

5. CWTP PIPELINE OPTIONS FOR WASTEWATER EFFLUENT DISCHARGE

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The purpose of this report is to gain Council approval to reduce the number of pipe routes under investigation for the wastewater ocean outfall. This is achieved by identifying pipe routes which have had preliminary investigations and public consultation and where the analysis of the investigations to date and feedback from the public indicate those routes are less likely. The objective is to provide certainty to the community regarding realistic viable pipe routes at the earliest possible time. Effort can then be focused on identifying the issues within the streets that are more likely to be used as a pipe route and finding ways of resolving those issues with these streets rather than causing continuing anxiety to people living in streets seen as less likely as a pipe route.

BACKGROUND

Early budget preparation for the construction of the ocean outfall pipeline was based on the use of Bridge Street as the pipe route. This was because Bridge Street offered the shortest route and the longest straight length to construct a temporary rail line to launch a pipeline to the ocean. This allowed a (say 2.0km) pipeline to be pre-assembled on Bridge Street and pulled into the ocean in the shortest time, thereby reducing risk related to adverse weather during construction of that part of the outfall. An alternative method of incremental construction in say short 100m pre-assembled lengths would be necessary in streets that are shorter than Bridge Street. In these instances a pipe stringing yard would need to be established on the foreshore (except for Jellicoe Street where the domain could be used for this purpose). The shorter the length of pipe stringing the more construction risk there is by longer exposure to the risk of bad weather.

When the Council resolved in October 2002 to proceed with the preparation of an Assessment of Environmental Effects (AEE) for an ocean outfall it became apparent that other pipe routes apart from Bridge Street needed to be investigated. This would be required for the AEE, and there was some public concern regarding the choice of Bridge Street largely due to the potential disruption to business and access to properties along the route during construction. Additional streets were subsequently identified for investigation as possible pipe routes. These were Beatty Street, Jellicoe Street, Caspian Street, Godwit Street, and Heron Street (refer Appendix 1).

INVESTIGATIONS

Consultants URS were commissioned to undertake an evaluation of each street under consideration with respect to economic, social, and ecological issues. As part of this work NIWA undertook an ecological assessment of the impact related to a pipe crossing of the estuary, excluding the ocean foreshore and seabed. The reason for excluding the ocean for separate streets as part of this evaluation is because the issues related to ecology are very similar for each of the routes so only one ocean study is needed. Thus a single separate ecological base line study is being undertaken within the ocean. Kvaerner, a Singapore based company with specialist ocean pipeline construction experience undertook a review of the construction technique and cost estimate for the pipe routes. Information from these reports was included within the report prepared by URS. This report was distributed at the open days referred to later in this report, and is also available on the Councils Web page on the Ocean Outfall.

CONSTRUCTION RISK FOR OCEAN PIPELINE LAUNCHING

Although the previous investigation and reports completed by URS acknowledged the construction risk associated with incremental pipe pulling to the ocean rather than a single pull approach, no value was attributed to this. Kvaerner requested to quantify this risk. For clarity, this is the risk associated with pulling a single pipe string into the ocean in one or two lengths (of say 2.0km or 1.0km times two) from Bridge Street against pulling 20 pipe strings (say 100m long) from a beach fabrication site at any of the other potential routes apart from Jellicoe Street. The beach stringing sites require removal of 100m of the sand dunes to provide sufficient area to marshal the pipe. This creates potential adverse affects to adjacent residences exposed by lowered dunes related to wind blown sand, difficulty re-establishing the ecology (eg marim grass), and the risk to the construction site from storm damage. Jellicoe Street has the alternative option of establishing a stringing site on the beach or within the park at the west end of the street.

Kvaerner advised that it was not possible to fix a precise cost for the risk involved, though their 'guesstimate' would be in the region of 10-15% of the value of the contract based on their extensive experience. In making this estimate the following considerations have been made:

- Longer off shore duration for the pull as the strings need to be attached one by one.
- Risk of pipe settlement during the intermittent periods when each string has been pulled and the next string is being installed.
- Risk of sedimentation over the longer pull duration.
- Larger winch to account for this uncertainty.
- Contingency for air lifting the pipe string length if stuck or settled in mud.
- More labour and equipment downtime as the strings are pulled.
- Weather problems.

