Before the Independent Commissioner Hearing Panel

Under	the Resource Management Act 1991 (**RMA**)
In the matter of	an application by **Dunedin City Council** to develop a landfill at Smooth Hill, Dunedin.

Statement of evidence of Gregory Michael Akehurst

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Qualifications and experience

1 My full name is **Gregory Michael Akehurst**.

2 I am a Geographer and Economist with Market Economics Ltd ("**M.E**"). I am one of the foundation Directors of M.E.

3 I have Bachelor's Degrees in Geography and Economics from Auckland University and have more than 25 years experience in assessing the economic effects of growth and change in the New Zealand economy. I have particular experience in carrying out economic impact assessments used in assessing the economic effects of development and change. I have also carried out significant work in assessing requirements for housing and business land to assist Councils in setting development and growth strategies and to meet their obligations under national direction (NPS-UDC 2016 and NPS-UD 2020).

4 I have also carried out economic assessments of infrastructure developments and have reviewed and prepared assessments of Development Contributions policies and other council financial methodologies. I am a member of the Resource Management Law Association.

5 I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014. This evidence has been prepared in accordance with it and I agree to comply with it. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Scope of evidence

6 I have been asked to prepare evidence in relation to the economic benefits that that may arise from Dunedin City Council (DCC) consenting, constructing and operating a new landfill at Smooth Hill. This includes:

(a) The Dunedin Economy and Economic Growth Futures;

(b) The Smooth Hill Proposal;

(c) Potential Economic Implications of Smooth Hill development and operation; and

(d) Issues raised in Submissions and other Council reporting.

7 I originally prepared a report in support of the Assessment of Environmental effects in August 2020. This report outlined the economic justification and benefits of the project. Due to amendments to the design and coverage of

the landfill which changed the costs and potential benefits, the report was updated in May 2021 to reflect the new cost structures. My evidence is based on the updated May 2021 report.

8 In order to assess the economic effects of the new landfill at Smooth Hill I have carried out the following analysis

9 Using M.E's Economic Futures Model (EFM) developed for DCC, I have produced economic projections for DCC. The model outputs projected employment, gross output and value added into the future which helps to build a picture of the Dunedin economy going forward.

10 Translated structure capital and operating costs of the proposed landfill into cashflows that are then placed into a Multi-Regional Input-Output ("**MRIO**") model of the Dunedin economy within the Otago and New Zealand economies as a flow of economic stimulus over time.

11 Identify through the MRIO resulting contributions to GDP and Employment at the local and regional level.

12 The Input Output approach is well defined in economics. The fundamental steps and assumptions summarised as follows;

13 An IO framework of the local, regional and national economy is combined into a Multi-Regional model such that cross border transactions are fully accounted for. This model represents a snapshot of the economy at one time.

14 The IO framework assumes that there are constant returns to scale. This means that as an industry's outputs increase as a result of additional demand, its input requirements increase in direct proportion.

15 The IO framework assumes that an economy is operating at full potential, that there are not unused employment or capital resources available for growth. This means that as funds are diverted between activities there are compensating downturns elsewhere. In this case, Dunedin household incomes are diverted to fund the Smooth Hill development meaning they have less to spend on other goods and services. They also do not incur the costs of disposal of waste out of district, either.

16 The approach is broadly consistent with a Cost Benefit Analysis (CBA) in terms of assessing economic impacts. The main differences relating to how the different elements are treated, for example an economic impact assessment does not differentiate between costs and benefits. It looks at all spend and translates it into economic transactions at a sector level.

Next, these transactions are modelled to estimate the flow-on impacts. The impacts are presented in Value Added and employment terms. Value Added is similar to GDP. It is important to note that the EIA does not include aspects like environmental costs and social or cultural impacts. It is assumed that through the consenting process, the decision makers will have experts addressing other environmental issues.

17 Following the executive summary my evidence focuses on the Dunedin economy, the Smooth Hill Proposal and the effects on the economy of Smooth Hill being developed to replace the Green Island land fill.

Executive summary

18 Dunedin is a relatively slow growing city (in the New Zealand context) of around 133,000 residents. It is expected to reach some 152,000 residents under the high growth future by 2048.

19 The Green Hill Land fill that the city relies on has reached the end of its life and needs to be replaced. A Class 1 landfill at Smooth Hill has been assessed as being the most suitable option providing capacity for growth and replacement for Green Hill.

20 As part of the evaluation process, decision makers need to understand the impacts construction and operation of the Smooth Hill proposal will have on the economy of Dunedin.

