

BEFORE THE HEARINGS COMMISSIONERS FOR
AUCKLAND COUNCIL

IN THE MATTER OF

The Resource Management Act 1991 ("the Act")

AND

IN THE MATTER OF

Proposed Private Plan Change 55 - Patumahoe

Between

Askew Consultants Limited
Applicant

And

Watercare Services Limited
Submitter

Joint Witness Statement of Infrastructure Engineers
(Water Supply & Wastewater)

DATED 15th December 2021

1. This is a Joint Witness Statement prepared by Andre Stuart (Network Planning Manager at Watercare Services Limited (“**Watercare**”) and Alan Blyde (Director) and Dave Munro (Senior Engineer) both of Envelope Engineering on behalf of the Applicant. It addresses the provision of water supply and wastewater infrastructure necessary to service the development potential of Plan Change 55 (“**PPC55**”). Finalising this JWS was facilitated online by Marlene Oliver (Independent Facilitator).

Introduction

2. Mr Stuart is the Network Planning Manager at Watercare. He holds a Bachelor of Engineering (Chemical and Materials) (Hons) from the University of Auckland, and is a Member of Engineering New Zealand. He has been employed by Watercare for nine years is responsible for water and wastewater network infrastructure planning. This role extends across Watercare’s wastewater functions with respect to planning to meet future growth, demand and regulatory changes.
3. Mr Blyde is the Director of Envelope Engineering Ltd, an engineering consultancy practice, with offices in Wellington, Tauranga and Auckland. Prior to Envelope, he was the Technical Director, and Wellington Manager for Harrison Grierson Consultants Limited. He has worked for over 29 years in the Land Development field of civil engineering on numerous large residential land subdivision projects providing developer clients with development advice and technical design expertise from early land acquisition and feasibility phases, through to scheme planning and subdivision layout design, Resource Consent and Engineering Approval processes, contractor procurement and construction management, through to subdivision completion and land titling. He holds a Bachelor of Engineering (Environmental) Hons Degree and a NZ Certificate in Engineering (Civil) and is a Professional Member of Engineering New Zealand.
4. Mr Munro is a Senior Engineer with Envelope Engineering. His qualifications include a Bachelor of Science (Maths) and a Bachelor of Engineering (Civil)(Hons), both from University of Canterbury, and is a Chartered Member of Engineering New Zealand. He has been employed in several roles, predominantly in Civil Engineering over the last 46 years.
5. Watercare lodged a submission opposing PPC55 because it considered that there was inadequate water and wastewater servicing in place for PPC55. Watercare’s position was that

there was insufficient capacity in the water and wastewater network to provide for existing and planned development in Patumahoe (though Live-Zoned residential land), and the development potential of PPC55.

6. Following extensive technical discussion, and facilitated pre-hearing mediation on 6 December, the Applicant and Watercare have now reached agreement on the technical approach to the provision of water and wastewater servicing to PPC55, including the upgrading that will be needed to facilitate the development potential of PPC55, if approved.
7. The purpose of this statement is to set out the technical basis of agreement, and the upgrading solutions contemplated. The mediation agreement is **Attachment 1**.

Provision of Potable Water Supply for PPC 55

8. The existing water reservoir at Carter Road, servicing the Patumahoe urban area and the potential development from Live Zoned land in this area is currently under-capacity by approximately 0.5ML.
9. The PPC55 area will be developed to provide 180 dwellings plus 2.5Ha of Industrial land. The water supply for this will need to be provided in addition to meeting the current shortfall.
10. In order to accommodate the development potential of PPC55, 24 hours of peak day reservoir storage +15% buffer is required. This requires an additional 0.62ML reservoir capacity which is broken down as follows:
 - i) 180 dwellings requires an additional capacity of approximately 0.27ML;
 - ii) 2.5ha of Industrial Zoned requires an additional capacity of approximately 0.35ML.
11. Therefore, to provide for the existing shortfall and PPC55, an additional reservoir capacity of 1.12ML is required.
12. Watercare agree that the Developer/Consent Holder (at their cost) can provide a water reservoir of at least 0.62ML on the PPC55 land area, plus the connecting infrastructure to the existing transmission and local network to service PPC55 (which may likely include increased local network booster pump capacity) ("**Option A**"). The infrastructure will need to be in place prior to the release of the first section 224c certificate on any subdivision.
13. As an alternative to Option A, the Developer/Consent Holder could, in principle, "piggyback" on water reservoir upgrading being undertaken by Watercare to provide a total additional capacity of 1.12ML ("**Option B**"). This would be undertaken under a cost share agreement (for

the total proposal) between Watercare and the Developer/Consent Holder, inclusive of any additional land requirements to accommodate this option.

