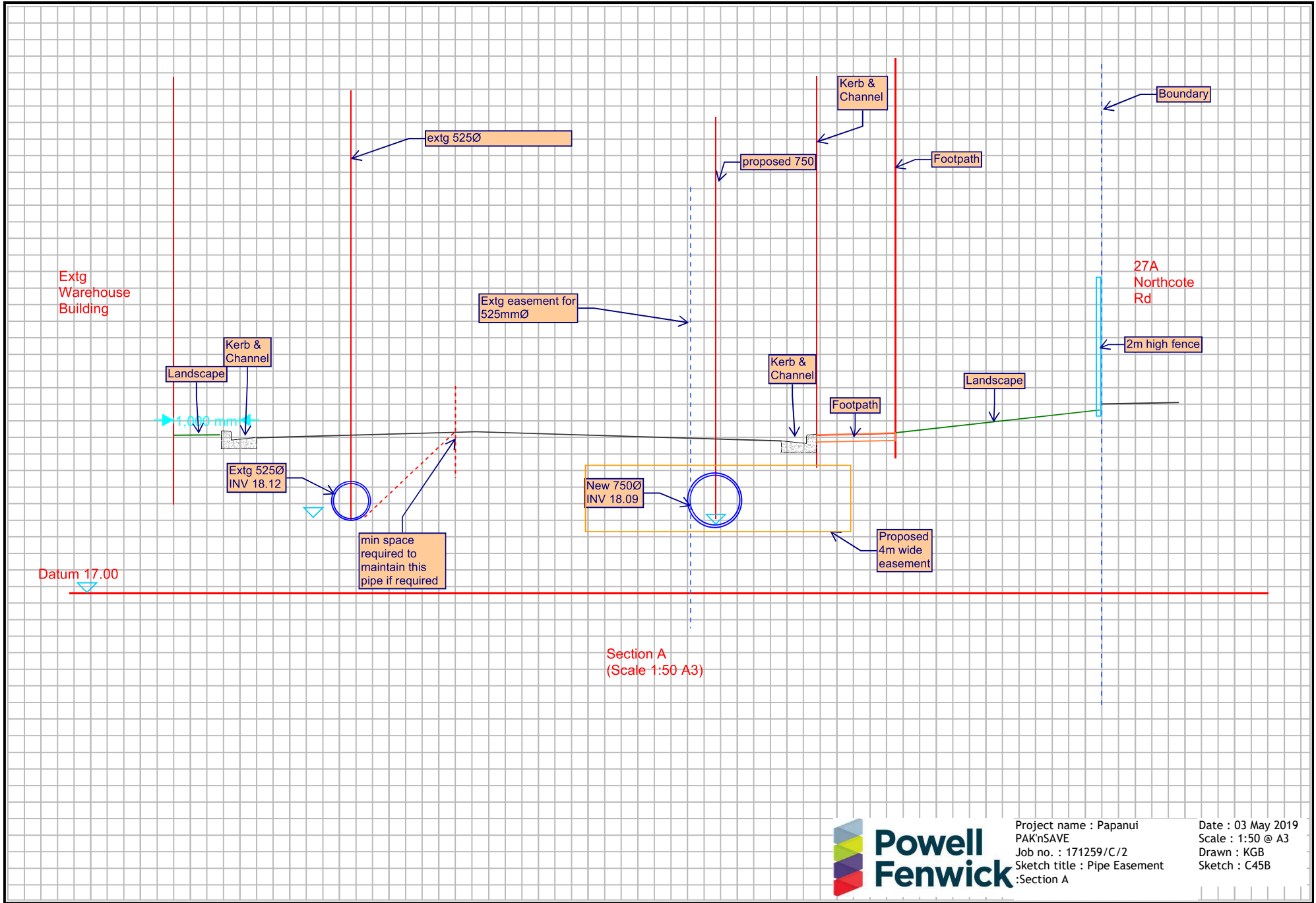
REV	DATE	REVISION DETAILS
A	28/05/19	EASEMENTS