Based on this additional risk Kvaerner have advised there is a \$3.5m to \$4.0m advantage to using Bridge Street over any of the beach launching options with respect to construction risk.

SOCIAL COST

No matter which route is used for the pipe route, it is recognised there will be significant disruption to those living in the street, and the greater community depending on the street being used. Again this is difficult to quantify and will be somewhat subjective in assessment, however, an estimate has been made of the social disruption on more likely routes so as to make some comparative judgement between the routes. This assessment is shown in Appendix 2. One part of the assessment has placed a value on the disruption that will be experienced by residents in the street where construction takes place due to this activity for a period of say eight months for the dig and lay part of a contract. In Bridge Street for example, progress would expect to proceed at about 150m of pipe/month. As Bridge Street is approximately 1,200m long between Bexley Rd and Marine Parade, this would equate to eight months. It is not expected that more than 200m of road would be subject to construction operations at any one time for this part of the project (being dig and lay between the CWTP and foreshore). This would then be followed by pipe stringing operations including potentially, provision of a rail line along the centreline of the road to enable the pipe to be launched to the ocean (pipe launch from foreshore to minimum 2 km offshore). It is possible that a pipeline may sit in this location for a considerable time while a suitable window of opportunity is available from settled weather. Ancillary to this will be the need to relay existing services and reconstruct the street.

Significant concern has been expressed by the community regarding this disruption. During consultation to date, it has been stated that the Council does not pay individuals compensation as a result of construction activity, however, the Council will look favourably at providing a significant living street enhancement in recognition of the disruption that will be experienced. If the final pipe route selected has an impact on business, there will need to be further investigations on how those impacts can be mitigated.

It would be useful if the Council would endorse this approach so that this information can be passed to residents in each of the streets that will be subject to further investigations. It is really important that the local community (residents and business) fully understand what disruption is going to occur and what the Council will provide **before construction starts**.

CONSULTATION

Two open days were held at the South New Brighton Community Centre on Saturday 15 February 2003 and on Tuesday 18 February 2003 evening. At the open days information was presented to the community from the URS report on the pipe routes, as well as other general information related to the outfall. Staff were on hand to discuss the information and listen to those that attended. There was also the opportunity to fill in a feedback form seeking what people thought the Council needed to take into account when deciding which pipe route is best. An independent facilitator was also in attendance to assist in ensuring that the community had suitable opportunity to receive information and provide feedback. Approximately 250 to 300 people attended these open days.

OPEN DAY FEEDBACK

There was a lot of interest in the material on display at the open days. While the purpose of the open days was to consult on possible pipe routes the feedback from the community from discussion with staff and consultants in attendance was generally focused on water quality. Although there was certainly interest in the pipe route, people were mostly interested at this stage of the consultation process in the level of treatment of the wastewater, construction techniques and issues related to disruption, damage to property, and access. A lot of those issues were independent of pipe route. The feedback forms that people filled in also reflected the comments above. A summary of the feedback is included as Appendix 3.

ANALYSIS OF PIPE ROUTE OPTIONS

The table in Appendix 4 summarises the issues identified within the URS report on pipe routes, and incorporates feedback from the public received at the open days and reflects some of the individual issues identified, as well as the social concerns.

This table has been used to undertake a subjective assessment of the issues by assigning a weighted attribute to each issue.

This weighting has been undertaken by assigning a score on a scale of 0-9 against the importance or significance of each issue, then assigning a score on a scale of 0-3 against the severity of the adverse affect caused by that issue on each route. The score assigned to the importance or significance of the issue is then multiplied by the score assigned to the severity of the adverse affect for each route. The sum of all the scores for each route gives the total score for that route. The higher the number, the greater the severity of issue and impact, therefore the higher the score the greater the impact of the pipeline on each route. Hence lower scores are better.

The results of this analysis are included in Table 1 below labelled 'Ranking of Streets' and lists the streets in order of ranking as scored within this table. The table also includes columns showing the assessed construction cost, construction risk cost for the ocean pipeline part of the project, and a subjective social cost.