14. A site has been identified within the PPC55 area that could accommodate a water reservoir of at least 0.62ML reservoir capacity plus access for maintenance vehicles and other infrastructure required for the operation of the reservoir. This is shown as **Attachment 2** and the location will be indicated on the Precinct Plan.
15. Once these upgrades are in place, there will be sufficient water supply capacity to service PPC55, subject to funding.

Provision of Wastewater Servicing for PPC 55

16. Wastewater from the existing Patumahoe urban catchment (developed live zoned land) currently discharges to the Fletcher Lane Pump station, from where it is then pumped through a rising main to an outlet into a gravity network approximately 7,240m away.
17. The Fletcher Lane Pump station has limited capacity to accommodate any additional flow beyond the existing developed live zoned land plus undeveloped live zoned land.
18. The rising main has a limited pressure rating to cater for the pumping pressures expected to be generated by the existing live zoned land plus that of PPC 55.
19. The design Peak Wastewater Flow of wastewater generated by the existing live zoned land, ("PWWF") is assessed as 21.88 L/s.
20. The design Peak Wastewater Flow generated by PPC55 (180 houses plus 2.5Ha of industrial land), at PWWF is assessed as 13.35 L/s.
21. Therefore, the total design Peak Wastewater flow is 35.23 L/s generated from PPC55 plus the existing live zoned land.
22. We agree that a lifting pump, or daisy chain arrangement could be installed in the rising main to reduce the pressures within the rising main to an acceptable level so that a design flow of 35.23 L/s could be accommodated in the wastewater network. This would be in addition to upgrading the Fletcher's Lane pump station.
23. The lifting pump would be located sufficiently along the rising main route such that the resultant pumping pressure will be less than the assessed capacity of the rising main, and would include a storage volume of approximately 1 hour of ADWF.

24. A possible site for the lifting pump has been identified within the PPC 55 area at 90 to 94 Patumahoe Road, but further assessment is required to confirm the viability of this site. Another possible site has been identified within a Paper Road (Cronin Road) along which the rising main is reticulated and at its approximate midway point, that would accommodate the construction of a lifting pump.
25. The actual location of the lifting pump is yet to be determined, whether within the developer's/consent holder's land or within land that is to be acquired. This can be determined when resource consents are being sought and the infrastructure will need to be in place prior to the release of the first section 224c certificate on any subdivision.
26. The Fletcher's Lane wastewater pump station can be, and will need to be, upgraded to accommodate the design flow of 35.23 L/s. This upgrading will entail an upgraded pump and additional storage. The Fletcher's Lane upgrade will need to accommodate PPC55, inclusive of 8 hours of its average dry weather flow storage. This can be determined when resource consents are being sought and the infrastructure will need to be in place prior to the release of the first section 224c certificate on any subdivision.
27. A conceptual design for upgrading the Fletcher's Lane pump station is attached as **Attachment 3**.
28. We accept that the gravity network from the development to the pump stations can either accommodate the flows or can be modified to suit (at the developer's cost).
29. There will be sufficient capacity in the wastewater network after the above-mentioned upgrades are complete to cater for the development enabled by PPC55. The most likely scenario is upgrading the Fletcher's Lane pump station and installing a lifting pump in the rising main. We are confident that these upgrades can be achieved and the details of this work is a matter to be determined, upon more detailed design work as part of the subdivision resource consent process. However, sufficient conceptual design has now been done, so that demonstrates that there is sufficient land area available at Fletchers Lane. This is subject to future discussions with the landowner (Auckland Council).
30. As with water supply, there will be an agreement entered into between Watercare and the Applicant providing for the funding and implementation of these upgrades.

Conclusion

31. As a result of technical discussions, and further assessment, it is technically feasible that the development provided for under PPC55 can be accommodated in the water and wastewater networks. Upgrading of this infrastructure will be required, and that is a matter to be determined in more detail as part of the resource consent applications and the infrastructure will need to be in place prior to the release of the first section 224c certificate on any subdivision. There will be an agreement between Watercare and the Applicant that will outline the terms to provide this infrastructure.

