

8. AVONDALE PARK - PROPOSED WASTEWATER PUMPING STATION

General Manager responsible:	General Manager City Environment Group, DDI 941-8608
Officer responsible:	Unit Manager Asset & Network Planning
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PURPOSE OF REPORT

1. To enable the Burwood/Pegasus Community Board to consider an application made under the Canterbury Earthquake (Reserves Legislation) Order 2011 ("the Order") for the installation of a waste water pumping station and pipe infrastructure in Avondale Park, and recommend to the Council that they grant approval for its placement on the park. This work is required to be completed urgently to return normal sewerage services to the area reducing the reliance on temporary diesel powered pumps and removing discharges to the stormwater network.

EXECUTIVE SUMMARY

2. The Christchurch City sewer collection network system includes 945 kilometres of laterals, 1,617 kilometres of gravity sewer pipeline, 145 wastewater pump stations, 151 kilometres of pressure mains and a centralised wastewater treatment plant at Bromley. The September 2010, February and June 2011 earthquakes have caused significant damage to the system:
 - (a) Investigation of the damage to the laterals and gravity sewers is in progress. Around 300 kilometres of gravity pipes have already been checked to date out of which more than 25 kilometres of the pipelines require replacement. Many of the deep gravity pipelines will now be replaced by enhanced-gravity and pressure systems. The new sewer collection system is shallower, more earthquake resilient and easier to repair;
 - (b) Four pumps stations (PS63, PS36, PS1 and PS15) have suffered substantial damage which will need extensive repair or a total re-build at new locations. Most of the pump stations have suffered medium to minor damages. Investigation work is currently underway;
 - (c) Over 15 kilometres of pressure mains have been identified for replacement, 10 kilometres of which had been replaced by the end of August 2011;
 - (d) The centralised Bromley treatment plant has suffered over \$30 million of damage to various sections of the plant including the ponds.
3. The earthquakes of September 2010 and February 2011 have resulted in damage to the wastewater network in the catchment of Pump Station 54 (PS 54), Avondale. Refer to **Attachment One** for catchment area. Repairs and reinstatement of the wastewater network requires consideration of the following issues and their impacts:
 - (a) The differential ground settlement that has occurred in the catchment has resulted in PS 54 having risen relative to the network;
 - (b) The ends of network lines are generally close to the Avon River and greater settlement in this area has resulted in a general "flattening" of the catchment;
 - (c) There is expected to be a degree of ongoing settlement in the area, so that pipes laid at minimum grades may not continue to provide the required level of the service in the future.
4. The net result of the above issues is that there is less elevation to provide the service required via gravity and therefore the repairs must provide a greater degree of resilience to settlement in order to provide the required level of service for the design life of the asset.
5. As there is less elevation to provide the required grades, PS 54 will service a smaller catchment at its current level or need to be reconstructed at a greater depth to service the wider catchment. Retaining PS 54 at its post earthquake level would require an additional pump station within the current catchment.

6. The option of repairing the existing pump station to service the whole catchment would require it's reconstruction at a greater depth and the relaying of sewer lines. This would be expensive and result in a less resilient system. The option of retaining the existing pump station in it current location to service part of the catchment would require an additional pump station to be built elsewhere in the catchment to match the pre-earthquake level of service in terms of catchment area and reliability.
7. A workable location for the new pump station (PS 106) is defined by the areas that can no longer be serviced by the existing pump station. The pump needs to be situated in a location where it can service the required area with the pipe network constructed in accordance with the City Council Infrastructure Design Standard grade requirements. Refer to Attachment One. This limits the location to within Woolley Street between Belmont and Eglinton Roads and the southern side of Avondale Park. Extending the possible location area in which to site the station would result in the wastewater lines and wet well being installed at a greater depth, potentially encountering ground water issues which would significantly increase the difficulty and expense of any future repair work required to the system. Woolley Street only has a narrow verge and therefore is not a suitable site for the siting of the proposed pump station. It is therefore proposed that the pump station be located on the southern edge of Avondale Park.
8. A number of sites in and adjacent to Avondale Park were considered as possible permanent sites for building the new pumping station. The benefits and non-benefits of these sites, including the option of rebuilding PS54 to service the entire catchment, are given in the following table. The letters in bold and contained in brackets indicate the general locations as shown on the Location Map refer to **Attachment Two**. Refer to **Attachment Three** for the location of existing pump station (PS54).