21 The development of a Class 1 land fill at Smooth Hill is expected to cost up to $163m to 2055 in current dollar terms. A further $121m is required to operate the landfill over that time period.

22 Once this expenditure filters through the economy it is expected to generate a nominal $14.6m in net additional Value Add in the Dunedin economy over 35 years (in $2016 terms). Once these flows are discounted at 9%, the contribution to total value added is $22.9m. This increase is the discounting effect of larger negative values in future reduce their impact on the NPV total, but not the nominal total.

23 In employment terms, the activity generated by the development and operation of Smooth Hill landfill, once it flows through the economy, is equivalent to over 813 full time job equivalents across the 35 years of operation, or an average of 34 full time jobs each year (within Dunedin City). Employment effects are lumpy with 616 full time jobs for 1 year in the first 10years (62 on average annually) as construction occurs. Employment is also stimulated across the rest of the region in the first 10 years (56 full time

equivalent jobs) and the rest of New Zealand (106 job equivalents for a year).

24 Through the submission process three economic issues emerged. First, that the approach taken was not a full living standards framework approach. That is not necessary within this RMA hearing as other experts cover other costs and benefits in their areas of expertise. Second, that the economic assessment was simply a breakeven analysis. This is not the case as my assessment places the new land fill within the Dunedin economy to assess direct, and all the flow on effects of the proposal. Third, that the economics of transporting Dunedin's waste to a site in Southland. This has been assessed from an economic perspective and it proves far more costly both in monetary terms and environmentally to do so.

Dunedin economy and economic growth future

25 The Dunedin economy is stable. It is probably the slowest growing of the large 5 cities. The need for a new landfill is primarily driven by the need for a viable waste option to replace the existing landfill at Green Island when it comes to the end of its operational life.

26 Dunedin's population is expected to increase from around 126,800 (2018) to 130,700 (2048) under a medium growth scenario, and from 129,400 to 152,000 over the next 30 years under a high growth outlook (Figure 1).

27 Following guidance by Statistics NZ issued in June 2019, it was recommended DCC rely on the medium-high projections scenario for Dunedin until 2028, and the medium growth scenario from 2028 until 2043. DCC has recently updated their population projections, which fall largely within the medium-high population projection range, this means there is broad alignment between the population future and the economic future as the EFM is run using a medium high projection.

Figure 1: Dunedin City Population Projections, 2018 - 2048

Population Projections	2018	2023	2028	2033	2038	2043	2048	2018-2028		2028-2048	
								n	%	n	%
Medium	126,820	128,430	129,740	130,560	130,870	130,670	130,725	2,920	2.3%	985	0.8%
High	129,360	133,730	137,950	141,900	145,380	148,600	151,950	8,590	6.6%	14,000	10.1%
DCC Update (2020)	130,520	135,100	138,670	141,420	142,320	142,670	142,990	8,150	6.2%	4,320	3.1%

28 The updated population projections anticipate Dunedin will grow by an additional 8,150 (6.2%) people from 2018-2028, and by around 4,320 (3.1%) from 2028-2048. That is equal to an annual growth rate of 0.6% in

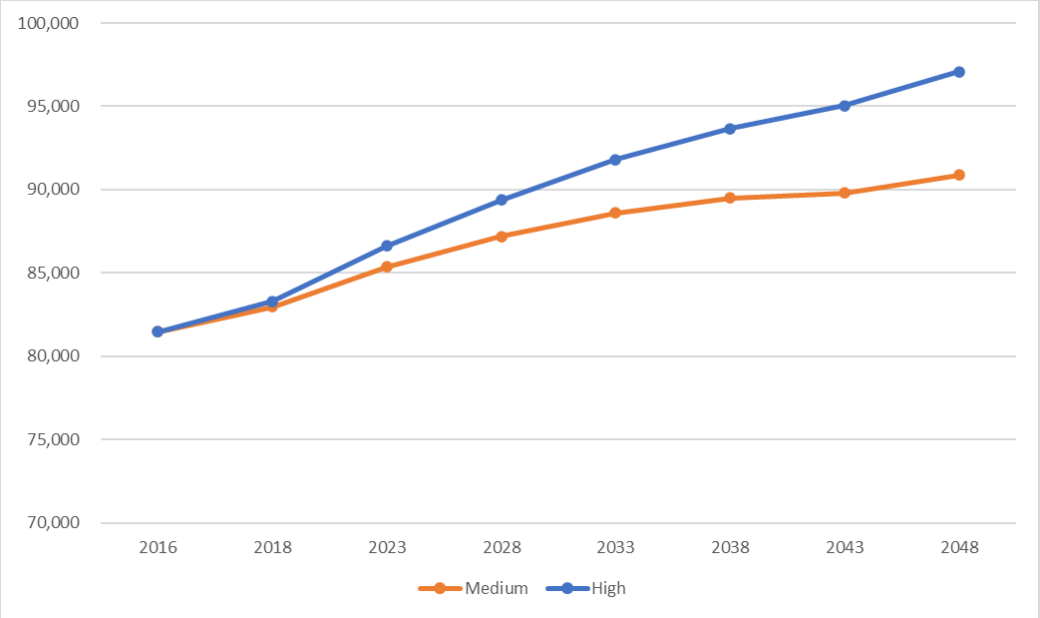
the first 10 years, which declines to 0.2% per annum for the subsequent 20 years until 2048.