PARTICIPANTS TO JOINT WITNESS STATEMENT

32. The participants to this Joint Witness Statement, as listed below, confirm that:
- i. They agree that the outcome(s) of the expert conferencing are as recorded in this statement and this statement is to be filed with the Hearing Panel; and
 - ii. The Environment Court Practice Note 2014 provides the relevant guidance and protocols for expert conferencing and that they have complied with the relevant provisions; and
 - iii. They will make themselves available to appear at a Hearing, if required to do so by the Panel; and
 - iv. The matters addressed in this statement are within their area of expertise; and
 - v. As finalising this JWS was held online, in the interests of efficiency, it was agreed that each expert would verbally confirm their position to the Independent Facilitator (Marlene Oliver) and this is recorded in the schedule below.

Confirmed online on 15 December 2021:

EXPERT'S NAME	PARTY	EXPERT'S CONFIRMATION REFER PARA 32
Andre Stuart	Watercare Services Limited	Yes
Alan Blyde	Envelope Engineering for Askew Consultants Limited	Yes
Dave Munro	Envelope Engineering for Askew Consultants Limited	Yes

AUCKLAND COUNCIL:

PRIVATE PLAN CHANGE 55: PATUMAHOE

MEDIATION – RECORD OF SESSION

6 December 2021

TOPICS – INFRASTRUCTURE (POTABLE WATER AND WASTEWATER SERVICES)

Held on: 6 December 2021

Venue: Online via Microsoft Teams at 10.00am

Independent Facilitator: Marlene Oliver

Admin Support: Kirsty Ren

1 Attendance:

1.1 The list of participants is included in the schedule at the end of this Statement.

2 Basis of Attendance and Environment Court Practice Note 2014

2.1 All participants agree as follows:

- (a) The Environment Court Practice Note 2014 provides relevant guidance and protocols for the mediation session;

3 Agenda – Matters Considered at Mediation

The matters identified for discussion are:

3.1 Provision of Potable Water Supply to PC55 (as amended):

- (a) Volume of potable water required to service the development enabled by PC55;
- (b) Any upgrading of the existing infrastructure currently required and/or timetabled by Watercare;
- (c) Options available to upgrade/supplement the existing potable water supply so as to service PC55;
- (d) Any further provisions required in PC55 to resolve the issue;
- (e) Cost sharing and commercial terms required.

3.2 **Provision of Wastewater Servicing to PC55 (as amended):**

- (a) Volume of wastewater generated by the development enabled by PC55: Residential @180 houses; Industrial @2.5ha;
- (b) Constraints of existing infrastructure: Fletcher’s Road Pump Station; existing Rising Main; Gravity Line
- (c) Any upgrading of the existing infrastructure currently required and/or timetabled by Watercare;
- (d) Options available to upgrade the existing wastewater infrastructure so as to service PC55;
- (e) Any further provisions required in PC55 to resolve the issue;
- (f) Cost sharing and commercial terms required.

3.3 **Agreed Position & Advice Required to Hearings Panel**

- (a) Outcomes that can be publicly disclosed;
- (b) Joint Technical Statement.

3.4 **Any Other Matters**

4 Matters of Discussion

Matter	Description	Check Agreement and if not agreed state reasons why. ACL=Askew Consulting WC=Watercare
1.	The development potential of PPC55 is agreed for assessment purposes at 180 dwellings and 2.5ha of Industrial Zoned land.	Agreed
2.	Provision of Potable Water Supply to PPC 55 (as amended)	
3.	The existing water reservoir is under capacity by approximately 0.5ML to cater for the existing Patumahoe region and development of the Live Zoned land in Patumahoe. Watercare confirm that the water storage capacity of the existing reservoir is 0.3ML.	Agreed
4.	The existing water reservoir capacity needs to be increased to service the existing “live” urban zoned land.	Agreed