Table 1: Ranking of Streets

Rank	Pipe Route	Weighted Score Appendix 4 Note (1)	Estimated Construction Cost (A)	Construction Risk for Ocean pipe launch (B)	Assessed Social Cost Appendix 2 (C)	Total Cost (A) + (B) +(C)
1st	Jellicoe Street	64	\$35.9m	\$1.5m for park Note (2) \$3.5m for beach	\$0.2m	\$37.6m \$39.6m
2nd	Beatty Street	108	\$35.3m	\$3.5m	\$0.2m	\$39.0m
3rd	Bridge Street	109	\$35.9m	\$0.0	\$1.8m	\$37.0m
4th	Godwit Street	119	\$41.7m	\$3.5m	Not assessed	\$45.2m
5th	Caspian Street	124	\$40.4m	\$3.5m	Not assessed	\$43.9m
6th	Heron Street	132	\$42.4m	\$3.5m	Not assessed	\$45.9m

(1) Low number means better score

(2) See discussion under "Jellicoe Street Favoured option" heading below

GODWIT STREET, CASPIAN STREET, HERON STREET: LEAST FAVOURED ROUTE

For the purposes of eliminating potential pipe routes, it appears that the three southern routes of, Godwit, Caspian, and Heron score (see weighted score in Table 1 above) the highest (greatest impact on route) and therefore can be reasonably quickly discounted. These three southern routes are between \$4.3M and \$6.3M more expensive than the most expensive of any of the three northern routes. All three southern routes require a pipe-stringing yard to be established on the foreshore of the ocean implying that at least 100m of sand dune would need to be removed temporarily, exposing a narrow section of the estuary to risk from storms, inconvenience to the residents from wind blown sand, and difficulty re-establishing the ecology of the dunes. The community have expressed concern at this. These routes also involve a long estuary crossing with associated disruption to that ecology. The only real advantage of the southern routes is that for the crossing of the spit, there are the fewest people on the actual pipe route.

For these reasons, and to avoid continuing anxiety to residents in these streets it is considered that the three southern routes of Caspian Street, Godwit Street, and Heron Street be removed from further consideration as potential pipe routes.

BRIDGE STREET: HIGH COMMUNITY DISRUPTION, LOW CONSTRUCTION RISK

Of the three northern routes, Beatty Street and Bridge Street score (see weighted score in Table 1 above) almost identically in second and third ranking respectively. As the scoring system is recognised as being somewhat subjective, there is a need to give close consideration to the views expressed by the community at the pipe route open days, the information received through feed back forms, the web on-line 'have your say' forms, and assessed disruption to the wider community and businesses in the area. Clearly the use of Bridge Street has a much greater impact on the community than Beatty Street, which has been difficult to fully recognise in the scoring system within Appendix 4. This is typical of such scoring systems which should be regarded as only one of a number of assessment tools. Appendix 2 has attempted to attribute a dollar cost against the social cost of using Bridge Street. A figure of \$1.8m is tentatively suggested as recognition of the community's concerns over the use of Bridge Street on social grounds. Against this there are clear construction advantages by using Bridge Street including a potential reduction of construction risk for the ocean pipeline launch in the order of \$3.5m - \$4.0m.

JELlicoe STREET FAVOURED OPTION/BEATTY STREET LEAST FAVOURED OPTION

Jellicoe Street has a significantly better weighted score (note a lower score is better) than any of the other routes, having the best ranking. Construction risk cost and assessed social costs are also at a level that favourably maintains this route as an option worth further investigation. Jellicoe Street also scores better than Beatty Street on all areas within the table (Appendix 4) except for the issue of need to remove a number of mature pine trees.

Jellicoe Street provides a better pricing option than Beatty Street if the park is used as the pipe string area, and the price would be similar if the beach is used as the pipe string area. In table 1 above, under the column 'Construction Risk for Ocean Pipe launch' Jellicoe Street is listed as having a \$1.5m construction risk for the park. The reason for this is because pipe strings approximately 500m long could be achieved if the park is used as the pipe string area, thereby implying four pulls of 500m to the ocean.