Employment

29 Given Dunedin's updated population projections reflect that of a medium-high scenario, employment for Dunedin City is projected to increase by somewhere between 4,200 and 6,100 workers until 2028. That is to a total between 87,200 to 89,400 MECs (Figure 2). The next 20 years from 2028-2048 would see an additional 3,700 to 7,700 Modified Employment Counts (MECs), or total workers somewhere between 90,900 and 97,100.

30 The average annual growth rate for employment is slightly higher (0.5%) in the first 10 years to 2028 compared to the following 20 years from 2028 to 2048 where it is equal to 0.2%.

Figure 2: Dunedin City Employment Projections (MECs), 2016 - 2048



Gross Output

31 Gross output is the total value of goods and services produced by an economic activity or industry. It is the broadest measure of economic activity and makes no account of where the actual activity that generated the goods used by the economy, occurred. Therefore, a sector that simply relies on importing high value items from overseas, and on selling them at a small margin (thereby generating a small level of locally based income or value add), may have the same Gross Output as an activity that designs and manufactures all products locally, using local materials.

32 From 2018 to 2028 total gross output is anticipated to grow at around 1.3%-1.6% per annum, producing a total gross output somewhere between $11.4bn and $11.7bn in 2028.

33 The value of total gross output is projected to decline slightly over the subsequent 20 years (2028-2048), an average annual growth rate of 0.9%-1.4%. Overall, gross output is anticipated to increase by somewhere between 34%-42%, an additional $3,400m to $4,200m in total gross output for Dunedin (2018-2048).

Value Added

34 Value added is the additional value added to goods and services by the contributions of capital and labour within a defined economy. It can be thought of as, the value of output after the cost of bought-in materials and services has been deducted. It includes the national accounts categories of 'gross operating surplus', 'compensation of employees', 'other taxes on productions' and 'subsidies'. The sum of all value added is equal to gross domestic product (GDP), excluding taxes on products and import taxes net of subsidies. Thus, in New Zealand, total value added is equal to approximately 88% of GDP.

35 Value added in an economy is the most important measure, for it measures the wealth able to be created by economic activity. Wages and salaries are paid from value add, and the profits, taxes and reinvestment is all drawn from the value added by businesses in the economy.

36 Total value added for Dunedin is expected to increase to somewhere between $5.7bn and $5.9bn by 2028 and between $6.6bn and $7.1bn by 2048. Overall, value added is projected to increase by an additional $1.5bn to $1.9bn (28%-37%), which translates to an average annual growth rate of 1.0%-1.2% over the next 30 years out to 2048.

Summary

37 The EFM provides projections for economic activity in Dunedin for the next 30 years to 2048. As the population, workforce, gross output and value added continue to grow over time, Dunedin City will need additional infrastructure. The identified growth does not and will not occur at these rates unless Dunedin has a robust waste management system in place. Dunedin is seeking to become a circular economy in which true waste that usually finds its way to landfill, is minimised as the vast majority of waste is either repurposed, recycled and or reused in other productive processes.

38 The Waste Futures Project aims to move Dunedin towards that goal. Without such a plan, the city is on target to be sending more than 290,000 tonnes of waste per annum to landfill by 2077. That is almost 4 x the volumes sent in 2018, and significantly more than Smooth Hill or any other local landfill could accommodate.

39 However, even with significant shifts the city will still require landfill of some sort to facilitate the value added, output and employment growth outlined in Figure 2, below.