5.	<p>In order to accommodate the PPC55 area, 24 hours of peak day reservoir storage +15% buffer is required which is an additional 0.6ML reservoir capacity. This is broken down as follows:</p> <p>(a) 180 dwellings requires an additional capacity of approximately 0.27ML;</p> <p>(b) 2.5ha of Industrial Zoned requires an additional capacity of approximately 0.35ML</p>	Agreed
6.	<p>In order to service the maximum development of existing Live Zoned land and proposed PPC55, an additional reservoir capacity of 1.1ML is therefore required.</p>	Agreed
7.	<p>Subject to confirmation by on-site investigation, the existing Council/Watercare reservoir site on Carter Road is not large enough to provide for an additional reservoir capacity of 1.1ML.</p>	Agreed
8.	<p>Watercare agree that the Developer/Consent Holder can provide a water reservoir of at least 0.6ML on the PPC55 land area, plus the connecting infrastructure to the existing transmission and local network to service PPC55 (which may likely include increased local network booster pump capacity) ("Option A"). The infrastructure will need to be in place prior to the release of the first section 224c certificate on any subdivision.</p>	Agreed
9.	<p>As an alternative to Option A, the Developer/Consent Holder could, in principle, "piggyback" on water reservoir upgrading being undertaken by Watercare to provide a total additional capacity of 1.1ML ("Option B"). This would be undertaken under a cost share agreement (for the total proposal) between Watercare and the Developer/Consent Holder, inclusive of any additional land requirements to accommodate this option.</p>	Agreed
10.	<p>Potable Water infrastructure upgrading to be implemented prior to s224(c) certificate for the first subdivision of PPC55 unless it is</p>	Agreed

	agreed with Watercare that the first subdivision can proceed ahead of the completion of the reservoir.	
11.	If the Developer/Consent Holder provides a water reservoir on their own land to service PPC55 (Option A), then the cost of that infrastructure and connecting infrastructure will be at the Developer/Consent Holder's cost.	Agreed
12.	If the Developer/Consent Holder and Watercare enter into a joint upgrading proposal, that provides a benefit or level of service beyond that required by PPC55 (Option B), then the Developer/Consent Holder will meet their share of the cost of additional storage and connecting infrastructure.	Agreed
13.	It is accepted by both Watercare and Askew that further investigation, assessment, and detailed design may result in an alternative solution being acceptable for the provision of water supply to PPC55.	Agreed
	Provision of Wastewater Servicing to PPC55 (as amended)	
14.	The rate of discharge of wastewater generated by the existing Patumahoe developed Live Zoned land, PWWF is assessed as 16.96 L/s.	Agreed
15.	The rate of discharge of wastewater generated by the existing Patumahoe developed Live Zoned land, Undeveloped Live Zoned Land with Approved Consents (as of 6/12/2021), PWWF is assessed as 21.27 L/s.	Agreed
16.	The rate of discharge of wastewater generated by the existing Patumahoe developed Live Zoned land plus Total Undeveloped Live Zoned Flows, PWWF is assessed as 21.88 L/s.	Agreed

17.	The rate of discharge of wastewater generated by the residential component of PPC55 (180 houses), PWWF is assessed as 7.53 L/s.	Agreed
18.	The rate of discharge of wastewater generated by the industrial component of PPC55 (2.4ha) which is calculated as being generated from 50% of the total industrial land area at medium flow rate, PWWF is assessed at 5.82 L/s.	Agreed
19.	The wastewater flow from PPC55 is therefore calculated as 13.35 L/s.	Agreed
20.	The total design wastewater flow now required is 35.23 L/s being for PPC55, the existing Patumahoe developed Live Zoned land plus Total Undeveloped Live Zoned Flows.	Agreed
21.	Upgrading of the existing wastewater infrastructure will be necessary to accommodate PPC55. The wastewater infrastructure that may need upgrading includes Fletcher Lane wastewater pump station, rising main and local gravity network.	Agreed
22.	<p>The parties do not agree on the maximum allowable pressure calculation for the rising main:</p> <p>Envelope Engineering (for ACL) has calculated that this design flow (35.23 L/s) would generate maximum pressures of 660 kPa within the rising main and that this fits within the allowable pressures based on AS-NZS2566.1 of the rising main calculated at 768 kPa.</p> <p>Watercare base their allowable pressures on a different standard, AS-NZS4130, from which they derive 606kPa. On this basis Watercare believe discharge through the rising main would be at a higher pressure than able to be accommodated by the rising main.</p>	Agreed
23.	Envelope Engineering (for ACL) have proposed, and Watercare have accepted that the option of a Lifting pump, or daisy chain arrangement, would be a suitable option to reduce the pressures	Agreed