Location	Benefit	Dis-benefit
(A) Woolley Street verge	<ul style="list-style-type: none"> • Not a park. • No park access required for construction. 	<ul style="list-style-type: none"> • Proximity to neighbours. (construction and occupation of street lawns) • Verge width is too narrow for the pump station configuration. • Any repairs or maintenance would require digging up the carriageway.
(B) Avondale Park – north west of preferred site	<ul style="list-style-type: none"> • No specific current use. • Further away from areas of residential occupation. 	<ul style="list-style-type: none"> • Wastewater lines and wet well would need to be installed at a greater depth where groundwater is more likely to be encountered (greater cost). Slightly greater disruption to the park. • More intrusive than preferred boundary location.
(C) Avondale Park – accessway off Woolley Street	<ul style="list-style-type: none"> • Not located in park proper. 	<ul style="list-style-type: none"> • Closer to residents. • Partial obstruction to park access due to above ground features. Construction and maintenance would require blocking this access route into park.

(D) Avondale Park – south west corner	<ul style="list-style-type: none"> • Less intrusive than non-boundary locations. 	<ul style="list-style-type: none"> • Closer to neighbours. • Wastewater lines and wet well would need to be installed at a greater depth where groundwater is likely to be encountered (greater cost).
(E) Avondale Park – preferred southern boundary	<ul style="list-style-type: none"> • Room to construct the pumping station infrastructure. • Location would not require deep trenching. • Site would not displace park users. 	<ul style="list-style-type: none"> • Station and associated infrastructure would be located on a public recreation reserve. • Minor visual intrusion by above ground infrastructure. Planting could easily hide this from view if required. • Temporary disruption to park users and adjacent kindergarten during construction.
(F) Rebuild existing pump station (PS 54) to service pre-quake catchment	<ul style="list-style-type: none"> • Park land not required. 	<ul style="list-style-type: none"> • Greater construction cost. • Construction time longer. • Maintaining service to residents during construction would be difficult. • Discharges to river would need to be maintained for a longer period. • Wastewater lines and wet well would need to be installed at a greater depth where groundwater is likely to be encountered (greater cost).

9. The preferred (and cheapest) option of a shallow network and shallow grade located on the southern side of the park (option 5 in table below), has been costed at approximately \$1 million less than the cheaper of the two options not requiring an additional pump station (like for like). The most expensive of the three options utilising the park space is \$800,000 less expensive than the cheaper of the two like for like options. Note, options 3 to 5 in the table below were assessed as a non-specific location in the vicinity of the park.

Option		Risk of future park disruptions	Cost
1	Like for like, minimum IDS grades	Not in park	\$5,310,000
2	Like for like, steeper grades	Not in park	\$5,700,000
3	Additional PS, shallow network, steeper grade	Least risk of future park disruptions	\$4,910,000
4	Additional PS, deep network , steep grades	Low risk; greater repair time	\$4,660,000
5	Additional PS, reduced grades, shallow network	Slightly higher risk; repair time low	\$4,320,000

10. Options 3 to 5 in the above table essentially represent permutations on network depth and grade and would all utilise the park as the location for the required additional pump station. The piping network associated with the selected option (Option 5 in the table above) would be more susceptible to damage from any future land settlement than options 3 and 4. There is therefore a slightly greater chance of the need for future repair work to infrastructure to be undertaken within the park than the other two options to site the pump station within the park. The shallowness of the network for options 3 and 5 would mean less repair time spent occupying the park than Option 4.