Figure 3: Dunedin City Economic Projections Medium and High Scenario, 2018 - 2043

EFM Projections	2018	2023	2028	2033	2038	2043	2048	2018-2028		2018-2043	
								n	%	n	%
Employment (MECs)											
Medium	82,960	85,370	87,190	88,610	89,490	89,790	90,870	4,230	5.1%	7,910	9.5%
High	83,300	86,630	89,390	91,820	93,670	95,030	97,090	6,090	7.3%	13,790	16.6%
Gross Output ($2016m)											
Medium	10,080	10,790	11,430	12,030	12,580	13,080	13,510	1,350	13.4%	3,430	34.0%
High	10,120	10,930	11,690	12,420	13,090	13,740	14,300	1,570	15.5%	4,180	41.3%
Value Added ($2016m)											
Medium	5,140	5,460	5,740	6,000	6,230	6,440	6,620	600	11.7%	1,480	28.8%
High	5,160	5,540	5,880	6,220	6,520	6,810	7,060	720	14.0%	1,900	36.8%

The Smooth Hill proposal

40 In this evidence I have not assessed the differences between different ownership and management options as that formed part of the decision process, rather I have focused on the economics of development and operation of Smooth Hill to cater for Dunedin's landfill waste now that this option has been selected.

41 DCC embarked on the "Waste Futures Project" to investigate and assess all aspects of Dunedin's waste collection, recycling, reuse and disposal process. As part of that study DCC developed a comprehensive business case (that follows Treasury's recommended Better Business Case guidelines), to ensure best practice decision making.

42 An early stage in that process was to establish a long list of potential options for the wider waste system that can be assessed against strategic objectives and critical success criteria. The long list was then reduced to a short list that included the key options in terms of location as well as ownership and operational options including partnerships. Financial analysis and economic analysis occurred at that point such that outputs could be considered in net present value (NPV) terms. Costs and benefits were assessed and were able to be compared on a same basis to identify the final preferred option.

43 The purpose of my evidence is not to replicate that process, rather it is to explore the more fundamental question; What are the economic impacts and from there economic benefits from developing Smooth Hill to meet Dunedin's ongoing land fill needs?

Option selection

44 Following identification and consultation, Council settled on 12 options for consideration as part of the long list. The options differed in terms of ownership and operational structures and included options that extended the coverage of the landfill to cater for demand from Clutha and Waitaki Districts. The list also explored the ownership extremes of 100% Council ownership to 100% private sector ownership.

45 The long list of options was assessed in terms of facilities required and the partnership arrangements against strategic objectives and critical success factors, based on scope, scale, service delivery, implementation and funding. From the long list of 12 options, 3 were taken through to a short list for more comprehensive evaluation.

46 My analysis assumes that Council own and operate Smooth Hill landfill in its entirety. This assumption has an impact on the outcomes of the economic impact assessment. Council ownership implies that funding the development of the facility is through rates.

47 The ownership and funding decision is outside of my assessment and the results of my assessment only represent the impacts of Council building and operating the facility themselves. Other ownership and management arrangements will have different outcomes and would require their own assessment to quantify their effects.

Economic implications of Smooth Hill development and operation

48 I have estimated the potential economic implications of the proposal to consent, build and operate a new Class A landfill at Smooth Hill and expressed in terms of the net additional impacts in the Dunedin City, the rest of Otago Region and rest of New Zealand economies.

49 The scenario being considered for this proposal is:

(a) A new Class 1 landfill is consented, constructed, and operated at Smooth Hill, to be owned and operated by Dunedin City Council. This will form a part of the Waste Futures Programme that includes diversion of waste through recycling and organic processing.

50 For comparison purposes only, a second scenario is run that allows 50% of the capital and operating costs to be covered by a private entity.

Cost Assessment

51 Establishing a new Class 1 landfill requires a substantial investment; however, this is not the only cost incurred. Other economic resources will also be consumed to deliver the goods and services.

52 It is my understanding that the new Class 1 landfill reflects the optimal design and this in turn will be reflected in the costs of construction (engineering etc).

53 The proposed site for the landfill is located approximately 30 minutes from Dunedin city and therefore requires a network of transfer stations to consolidate waste ahead of bulk transportation of waste to the landfill. When the future waste and diverted materials system is delivered, there is a risk that landfill revenue will not be maintained which poses flow on effects for DCC.

54 Increased truck volumes on roads in and out of Smooth Hill would require investment to upgrade side roads surrounding landfill and road widening and sealing is proposed as part of the consent applications.

55 Estimates of the capital and operating costs for Smooth Hill have been drawn from the information prepared for the Business Case application. They have a mid-2021 date and may represent an updated set of information than appears in Councils Long Term Plan (which appears to be based on 2020 estimates).

56 This is not a concern as the LTP is a living document and is likely to be updated to reflect the Business Case information when it is revised (on an annual basis). Capital and Operating costs are summarised in Figure 4 below.