	within the rising main to an acceptable level and could accommodate the design flow of 35.23 L/s (“ the Lifting Pump ”).	
24.	The Lifting Pump will likely need to be approximately half way along the rising main route with storage volume (assume 1 hour of ADWF storage volume, as it does not have a local network connected to it). Subject to further assessments.	Agreed
25.	Land will be required for siting the Lifting Pump (“ the Lifting Pump Land ”), which will be provided either on the Developer/Consent Holder’s land or otherwise acquired by Watercare and paid for by the Developer/Consent Holder.	Agreed
26.	Envelope Engineering have proposed, and Watercare have accepted, in principle, that the Fletcher Lane wastewater pump station can be upgraded to accommodate the design flow of 35.23 L/s and eight hours of average dry weather flow storage. This upgrading will most likely require an upgraded pump and additional storage (“ the Fletcher Lane Upgrade ”). The technical experts for ACL and WC agree to work together over the next few weeks to clarify a conceptual design for the upgrade.	Agreed
27.	Wastewater infrastructure upgrading to be implemented prior to s224(c) certificate for the first subdivision of PPC55 unless it is agreed with Watercare that the first subdivision can proceed ahead of the completion of the wastewater upgrade.	Agreed
28.	It is accepted by Watercare that the gravity network from the development to the pump stations can either accommodate the flows or can be modified to suit (at the developer’s cost).	Agreed
29.	It is accepted by both Watercare and Askew that further investigation, assessment, and detailed design may result in an alternative solution being acceptable for the provision of wastewater to PPC55.	Agreed

30.	In addition, local network infrastructure required within the subdivision will be required to be provided by the developer at the developer’s cost, which can be addressed during the resource consent process.	Agreed
31.	The Developer/Consent Holder will bear the cost of the Lifting Pump and the Fletcher Lane Upgrade, except and insofar as that upgrading results in a benefit to the network infrastructure over and above that necessary to service PPC55.	Agreed
	Provisions in PPC55 for Infrastructure	Agreed subject to comment below
32.	<p>The following amendments to PPC55 taking account of the above are agreed (amendments from 6 August 2021 version shown in blue) :</p> <p><i>I430.2. Objectives</i></p> <p>(1) ...</p> <p>(2) <i>Efficient infrastructure is provided to service the needs of the precinct area.</i></p> <p><i>I430.3. Policies</i></p> <p><i>(6)Require all lots within sub-precincts B, C, D and E to be connected efficiently and cost effectively to the existing public sewerage and water supply networks in Patumahoe, and recognise that the council may enter into such arrangements as are appropriate with any developer to ensure this happens in a timely manner.</i></p> <p>I430.6. Standards</p> <p><u><i>I430.6.13. Infrastructure Staging in Sub-precinct E</i></u></p> <p>(1) <u><i>Before any S224(c) certificates for subdivision or building consents for new dwellings are issued for any</i></u></p>	

	<p><i>stage of development within Sub-precinct E, <u>(excluding subdivision Consent BUN60329721)</u> the following works shall be constructed and completed to the Council's satisfaction:</i></p> <p>...</p> <p>(h) <u>An extension of the public wastewater network and water supply networks, along with any necessary upgrades, to ensure with sufficient capacity to service the proposed allotments and any future subdivision stages.</u></p> <p><u>Advice Note: Unless otherwise confirmed, upgrades are likely to be required to the water reservoir and wastewater network capacity and functional requirements (pump station and storage, plus lift station).</u></p> <p>I430.8. Assessment – restricted discretionary activities</p> <p><u>(3) Subdivision and infringements of subdivision standards for sub-precinct E:</u></p> <p><u>(g) provision of adequate capacity in the public water supply and wastewater networks to service sub-precinct E;</u></p> <p>I430.8.1. Assessment criteria</p> <p><u>(4) Additional assessment criteria for subdivision in sub-precinct E</u></p>	<p>Advice Note is agreed in principle, subject to refinement of the wording at the PPC55 hearing, if further design work has confirmed specific solutions.</p>
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	<p>(b) Rooding <u>and Infrastructure</u></p> <p><u>(vii) Whether the subdivision/development is aligned with the delivery of public water supply and wastewater network capacity required to service lots and/or development.</u></p> <p>(c) <u>In the event subdivision/development of sub-precinct E is staged:</u></p> <p><u>(ii) Whether subdivision/development staging is aligned with the delivery of public water supply and wastewater network capacity required to adequately service lots and/or development.</u></p>	
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5 Next Steps

		Parties positions
	<p>1. On completion of mediation, this Record of Mediation will be provided to the Hearings Panel as the basis upon which Watercare’s submission in opposition to PPC55 has now been resolved so that it no longer opposes PPC55. Watercare will confirm their position to the Hearing Panel.</p> <p>2. Alan Blyde and Dave Munro (for ACL) will prepare a draft Joint Technical Statement explaining the position reached in this Record of Mediation to be circulated to Watercare by 4pm, Friday 10 December 2021. An expert conferencing session, facilitated by Marlene Oliver, between Alan Blyde, Dave Munro (for ACL), and Andre Stuart (for Watercare) is scheduled for 1pm, Wednesday 15 December 2021. Any Joint Witness Statement will be filed with the Hearing Panel.</p>	<p>Agreed</p> <p>Agreed</p>