This compares to a significantly reduced risk for Bridge Street where the pull to the ocean could be achieved in one or two pulls of 2.0km or 1.0km. If the Park in Jellicoe Street was not available for pipe stringing, then the construction risk would be \$3.5m, the same as Beatty Street

It is proposed that Beatty Street be eliminated as a potential pipe route. The reason for this is that physically, the two routes (ie Beatty and Jellicoe Streets) are relatively similar, however on the work undertaken so far, it is fairly clear that Beatty Street would be unlikely to be found to be a choice of pipe route on any substantial basis compared to Jellicoe Street. Whatever the pipe route finally chosen, consultation with the residents could include provision of a living street treatment during reconstruction and in the case of Jellicoe Street, the opportunity to provide a greatly improved park facility

BRIDGE STREET OR JELlicoe STREET: FAVOURED ROUTES

Although Bridge Street ranks very similar to Beatty Street, it represents a very different option, and hence quite different opportunities for the construction of the pipeline. It is on this basis that Bridge Street and Jellicoe Street are proposed for further investigation and consultation for the ocean outfall pipe route. In gathering more information regarding these two routes there are a number of issues which will need to be addressed.

Some aspects to consider are:

- Bridge Street presents significant social concerns, which may not have been adequately addressed within the Appendix 2 costings.
- By further investigating Jellicoe Street and Bridge Street, the option remains of fully exploring with the residents of each street all issues and how these might be resolved.
- Construction on Bridge Street will necessitate the relocation of the Surf Lifesaving Club Building.

- Removal of the pine trees in the domain at Jellicoe Street is a significant concern to the community, and if this option was to proceed a satisfactory plan of restoration would be required. An opportunity to provide a significantly enhanced park facility exists if this route is finally selected.
- Jellicoe Street provides for the option of construction of the pipe strings for the ocean pipeline on the beach if issues arise over the use of the domain that have not yet been identified, or the removal of pine trees in the domain is identified as an overriding concern. If this is the case consideration needs to be given to the negative aspects of temporarily removing 100m of the dunes, the additional wind blown sand this will cause, and the difficulty in re-establishing the ecology of the dunes.
- Any archaeological or cultural sites around the estuary edge along the potential pipe routes which have not yet been identified.

OTHER OPTIONS: ARE THE SOCIAL COSTS TOO HIGH IN BRIDGE STREET?

It is recognised that using the assessment tools chosen to undertake a comparison of the pipe routes, there is no outstanding clear and definitive separation between each of the three northern routes of Bridge Street, Beatty Street, or Jellicoe Street. Although this assessment indicates that Jellicoe should certainly be subject to further investigation, the choice between Bridge Street and Beatty Street is not so clear. The issue that will be of the greatest concern to Councillors will be the significant social consequences if Bridge Street is pursued. These issues are difficult to put a definitive value on, and serious consideration needs to be given where there is an impact on people's lives. This is particularly so where the livelihood of businesses are at risk.

The community feedback from the open days also indicated that the community was not comfortable with the use of Bridge Street, and this needs to be recognised.

Having said that, City Water and Waste Unit staff and consultants have debated the merits of each route robustly to come to the conclusion that further investigation of Jellicoe and Bridge Street as a pipe route offers the best opportunity on balance to provide an excellent solution for the ocean pipeline outfall route. That is not to say that Beatty Street would not be possible or even suitable, and if Councillors assessment of the social aspects of the Bridge Street option concluded that the cost was significantly more than the assessment presented here, then Beatty Street should replace Bridge Street as a pipe route option to be further investigated (ie together with Jellicoe Street).

LEGAL MATTERS

The Legal Services Manager has reviewed this report and has raised the following issues.

Use of Park and Beaches

The use of these amenities for construction purposes will need to be investigated in terms of permissibility under statutory requirements. In depth discussion will also be needed with other Units of the Council (such as Parks and Waterways, ESU etc).

Social Disruption Value

The mooted value of \$5,000 per property in Appendix 2 as a cost of social disruption must not raise expectations in the community of any such payment as it has only been used as a tool for assessing total costs of the various routes for comparative purposes.

Note here that these issues will be resolved as part of the next stage of consultation and investigations.