57 It is important to note that these costs cover the consented life of the facility (35 years, out to 2055). The facility will have a physical lifespan that extends past 2055 – but the costs and benefits of that will need to be assessed at the time the consent is reapplied for.

Figure 4: Smooth Hill expected Capital and Operating Costs, 2021 – 2077 ($m)

	2021 - 2024 Pre-Build	2025 - 2032 Stage 1	2032 - 2045 Stage 2	2046 - 2055 Stage 3	**2021 - 2044 TOTAL ($m)**
Capital Costs ($m) - base plus 20% contingency	$ 41.2	$ 38.9	$ 49.2	$ 33.4	**$ 162.7**
Operational Costs ($m) - base	$ -	$ 28.4	$ 52.2	$ 40.2	**$ 120.8**

58 While the capital costs are 'lumpy' in that they vary through time, for modelling purposes I have assumed they are to be loan funded over 30 years from the year that the capital is required. This means that if $10m is required in year 1, Council takes out a loan to be repaid over 30 years for $10m and ratepayers pay the interest and principal required annually to service that loan. In Year 2 if a further $5m is needed the same process occurs so ratepayers are now paying off the $10m plus the $5m in instalments. This has the effect of smoothing out the repayments over a much longer time period and is the standard way Councils consider funding and repayment of loans for infrastructure.

Benefit Assessment

59 As mentioned above, the investment in the proposed Smooth Hill landfill is expected to address the waste disposal issue in Dunedin and could provide waste disposal for Dunedin for approximately 40 years, or longer if DCC's waste diversion targets are achieved. The Smooth Hill site is already designated for a landfill as set out in the 2GP, and therefore there is no immediate opportunity cost to using the land for waste disposal. Economic benefits include:

60 Retaining or potentially increasing employment through jobs and supporting waste systems infrastructure that will also be required as indicated in the draft Wider Waste System Business Case.

61 The costs associated with transportation of waste out of district will be avoided by having a reasonably accessible in-district waste disposal site. An in-district waste disposal facility will also reduce CO2 emissions from the reduction in distance of transport trips.

62 In reality, Dunedin (like all cities) generates waste and requires landfills to manage/dispose of at least a portion of that waste. The capital cost of developing a new landfill imposes a cost on ratepayers. However, with the Green Island Landfill nearing both the end of its consent and capacity, capital, expenditure for DCC is inevitable. As discussed above, capital expenditure stimulates the economy in the near term, as the construction

sector carries out the task of developing the landfill (employing staff, paying wages and making profits for owners). However, in the longer term repaying the costs reduces the availability of funds for spending elsewhere.

63 The costs imposed on ratepayers arise as the Council potentially increases rates to fund the development. The usual process is that Council will raise a loan that is repaid over time (usually 30 years). Councils do operate under borrowing limits which govern how indebted they can become, before the interest rates they face start to increase. It is not known if DCC is close to this limit, so it is assumed that there are no financial constraints on borrowing. In Dunedin (as in other relatively slow growing cities) Councils have to be careful as they cannot rely on significant growth to offset the repayments made by existing ratepayers, through development contributions.

64 While the financial information provided has included some estimates of debt and interest repayments, I have worked out a revised repayment schedule based on the timing and scale of capital requirements spread over 30 years at the provided interest rate of 5%.

Economic Modelling Assumptions

65 Alternative mixes of ownership and waste management translate into different levels of utilisation and waste volumes, however for the purposes of assessing Smooth Hill, I have relied on key assumptions that represent the most likely outcomes. I have not modelled diversion of waste designed to capture organics for composting and reusable materials that may enter the production process again because they are potentially able to be carried out regardless of Smooth Hill progressing. That is, if Smooth Hill is declined, and another site consented the diversion and recycling investments are likely to be exactly the same. Key assumptions modelled include:

(a) Smooth Hill will receive a mix of DCC and commercial waste. For assessment purposes, this is equivalent to 60,000 tonnes annually (2019-20);

(b) Waste tonnage from all sources will grow at 2.0% per annum to a peak of 117,600 tonnes by 2055;

(c) Diversion and waste reduction processes have the potential to account for a significant portion of growth meaning that the values in this report may be on the high side;

(d) The gate rate is $260/tonne, including a waste levy of $60/tonne and ETS charges of $50/tonne; and

(e) Capital and operating costs are based on the GHD Model for Smooth Hill.

66 Other general assumptions include;

(a) Analysis in Net present Value (NPV) terms occurs over 35 years;

(b) All capital expenses are funded by way of council sourced loans that are fully repaid over 30 years;

(c) Given that capital expenditures occur over the life of the project (in this case 35 years), repayments are occurring far in the future. In NPV terms these distant repayments make little difference to the total. Discounting the repayments past 20 or 30 years into the future reduces the nominal amounts significantly; and

(d) Repayment of loans reduces Council spending elsewhere in the economy.