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11. The steep grades of options 3 and 4 would present slightly less risk for the park in terms of a future disruption, but if it did occur, the disruption time would likely be longer for Option 4 due to the depth of the network. Superficially, Option 3 appears to present the lowest risk to the park of the park based options. Option 5 is \$600,000 cheaper, however, to provide the service required.
12. The wastewater pump station would consist of a number of connected assets positioned in the park. Please refer to the infrastructure plan **Attachment Three**. In addition to one metre high bollards, only three items would be located above ground. These are: the control kiosk (0.7 metres by 2.5 metres by 1.5 metres high); backflow preventer (0.3 metres by 0.5 metres by 0.7 metres high); odour filter dome (diameter of 0.5 metres). The area bollarded off and the area outside this area occupied by above ground infrastructure will be approximately 26 square metres in total. Maintenance access would be via the park access way between 61 and 63 Woolley Street. Gobi blocks would be used to allow access over the park itself to the pump station. A seven metre wide easement would be required through the park in which to lay the gravity sewer pipe, and a six metre easement over the width of the existing park accessway at 67 Woolley Street in which to lay the incoming gravity sewer and the outgoing pressure main. The area proposed is currently planted in low shrubs. See photographs in **Attachment Four**.
13. The pumps are very quiet, submersible units, emitting minimal noise. Generators will not be present at the pump station unless there is an extended power outage and, in the unlikely event of this occurring, they will typically operate at approximately 68 dBA. Pumps operate intermittently day and night depending on the incoming flows which typically peak in early mornings and evenings. The design will meet the criteria for noise output from the station as laid out in Clause 1.19 of the Christchurch City Council City Water and Waste Unit Sewage Pumping Station Design Specifications. This clause requires the installation to comply with the noise levels at property boundaries as set out in the City Plan. Noise from the pump station will be minimal due to the submersible pump/enclosed wet well design. Noise from the control panel (VSD drives) will be mitigated to meet the City Plan requirements by soundproofing of the control panel kiosk as required.
14. There are a number of trees which will need to be removed, including a clump of cabbage trees in a garden bed. Advice received from the Council arborists indicate these trees are generally small in stature, in poor condition comprising three Alders and two Oaks. However, there is a very large Lombardy Poplar at the end of the eastern Woolley Street access way where both the gravity and pressure wastewater mains are proposed to be laid (please refer to **Attachment 4**). The pressure pipe could be 'thrust' but the gravity pipe needs to be installed in an open trench. An alternative layout is not possible in this location as adjacent land ownership precludes this. The western access way has been avoided as routing the pipework there would require work to be undertaken at a depth likely to encounter ground water in which construction is significantly more time consuming and expensive. Hence this (Poplar) tree will need to be removed before the preferred option can be executed. There are also a number of small/medium sized trees which are in the proximity of works which will need to be 'protected' during the construction period. These are two Alders (De Courcy Place end) and one Oak (adjacent to the poplar). It might be possible to avoid one of the trees at the DeCourcy Place end by making a slight adjustment (one to two metres to the south) of the pipe alignment. The investigation results will be presented at the meeting in addition to a plan showing which trees would need to be removed. 'Protection' means temporary fencing to avoid tree damage. Tree work will be undertaken by the Council's arboricultural contractor (TreeTech).
15. There may be a requirement to undertake appropriate landscaping around the above ground structures to better integrate them into the park environment, the responsibility for this requirement being delegated to the Transport and Greenspace Manager to administer as appropriate to the location. The photo in **Attachment Five** illustrates a similar installation.
16. **Attachment Six** shows the area required for construction. Construction access will be required from 67 Woolley Street, and also from DeCourcy Place as shown on the on Attachment Six. Permanent access to the pump station will be via the access path between 61 and 63 Woolley Street. The construction work within the park will occur concurrently and is expected to take two months to complete.

17. Construction work is currently underway replacing the damaged gravity network in areas around Avondale Park, there being a requirement for the completion of the building of the pump station by the time the sewer pipeline works are completed to ensure that the 140 properties will be connected to the sewer system, without which extensive over ground pumping would need to be maintained. The normal approval process timelines (involving consultation), and consequently delays to the work being completed would add significantly to construction/temporary remediation costs, and contributing to a higher risk of failure for properties in the new pump station catchment. Currently the pump station 54 catchment is being served by a combination of temporary pumps (some discharging directly to rivers) and the existing pump station.
18. Avondale Park is a sports park of just under four hectares. Formally utilised by cricket in the summer and intermediate soccer in winter, it also functions as a local park and features a playground, tennis court and petanque piste. The playground and accessways from Woolley Street to De Courcy Place are well utilised by the adjacent kindergarten and local residents. Most of the park has substantial liquefaction mounding. This will be removed prior to construction to minimise the nuisance to neighbours. See photographs in **Attachment Four**.
19. Officers consider the proposed installation of the pumping station and associated underground piping and cabling in Avondale Park will have a small impact upon the park environment and its use, this impact being greatest during the temporary construction period. The proposed sewer easement cuts through the edge of the cricket outfield, however it is unlikely this will need to be dug-up in the future. In addition, the park has been scheduled for post earthquake repair work for the coming cricket season. The effects are listed in the following table, with comment on how each of these may be mitigated in italics.