DESIGNED	VERIFIED
APPROVED	DATE

PROJECT	
FOODSTUFFS S.I. LTD - 171 MAIN NORTH ROAD	
TITLE	
SUBJECT EASEMENTS	
SHEET 2 OF 2	

INFORMATION ONLY	
PROJECT NO 13836	
SCALE 1:500 (A1)	SEE AT
DRAWING NO SS-01	REV A

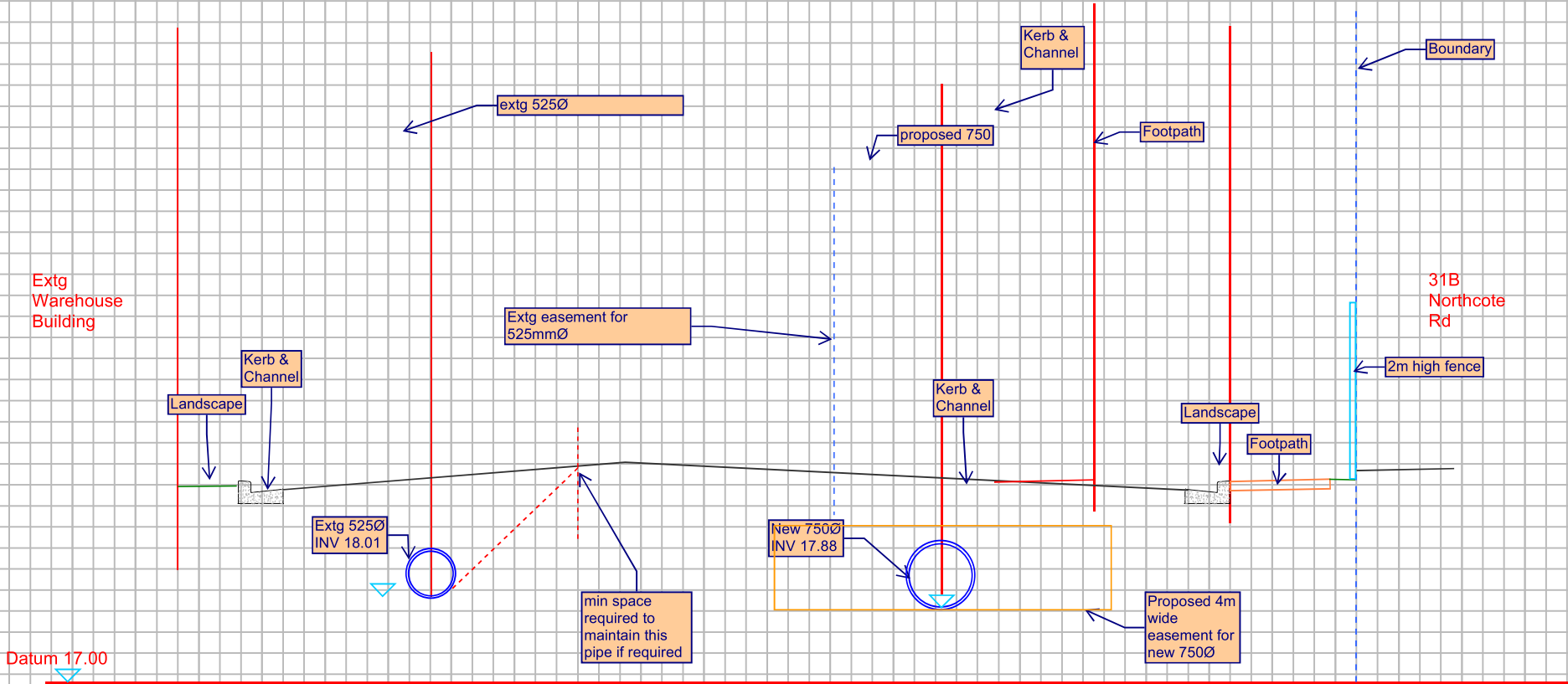




Project name : Papanui  
 PAK'nSAVE  
 Job no. : 171259/C/2  
 Sketch title : Pipe Easement  
 :Section A

Date : 03 May 2019  
 Scale : 1:50 @ A3  
 Drawn : KGB  
 Sketch : C45B





Section B  
(Scale 1:50 A3)



Project name : Papanui  
 PAK'nSAVE  
 Job no. : 171259/C/2  
 Sketch title : Pipe Easement:  
 Section B

Date : 03 May 2019  
 Scale : 1:50 @ A3  
 Drawn : KGB  
 Sketch : C45C