Develop Smooth Hill Landfill: IO Assessment

67 Details on the Economic Impact model and the MRIO model are contained in the appendices to this statement. I have summarised the model findings below.

68 The development of Smooth Hill results in a net additional direct cost over the 35 years of $135.6m in nominal terms in Dunedin. Once this flows through the economy it translates into Total Gross Output (GO) of $111m in nominal terms or $77.1m in NPV $_{9\%}$ terms[1]. GO is simply the summation of all transactions that have to occur within an economy to achieve a certain outcome. Because it is the sum of the total value of these transactions it makes no distinction between a transaction that might consist of mostly goods purchased overseas but might be required for the development, and transactions that involve locally generated content such as services delivered by local residents or goods made within Dunedin. It is therefore an unreliable measure of additional economic value or the benefits a development brings.

[1] As per the business case information, a weighted average cost of capital of 9% has been used as the discount rate.

69 However, as the raw measure of economic activity GO is the driver of employment and value added.

70 Because transactions that occur within Dunedin may result in activity being stimulated outside the district, the development of a landfill at Smooth Hill will lead to a further $7.6m of GO in NPV terms in the rest of the Otago Region and $15.6m across the rest of New Zealand. There is likely to be a small portion stimulated internationally as well as overseas firms respond to orders from Dunedin.

Figure 5: Smooth Hill Development – Total Gross Output by Economy

Location	Discounted Total NPV 9% ($m)	Total ($m) (35 Years nominal)
Dunedin City	$ 77.1	$ 110.8
Rest of Otago	$ 7.6	-$ 5.9
Rest of New Zealand	$ 15.6	-$ 20.5

Contribution to GDP or Value Added

71 This level of output generates a nominal $14.6m in net additional Value Add in the Dunedin economy over 35 years. Once these flows are discounted at 9%, the total value added is $22.9m. The reason for the increase is the discounting effect of larger negative values in future reduce their impact on the NPV total, but not the nominal total.

72 Note that Total Value Added includes the direct, indirect and induced effects of the development. Indirect effects are generated in businesses that supply the directly impacted sector while induced effects arise as workers in directly and indirectly impacted sectors spend their wages across the economy. Value add is a truer measure of the effect of the development on people's wellbeing within this economy and is broadly synonymous with GDP.

Figure 6: Smooth Hill Development – Total Values Added by Economy ($m)

Location	Discounted Total NPV 9% ($m)	Total ($m) (35 Years nominal)
Dunedin City	$ 22.9	$ 14.6
Rest of Otago	$ 2.7	-$ 4.0
Rest of New Zealand	$ 6.5	-$ 12.1

Employment Effects

73 In employment terms, the activity generated by the development and operation of Smooth Hill landfill once it flows through the economy is equivalent to over 813 full time job equivalents across the 35 years of operation, or an average of 34 full time jobs each year (within Dunedin City). Over the initial 10 years, developing Smooth Hill will stimulate the equivalent of 616 full time jobs for 1 year (62 on average annually). This is made up from high levels of employment through the construction phase (peaking at 158 full time equivalent job years) to the first few years of operation (an average of 39 job years each year for the first 4 years. Employment is also stimulated across the rest of the region in the first 10 years (56 full time equivalent jobs) and the rest of New Zealand (106 job equivalents for a year). The key stimulus is through the construction phase, as employment annually sustained shows a reduction in total over the 35 years covered by this study.

Figure 7: Smooth Hill Development – Total Employment sustained over 35 years (MECs)

Location	Additional Employment (MECs)	Additional Emp. MECs (10 years)
Dunedin City	813	616
Rest of Otago	-39	56
Rest of New Zealand	-108	106

Sensitivity Testing

74 The results of my modelling are sensitive to changes in assumptions made about; scale, timing, levels of investment and ownership. For example, by partnering with a private provider to share construction costs and operational activities local benefits are likely to increase. The main reason for this is that if capital costs do not have to be sourced from the local economy, they reduce the amount Dunedin residents have to 'pay back'. This reduces any reductions in spend elsewhere in the economy, raising the overall local benefits to the detriment of elsewhere.

75 To highlight this, I have run a scenario where 50% of capital and operating costs have been paid by a private operator from outside Dunedin City. This reflects a Joint Ownership model. Joint ownership means less money has to be funded from rates, lifting the total contribution to Value Added within Dunedin to $48.9m in NPV terms over the consented term.