Temporary Effects (How these can be mitigated)	Permanent Effects (How these can be mitigated)
<p>Closing off with temporary fencing a small part of the park adjacent to, but not including, the sealed path running between DeCourcy Place and Woolley Street to public access and use during the construction period. This would be for a period of approximately two months. One of the accessways into the park off Woolley Street will also be fenced off. Will have a minor visual impact.</p> <p><i>Access between the two streets along the existing path will be maintained. Access to the main part of the park will still be possible from Waratah Street and Mervyn Drive (the main entrance).</i></p>	<p>There will be bollards and two above ground boxes located on the south boundary of the park and a box within the eastern Woolley Street entrance way that are not required for formal (sports field) recreational use. The proposed infrastructure will provide no direct benefit to recreational users of the park.</p> <p><i>(Although not a recreational facility the pumping station will provide a wider community benefit by ensuring sewage is safely removed from the community. The pump station units are proposed to be located on the park at sites that will have the little impact on the park environment and its use.)</i></p>
<p>Works will take place in the vicinity of several trees.</p> <p><i>Two Alders and one Oak will require to be temporary fenced to protect them during construction. This work is to be undertaken in accordance with the requirements of the City Arborist or his designates.</i></p>	<p>Being raised from the ground surface, the bollards, pumping station units, radio aerial, and odour filter dome structures will present obvious profiles, which will have a small impact on the visual/landscape values of this part of the park.</p> <p><i>This impact can be lessened in a variety of ways, including landscaping, structures materials and colour, and planting.</i></p>

	<p>Several trees will need to be removed as described in paragraph 13 above.</p> <p><i>Not possible to mitigate the removal of most but it is possible to realign proposed sewer line slightly at the DeCourcy Street end to avoid one tree.</i></p>
<p>Heavy machinery and vehicle access on to the park will be required during the construction phase.</p> <p><i>Access to the construction sites will be from De Courcy Place and the eastern informal accessway from Woolley Street. Grassed areas and any vegetation or structures damaged will be reinstated upon completion of the works.</i></p>	<p>Vehicle access on to the park to the pump station will be required on a periodic basis for maintenance purposes.</p> <p><i>Park access will be via the existing formed access-way into the park from Woolley Street. Access is expected to be infrequent. The use of gobi blocks around the site for access will allow grass to grow through thereby lessening the visual impact.</i></p>
<p>During construction process dust could be a problem for residents and the adjacent kindergarten, especially because of the amount of liquefaction mounding present.</p> <p><i>Mounds will be carefully removed by contractors prior to construction work</i></p>	<p>Pipe-work will cross over existing underground lighting cabling. Sewer easements will cut through the edge of the cricket outfield and the informal access-way from Woolley Street.</p> <p><i>New pipework will be at a different depth to the lighting cable where they cross over. The risk of future damage requiring repair work has been accepted as low. The shallow network is easily accessible. The main accessway from Woolley Street is not affected.</i></p>
	<p>Pumps operate intermittently day and night depending on the incoming flows which typically peak in early mornings and evenings.</p> <p><i>Pumps will be designed to comply with City Plan noise requirements.</i></p>

20. Non-recreational infrastructure, such as water pumping stations and wells, have previously been sited on recreation reserves (for example, Burnside Park) but only where this has been shown to be absolutely necessary, in the wider public benefit, and any effects on the reserve have been minimal or mitigated. In general though, non-recreational facilities on recreation reserves have not been supported.
21. Avondale Park is a classified recreation reserve pursuant to section 17 of the Reserves Act 1977, made up of LOT 57 DP 59056 – 10,617 square metres (CT 31F/202) LOT 7 DP 41389 to 82 square metres (T 10F/574) PT LOT 11 DP 27058 – 243 square metres, PT LOT 13 DP 27058 – 243 square metres, PT LOT 7 DP 6481 (1F/202) 22,334 square metres (the proposed infrastructure will be built on this area of the reserve), LOT 40 DP 52812 – 6,408 square metres (pipe work through this lot).