SUMMARY

As a result of the Council resolving to proceed to prepare an Assessment of Environmental Effects for the construction of an ocean outfall pipeline for the wastewater discharge it was identified that investigations into appropriate routes for this pipe need to be undertaken. This included the preparation of a number of technical reports, preparation of material to inform the public, and holding open days to inform the community of the potential options, and to hear their views regarding a pipe route. This report analyses the community feed back and the technical information and concludes that Caspian Street, Godwit Street and Heron Street should be eliminated from further investigation in the meantime and the need to focus on identifying two of the three northern potential pipe routes.

This analysis identified that Jellicoe Street should be investigated further for a pipe route, however, the choice between Bridge Street and Beatty Street as the other options at this stage of the process is not so clear. Generally on technical grounds, staff have concluded that Bridge Street is a better option, however, it is recognised that Councillors may place a high value on the social disruption a Bridge Street choice may create. If that is the case, Bridge Street should be replaced by Beatty Street as a pipe route to be investigated further for the ocean outfall.

Staff

- Recommendation:**
1. That Beatty Street, Caspian Street, Godwit Street, and Heron Street be identified as streets presently least favoured to be used for the wastewater ocean outfall pipeline. Also that this decision be conveyed to the residents of those streets in order to reduce anxiety and provide a greater level of certainty for residents in the streets under consideration that no further investigation of utilising these streets for the pipe route occur unless future circumstances require this.
 2. That Bridge Street and Jellicoe Street be identified as streets which require further consultation to establish which of these two routes would be a preferred route for the wastewater ocean outfall pipe. This decision to be conveyed to the residents of those streets along with a timetable to meet with residents of each street to further identify issues and methods of mitigation in order that a final choice of preferred pipe route in principle can be made.
 3. That a further report be prepared in July on the final preferred route for a firm decision by the Council.

(Note: For the purposes of clarity, finance for any living street and park enhancement would be provided from the City Water and Waste Unit budget for the pipeline project.)

CHAIRMAN'S COMMENTS

1. The staff recommendations concerning Beatty Street, Caspian Street, Godwit Street, and Heron Street should be supported. The additional costs of constructing the pipeline along any of these streets, without any significant environmental and social advantages over the other two options, are clearly shown in table 1. There is little point in considering these four streets further. The choice between Bridge Street and Jellicoe Street is somewhat more difficult. It is therefore appropriate for the Council to carry out further investigations into both of these potential routes before a final decision is made in July on the basis that Jellicoe Street is the preferred option.
2. While it is appropriate for the Council to carry out further investigations in respect of both the Bridge Street and Jellicoe Street options, it is possible at this stage for the Council to declare a preferred option. It is unfair to the people who live in these two streets for the Council not to identify which street is preferred and the reasons why. In the end, while there are good technical reasons to favour Bridge Street, when other factors are taken into account, there are other good reasons to favour Jellicoe Street. On the basis of constructed cost, there is nothing much between them. But there is a considerable difference between them when construction risk is taken into account. This is a significant issue, and it is impossible to accurately quantify these risks. While the sum allocated to Bridge Street in table 1 construction cost is \$0, this does not mean that there are no construction risks for the Bridge Street option. The construction risk for Jellicoe Street is \$3.5 million if the beach is used as a pipe-stringing area, but this can be hugely reduced if the South Brighton Domain can be used instead (\$1.5 million). On the other hand, the social costs of using Bridge Street (\$1.8 million) are large. These are also difficult to precisely estimate. The point is, that whatever the estimate should be for the social costs of using Bridge Street, the real issue is that the social and traffic effects, including very significant potential damage to the viability of businesses, should if possible be avoided altogether. To put it another way, if there is a viable alternative to causing such high social and environmental damage, then it should be taken irrespective of financial estimates. The reasons why the social and environmental costs of choosing Bridge Street are so high, are well set out in the report. Nevertheless, Bridge Street should not be ruled out entirely at this stage pending the completion of a final report with more detailed information. This will only take until July 2003, so people will not be living with uncertainty for very much longer.