Figure 8: SENSITIVITY TEST: Smooth Hill Development, 50% Private Ownership, Total Value Added ($m)

Location	Discounted Total NPV 9% ($m)	Total ($m) (35 Years nominal)
Dunedin City	$ 48.9	$ 121.3
Rest of Otago	$ 8.6	$ 20.3
Rest of New Zealand	$ 21.8	$ 50.7

76 In employment terms this option would add the equivalent of 2,390 MEC equivalent jobs in total over the 35 years. Obviously, injections of capital and funding that do not have to be repaid by Dunedin rate payers stimulate the economy strongly.

Section 42A report issues

77 An issue raised in the Section 42A report with some bearing on economics is the view that the development and operation of Smooth Hill will have an effect on local property prices – and that this change has not been accounted for in the assessment.

78 However, this is not the case. Property price changes are the result of changes in the environment. In effect they are a market manifestation of changes that have been assessed and quantified by experts in; ecology, sound and vibration, noise, land use, water, traffic and air quality.

79 If they were also to be captured as an impact in the economic assessment, there would be significant double counting of adverse impacts.

Issues raised in submissions

80 Three submissions have raised issues relating to the assessment of economic effects. I will address each one in turn.

Viktoria Kahui

81 The submission prepared by Viktoria Kahui states that my economic impact assessment does not follow the recently updated Living Standards Framework (LSF) (October 2021) that guides Treasury in delivering policy advice across central government.

82 The submission correctly identifies that according to the LSF "…a cost benefits analysis that the Government is interested in must identify all the economic (including social and environmental impacts of decisions on

people whether or not they can be identified" This is contained in the Treasury's Guide to Social Cost Benefit Analysis).

83 The economic impact assessment I have prepared is part of a much wider set of assessments that accompany the application that cover, social, environmental and cultural aspects. Collectively the elements of the LSF are entirely met and all aspects are before the decision makers allowing them to make a fully informed decision.

84 It is not the case, that the economic assessment must capture every aspect of impact and effectively replace the decision-making process that the commissioners undergo.

85 Collectively, the supporting information addresses all aspects of the LSF such that the decision is fully compliant with Treasury Guidance.

Maria Sydor

86 The submission by Maria Sydor covers, in paragraph f) economic issues. In it she states that "the economic assessment was merely looking at whether the landfill would pay for itself over the life of the landfill."

87 This is not the case, the economic assessment looked at how the investment by DCC, to develop and operate the landfill resulted in a range of economic effects for Dunedin. It focused on the stimulatory effects of additional expenditure in the construction sector (during the development phase) and then the operational effects as the city took advantage of the landfill.

88 These stimulatory effects are then balanced against the costs to residents as they (through rates) must repay the additional debt required to develop the land fill in the first instance. As rates increase to fund the landfill, residents have less available income to spend elsewhere in the economy (or to save). These values are identified and reduced such that a net position is reached. The resulting impact estimates are (from an economic point of view) positive.

89 Maria Sydor also states that alternative sites have not been evaluated. This is not the case. Through the selection process, when Dunedin City evaluated alternatives, they were evaluated in cost benefit terms. This is also addressed by other witnesses.

Scott Weatherall

90 In the submission from Scott, Justine, Thomas and George Weatherall, they ask if DCC could look at alternatives to the Smooth Hill site. In

particular, they ask if Dunedin can look at transferring the city's waste to the Winton site, set up to receive waste (via Rail if at all possible), as they claim it will be cheaper than the cost of establishing a new land fill and operating it.

91 It is highly unlikely to be cheaper to transport waste over time. The additional transportation costs over the next 20 years to a Southland site are estimated to equate to over $100m alone. Over 30 years, the value is closer to $200m (in nominal terms) given the estimated increase in volumes assumed based on Dunedin City's growth.

92 In addition, there are a wide range of environmental costs associated with the additional distance. On average heavy transport required emits between 1.31kg of CO_2/km and 1.43kg/km of CO_2/km waste moved. This means that moving 60,000 tonnes of waste to Southland will generate almost 16,500 tonnes of CO_2 in Year 1.

93 Finally, there are significant additional truck movements over long distances under the Southland option. Moving 60,000 tonnes of waste annually (in the start year) requires 1,818, 33 tonne trucks. This is a large number of truck movements across the roading network.

94 Given the above, constructing and operating a landfill at Smooth Hill represents the most efficient approach to addressing Dunedin City's ongoing waste future.