FINANCIAL IMPLICATIONS

22. The cost of the proposed developments, including the reinstatement of the park surface and required landscaping and amenity enhancements to mitigate park impacts have been included in the Annual Plan 2011/12 budgets for Infrastructure Rebuild. These works will largely be funded from insurance.

Do the Recommendations of this Report Align with 2009-19 LTCCP budgets?

23. No - See above.

LEGAL CONSIDERATIONS

24. In ordinary circumstances the proposal to lay piping and install a wastewater pumping station in Avondale Park would be approved by granting an easement under section 48 of the Reserves Act 1977. This may require a change of classification of that part of the reserve affected by the proposed works as a local purpose reserve for the purpose proposed, this being dependent on the size of the works proposed and their long term effect upon the reserve. The former process may, (the current understanding in this particular case will), while in the latter would require public consultation. Council staff consider a change of classification will not be required in this case.
25. In response to the circumstances arising from the 22 February 2011 earthquake, the Government enacted the Canterbury Earthquake (Reserves Legislation) 2011 Order pursuant to the Canterbury Earthquake Response and Recovery Act 2010 to enable reserves to be used for certain purposes which would not ordinarily be permissible under the Reserves Act 1977, or other similar legislation, and to avoid unnecessary delays in responding to circumstances arising from the earthquake.
26. The Order enables some temporary solutions to issues caused by the earthquakes to be accommodated on park and reserve land. Whilst the Order currently expires on 31 March 2012, the Department of Building and Housing and the Department of Conservation have recommended to the Government that the powers granted under the Order be extended to 18 April 2016, this being the expiry date of the empowering legislation under which the Order has been made). At the date of writing, it is expected the extension will be made later in September 2011. The Order does not allow the use of parks and reserves for earthquake related purposes after its expiry date, unless the use would normally comply with uses allowed under the relevant legislation that the park and reserve is held under, and a permanent occupation right in accordance with that legislation has been granted, before the expiry of the Order.
27. Clause 5(b)(vii) of the Order provides that the Council, or any person authorised in writing by the Council, or the Council's Chief Executive, may use a reserve or erect a structure on a reserve for works associated with the repair and renewal of council infrastructure.
28. The Order also provides that when the Council authorises any such use of a reserve, that it does not need to comply with any relevant management plan or the usual Reserves Act processes. However, the Council is required to take all reasonable steps to protect the integrity of the reserve and to ensure that the reserve is reinstated at the end of the use as closely as
29. In addition to Council authorisation under the Order, the Council will also need to obtain all necessary resource and building consents required (if any) under the Building Act 2004 and the Resource Management Act 1991 or any Orders applicable to these acts made under the Canterbury Earthquake Response and Recovery Act 2010 for the proposed use. Approval under the Reserves Legislation Order does not constitute consent under those Acts.
30. Subsequent to approval being granted under the Order for the temporary use of Avondale Park, for the construction of the sewage pumping station, the Council will need to put in place easements over the infrastructure to be built in the park in accordance with the requirements of section 48(6) of the Act to formalise the permanent occupation of the reserve.
31. The reason approval for the pump station under the Order is being sort is because of the time it would normally take to obtain such approval under the Reserves Act 1977, which includes public advertising, possible hearing and the Minister of Conservations approval under the Act, being not acceptable from the earthquake infrastructure repair perspective.