3. We are fortunate that there are other alternatives. The Jellicoe Street option is clearly the best of these, as demonstrated in the report. This does not mean that the social and environmental effects of using Jellicoe Street should be underestimated though. In fact these effects will be very large, and we must acknowledge this and be open with the people who live in the street about it. While it would be unwise to make a final choice at this stage pending the final report in July, it is time now for the Council to make an interim decision openly stating that Jellicoe Street is the preferred option, for confirmation (or not after considering the final report) in July. This will reduce the guesswork for all involved, and it will assist in focusing discussion during the final consultation stages. At the same time, because Bridge Street is technically preferred by our consultants, we cannot yet be more definite about the final choice.
4. In focusing on Jellicoe Street in respect of social and environmental issues, it is necessary to consider how these may be mitigated. In this respect, there are three particular aspects that I would like the Committee and the Council to consider:

(a) The Street

Obviously the street will be destroyed by the burying of such a huge pipe beneath it I believe that it would be inadequate for the Council to simply restore it as it was before. The Council has developed and refined the 'living streets' concept, and this has been implemented already and several parts of Christchurch. This process should be used to ensure that the new Jellicoe Street incorporates all of the advantages of the living streets approach. The end result must be a Jellicoe Street which is much better, in terms of streetscape, facilities and amenity, than it is now. This is the least that the Council should do for the people in the Street, who would have to put up with a long period of construction and disruption.

(b) Real Acknowledgement

While a new 'living street' will be a considerable advantage for the Jellicoe Street community, it does nothing to acknowledge the disruption to the lives of the people who live there as individuals, as a result of the project. Fine words of appreciation and understanding will not be enough either. The fact of the matter is that the whole Christchurch community will be using one street along which to place its waste-water pipeline to the ocean - an exceptionally large imposition on a few people in the interests of the rest of us. Those few who live in the street must be treated fairly and given some real acknowledgement (ie money) in such unusual circumstances. I want to make it absolutely clear though, that this is not 'compensation' for any damage of any kind.

The Council's policy not to compensate individuals for disruption caused by, for example road construction, must be upheld. To do otherwise will create a very difficult precedent. However, I believe that the sheer magnitude of the effects of this project on the people who live in Jellicoe Street, if it is finally chosen, would justify the Council treating this case as an exception. The acknowledgement should be direct and expressed in monetary terms. I believe that the best way of doing this would be for the Council to confer a rates rebate of between \$500 and \$1,000 on each property in the street in the rating year in which the construction proceeds. The actual amount can be decided by the Strategy and Finance Committee to which this proposal should be referred.

(c) The South Brighton Domain

If Jellicoe Street is finally selected, the pipeline will have to go through this park. The damage will be considerable. In addition, it is clear that if the park is used as the pipe-stringing area, rather than the beach, then at least \$2 million can be saved due to a potentially lower construction risk. If the beach was used instead as the pipe-stringing area, then there would be more damage and disruption than otherwise there too. Therefore in either case there would be significant damage to recreational areas. The South Brighton Domain is capable of significant enhancement as a park. Consequently, following the construction of the pipeline, there will be an opportunity to redesign, replant, and generally enhance this park so that it will be left, not just as it was before, but as a much better park for the local community. The principle of enhancement, rather than just restoration, should be adopted for the park, just as I propose it should be for Jellicoe Street to become a 'living street'. This will mean spending somewhat more than would otherwise be the case, but the saving in using the park for pipe-stringing, instead of the beach, will offset the cost of enhancement of the park.

Furthermore, the city and the local community will end up with a better park, and will therefore be getting some real value for the additional expenditure.

Chairman's

Recommendation:

I therefore urge Committee members and the Council to approve staff recommendations 1, 2, and 3, and also to approve my following additional recommendations:

1. That Jellicoe Street be the preferred option for the pipeline route pending a final report in July 2003.
2. That the street along which the pipeline is constructed, be reconstructed according to the 'living streets' principles in respect of landscaping, community facilities, and amenity values.
3. That staff report to the Strategy and Finance Committee on whether the Council can grant rates rebates to property owners in the street along which the pipeline is constructed and that in doing so the Strategy and Finance Committee be requested to address the issue of rented properties (so that the benefit of the rebate be passed on to tenants).
4. That should Jellicoe Street be finally selected as the route for the pipeline, the South Brighton Domain be used as the pipe-stringing area, and that following completion of the project, this park be restored and enhanced with a fresh design, improved planting, and in other ways to be determined by the Parks and Waterways Committee in consultation with the local community.