Conclusion

95 Dunedin City's current landfill site at Green Island is nearing the end of both its consented lifetime and its physical capacity. The process of identifying what Dunedin should look at to meet the landfill and wider waste needs of its future has resulted in the Wider Waste System Detailed Business Case. This narrowed a long list of potential solutions down to 3 main alternatives based on the manner in which they met Dunedin's key performance indicators. No final decision has been made as to the final configuration of ownership or management.

96 The presence of Smooth Hill provides Council with an opportunity to cater for commercial volumes of waste and therefore help fund investment into diversion and processing facilities required for the Circular Economy.

97 The economic analysis I have carried out concludes that consenting, constructing and operating a landfill at Smooth Hill will facilitate employment and GDP effects in the Dunedin economy over 35 years (the landfill's anticipated consented lifespan).

98 In total, the development of Smooth Hill is expected to generate a net additional contribution to GDP of $23m in NPV over its consented lifetime. Sensitivity analysis indicates this has the potential to increase to almost $50m in a 50:50 joint venture with a suitably qualified private sector partner.

99 The analysis showed that Smooth Hill would sustain an additional 813 employment job years of which 616 occur within the first 10 years. This is dominated by employment in construction sector in the first 2 years – peaking at 98 job year equivalents in year 2 of construction.

100 Having read the submissions to the proposal, I have not found cause to alter my view that the proposal is an appropriate way for Dunedin City to address its current and future waste needs in an economically efficient manner.

Gregory Michael Akehurst

29 April 2022

Appendix 1: Economic Input Output (IO) Modelling

While direct profits and investments tell the financial story of the development, they do not convey the actual economic effects the investment is likely to have on Dunedin. For this, it is necessary to analyse the development using an Input Output model framework. Input-Output models are transactional frameworks of the local regional and national economies that capture the financial interactions between sectors, households and the government. They reflect the technology of an economy at a point in time and while this changes, they can be used to provide an understanding of how different levels and distributions of investment flow through an economy, generating;

- Additional Gross Output.
- Additional Value Added (broadly GDP)
- Additional Employment measured in full time equivalent jobs.

An IO Model allows estimation of net additional impacts if the inputs are net of spending that would otherwise have occurred. In addition, the IO framework I have used allows changes in household spending to offset the additional spending required to establish the Smooth Hill landfill. This means that additional capital spending required to fund the development sought by Council is modelled in the form of a loan. Council then applies the funds to the development and begins the process of repaying the principal and interest over 30 years. This happens from the following year as Council borrows more funds for year 2 capital requirements and so on. I have spread the repayments out over 30 years starting at the year the capital is required. In the absence of other information, we assume that the repayments are rates funded, with a corresponding rate increase. If Council were to readjust other expenditure, we assume that the reductions elsewhere equate to the value lost by households if they had to fund Smooth Hill.

In each year, the economy is impacted in two main ways during the development of Smooth Hill. First, money is spent in the Construction sector by Council to develop the landfill. The Construction sector purchases raw materials, pays wages and salaries, hires other specialist contractors, makes profits and pays taxes. All of these activities increase employment and GDP in Dunedin. Second, the additional rates that are required to fund the development mean that Dunedin households have less money in their pockets. This results in less spending in Dunedin and a slight reduction in employment and GDP. We have assumed that the reduction is distributed across all spend categories in proportion to the manner in which households currently spend.

The net result of both these changes (in direct spending terms) is then run through the IO Model to provide estimates of additional Gross Output, Value Add and

employment, for each year for both options assessed (develop Smooth Hill and truck waste to a Southland land fill).
In the sections that follow, both options are assessed through the IO Model framework and the results are aggregated in nominal and NPV terms.

Multi-Regional Input Output Model

The Multi-Regional Input Output model (MRIO) developed by M.E divides the economy into 48 distinct sectors and three geographies – Dunedin City, Rest of Otago Region and Rest of New Zealand. The MRIO has advantages over a single economy model as it captures the full range of effects across local authority boundaries. It is often the case that a development within the boundaries of Dunedin City will also stimulate activity across the rest of Otago Region. In addition, it is likely to be the case that reductions in Dunedin Household expenditure will reduce their spend across the rest of New Zealand.

While a financial analysis captures the direct effects of investment, an IO framework allows estimates of the flow on effects of additional expenditure by location and sector.

At each step or transaction between sectors, value is added, and people are employed. An IO model allows estimates of those changes to be generated. A MRIO allows estimates of those changes to be made across the wider region and the rest of New Zealand. This is important as the majority of material suppliers are unlikely to be located within Dunedin City – or even the Otago region. Many construction materials will come from the rest of New Zealand or be imported. These transactions are recorded in the model framework and incorporated into the model outputs.