32. Similar circumstances have arisen with respect to the use of approximately 3,000 square metres of Rawhiti Domain for the construction of a 66Kva electricity substation by Orion Limited. An application for an Order-in-Council is currently being processed by the Government to amend that Reserves Act 'business as usual' processes by changing the classification of the part of the reserve occupied by the substation and allowing the Council to grant the required easement without public consultation being required. Officers suggest that it will be necessary for a similar Order-in-Council to be made to provide a permanent legal solution for the proposed pumping station and associated works.
33. Before any work commences upon the site it will be necessary to contact the Area Greenspace Contracts Manager, to arrange an onsite meeting to discuss the Council requirements for working on the park, some of which are set out below:
- (a) The contractor undertaking the work is to have a minimum of \$2,000,000 public liability insurance; a copy of the policy is to be brought to the meeting.
 - (b) The site works within the park must be fenced off at all times to prevent public access to the site, because the work is being undertaken in a public park.
 - (c) No materials or equipment are to be stored under the drip line of any trees in the park outside the cordoned construction area.
 - (d) There is to be a temporary access licence signed between the Council, Area Contracts Greenspace Manager, who is acting under the delegated authority of Council, and the contractors undertaking the work to install the waste water line.
 - (e) A bond will be required to be paid to the Christchurch City Council via the Area Contract Greenspace Manager before work commences upon the site. The bond less any expenses incurred by the Council to restore the park to its former condition will be refunded to the contractor upon completion of the work, after the site has been inspected by the Area Contract Greenspace Manager.
 - (f) The liquefaction dust mounds will be carefully removed prior to construction, the control kiosk will be moved 1.5 metres further away from the boundary fence with the kindergarten than is shown on the attached plan. There may be other on-site requirements that the Area Contracts Manager wishes to include in the licence.

Have you considered the legal implications of the issue under consideration?

34. Yes, see above.

ALIGNMENT WITH LTCCP AND ACTIVITY MANAGEMENT PLANS

35. Yes – earthquake recovery.

Do the recommendations of this report support a level of service or project in the 2009-19 LTCCP?

36. As above.

ALIGNMENT WITH STRATEGIES

37. Not applicable.

Do the recommendations align with the Council's strategies?

38. Not applicable.

CONSULTATION FULFILMENT

39. Clause 6 of the Order expressly provides that the Council may act under the Order without complying with the Reserves Act 1977 (including any provision relating to public notification or the hearing of objections).
40. Clause 7 of the Order requires the Council to give notification to parties who have an easement, lease, licence, covenant or other legal right over the area of reserve to be temporarily occupied under the Order. No parties are captured by these legal rights, however the adjacent Kidsfirst Kindergarten has been consulted. Their concerns were: dust during construction (given the number of liquefaction dust mounds present on the park); security issues associated with the proximity of the 1.5 metre high control kiosk (proposed to be located adjacent to the boundary fence with the kindergarten); and noise from the operation of the pump. It has been agreed the liquefaction dust mounds will be carefully removed prior to construction, and the control kiosk will be moved 1.5 metres further away from the boundary fence. The pump station components will be constructed to meet City Plan noise requirements.
41. In addition, the Canterbury Earthquake (Local Government Act 2002) Order 2010 exempts the Council from compliance with some of the decision-making processes set out in the Local Government Act 2002. These include the requirement that the Council considers community views and preferences.
42. The exemptions can be relied upon in this case because it is necessary for the purpose of ensuring that Christchurch, the Council, and its communities respond to and recover from the impacts of the Canterbury Earthquakes.

STAFF RECOMMENDATION

It is recommended that pursuant to clause 5(b)(vii) of the Canterbury Earthquake (Reserves Legislation) Order 2011 the Burwood/Pegasus Community Board recommend to the Council that:

- (a) It authorises the use, by the Christchurch City Council, of that part of the recreation reserve known as Avondale Park as is approximately shown on the plans attached to this report (being **Attachment Three**) for the purpose of the installation and operation of a wastewater pumping station and associated infrastructure; and
- (b) It agrees that the period for which the authority referred to in paragraph (a) of this recommendation shall apply is that period commencing on the date of this authority until the date on which the Canterbury Earthquake (Reserves Legislation) Order 2011 shall expire (including any amended expiry date); and
- (c) The authorisation in (a) above be made on condition the principal contractor contacts the Greenspace Area Contracts Manager to complete a temporary access licence which includes the conditions set out in paragraph 33 above; and
- (d) Staff be requested to undertake a suitable process, as referred to in paragraph 32, to ensure appropriate easements are put in place over the park, as indicated on **Attachment Three**, to secure the long term location of the wastewater pump