	<p>3. The parties will work co-operatively to prepare and agree a Memorandum of Understanding reflecting the Record of Mediation and the commercial terms between them. Julian Dawson (for ACL) will provide a bullet point outline of the content of the agreement for review and comment by Watercare. Following agreement, a formal agreement will be prepared by Watercare at ACL’s cost. The parties agree to use their best endeavours to reach agreement on the bullet point outline prior to the commencement of the PPC55 hearing.</p>	<p>Agreed</p>
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6 Participants to the Mediation

6.1 The participants to this Record of Mediation, as listed below, confirm that:

- (a) They agree that the outcome(s) of the Mediation session are as recorded in this statement; and
- (b) As this session was held online, in the interests of efficiency, it was agreed that each participant would verbally confirm their position to the Facilitator and this is recorded in the schedule below.

Confirmed online on 6 December 2021:

NAME	ROLE & PARTY	CONFIRMATION REFER PARA 6.1
Julian Dawson	Barrister – Askew Consulting Limited	Yes
Nick Woolf	Director – Askew Consulting Limited	Yes
Ann-Maree Gladding	Surveyor – Askew Consulting Limited	Yes
Alan Blyde	Consulting Engineer – Askew Consulting Limited	Yes
Dave Munro	Consulting Engineer – Askew Consulting Limited	Yes
James Hook	Planning Consultant – Askew Consulting Limited	Yes
Ilze Gotelli	Head of Major Developments – Watercare	Yes
Andre Stuart	Network Planning Manager - Watercare	Yes

Attachment 2



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REV	NO	DATE	BY	DATE
P1	PRELIMINARY DESIGN		JW	04/10/21
P2	PRELIMINARY DESIGN - REDRAWN		JW	03/10/21

PROJECT:
PATUMAHOE PLAN CHANGE

TITLE:
PROPOSED WATER SUPPLY LAYOUT PLAN
RESERVOIR LOCATION AND SIZING



DESIGNED: JW DRAWN: JW
 CHECKED: AB DATE: 3-Dec-2021
 SCALE AS: 1:250 SCALE AS: 1:500
 STATUS: PRELIMINARY
 PROJECT No: 1725-01 DRAWING No: 500 REVISION: P2

Attachment 3



NOTES:

OPTION A

1. INSTALL STORAGE TANK
2. FIT NEW PUMPS TO EXISTING PEDESTALS/GUIDE RAILS (PUMPS STILL TO BE SELECTED)
3. WET WELL IS OF A SATISFACTORY STANDARD
4. WWPS DOES NOT NEED TO SATISFY DP/COP STANDARDS WITH IT BEING AN EXISTING PUMP STATION
5. REFURPOSE EXISTING SWITCHGEAR

OPTION B

1. NEW STORAGE TANK
2. NEW WET WELL/VALVE CHAMBER/PUMPS ADJACENT TO EXISTING WET WELL
3. NEW SWITCHGEAR

METHODOLOGY FOR OPTION B

1. INSTALL STORAGE TANK
2. RELOCATE EXISTING SWITCHGEAR
3. INSTALL NEW WET WELL
4. RUN LINE FROM WET WELL TO SATELLITE MANHOLE AND BUNG
5. BACKFILL WET WELL AND INCOMING LINE TO WET WELL
6. TIE INTO EXISTING DISCHARGE LINE
7. INSTALL NEW SWITCHGEAR
8. COMMISSION WWPS
9. DECOMMISSION OLD WWPS
10. HARDFILL OLD ASSETS

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REVISIONS			
REV	NOTES	BY	DATE
01	PRELIMINARY DESIGN	JAT	18/01/21

PROJECT: PATUMAHOE PLAN CHANGE

TITLE: PROPOSED PUMP STATION STORAGE LAYOUT OPTIONS



DESIGNED: JAT	DRAWN: JAT	REVISION: P1
CHECKED: DJM	DATE: 13/06/2021	
SCALE A1: 1:100	SCALE A3: 1:200	
STATUS: SKETCH	DRAWING No: SK102	
PROJECT No: 1725-01		