APPENDIX M – ECONOMICS ASSESSMENT

EMM
creating opportunities

High-Level Economic Impact Assessment of the Luddenham Advanced Resource Recovery Centre

Prepared for Coombes Property Group and KLF Holdings Pty Ltd

Gillespie Economics
www.gillespieeconomics.com

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Contact

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About

Gillespie Economics was established in 1997 in response to the growing need from both the public and private sector to integrate environmental, social, cultural, and economic considerations into their decision making.

Gillespie Economics is a firm that operates independently or in collaboration with other environmental and resource economists, agricultural economists, and multi-disciplinary teams as the situation requires. Gillespie Economics has an extensive network of specialists from which to draw.

Dr Robert Gillespie is the Principal of Gillespie Economics. Robert has a wealth of experience in environmental and resource economics, gained from 12 years with the NSW Government (including as the Manager of the Environmental Economics Policy Unit at the NSW National Parks and Wildlife Service) and over 23 years as a consultant. He has also lectured in environmental and resource economics at Macquarie University, Sydney University, and the University of Technology, Sydney. He has tertiary qualifications in science (BSc), economics (BEc, MEc, PhD) and planning (MPlan).

Table of Contents

EXECUTIVE SUMMARY

Gillespie Economics was appointed to undertake an economic assessment of the impacts of a proposal by Coombes Property Group and KLF Holdings Pty Ltd to develop an Advance Resource Recovery Centre (ARRC) at 275 Adams Road, Luddenham, which is currently host an existing shale/clay quarry. The proposal relates to Stage 2 of the long-term development vision below:

- Stage 1: Completion of approved shale extraction activities and preparation of the void for rehabilitation.
- Stage 2: Establishment of a technology-led ARRC and rehabilitation of the void.
- Stage 3: Development of a sustainable and high-tech agribusiness hub and continued investment in the ARRC research and development.

The proposed ARRC has the potential to deliver a range of incremental economic, social, and planning benefits over the alternative of leaving the partially rehabilitated former quarry site undeveloped. These benefits include:

- A capital investment which would be a major early private investment initiative for the area surrounding Western Sydney Airport;
- Development of an ARRC to recover, manage, and reuse Sydney's construction waste, and the repurposing of those materials that cannot be recovered;
- A sustainable and economically viable method of rehabilitating the quarry void to facilitate the future development of a high-tech agribusiness hub as envisaged in the Aerotropolis Plan;
- Environmental benefits in line with the NSW Government's 20-Year Waste Strategy and other policies to support waste reduction and enhance circular economy initiatives;
- Increased local area value-added economic activity generation in the order of $56 million per annum for the ongoing operations (net present value of $596 million) and $11 million per annum during construction (net present value of $17 million);
- Increased wage generation in the order of $14 million per annum for new employees (net present value of $143 million) and $6 million for construction workers (net present value of $8 million);
- Creation of 178 direct and indirect jobs from the ongoing operations, as well as 65 direct and indirect jobs during construction; and
- Employment creation around Western Sydney Airport resulting in enhanced employment containment within Western Sydney.

1.0 INTRODUCTION

CFT No 13 Pty Ltd, a member of Coombes Property Group (CPG), has recently acquired the property at 275 Adams Road, Luddenham NSW (Lot 3 in DP 623799, 'the site') within the Liverpool City Council municipality. The site is host to an existing shale/clay quarry.

CPG owns, develops, and manages a national portfolio of office, retail, entertainment, land, and other assets. The company's business model is to retain long-term ownership and control of all its assets. CPG has the following staged vision to the long-term development of the site:

- Stage 1 Quarry Reactivation: **Solving a problem**. CPG intends to responsibly avoid the sterilisation of the remaining natural resource by completing the extraction of shale which is important to the local construction industry as a raw material used by brick manufacturers in Western Sydney. Following the completion of approved extraction activities, the void would be prepared for rehabilitation.
- Stage 2 Advanced Resource Recovery Centre (ARRC) and Quarry Rehabilitation: **A smart way to fill the void**. CPG in partnership with KLF Holdings Pty Ltd (KLF) and in collaboration between the circular economy industry and the material science research sector, intends to establish a technology-led approach to resource recovery, management, and reuse of Western Sydney's construction waste, and repurposing those materials that cannot be recovered for use to rehabilitate the void. This will provide a sustainable and economically viable method of rehabilitating the void for development.
- Stage 3 High Value Employment Generating Development: **Transform the land to deliver high value agribusiness jobs**. CPG intends to develop the rehabilitated site into a sustainable and high-tech agribusiness hub supporting food production, processing, freight transport, warehousing, and distribution, whilst continuing to invest in the resource recovery research and development initiatives. This will deliver the vision of a technology-led agribusiness precinct as part of the Aerotropolis that balances its valuable assets including proximity to the future Western Sydney Airport (WSA) and Outer Sydney Orbital.

This economic assessment relates to the establishment of the ARRC in Stage 2 (the project) described above.

The ARRC would:

- accept construction and demolition waste and commercial and industrial waste (including tyres);
- not accept putrescibles, liquid, or hazardous waste;
- accept waste 24 hours per day, 7 days per week;
- manage, sort, and process waste, recovering between 80% and 90% of the waste received; and
- either:

  - dispatch unrecyclable material from site for disposal at an appropriately licensed centre; or

  - dispose of unrecyclable material in the quarry void (until the void is filled and rehabilitated).

2.0 ECONOMIC FRAMEWORKS

There are two main frameworks for assessing the economic impacts of projects:

- **Cost benefit analysis (CBA)** which looks at the costs and benefits of the project, relative to a "without" project scenario, and identifies whether the project would have net benefits to the local and wider economy, particularly Western Sydney in this case. This is the main approach that economists use to justify projects; and
- **Economic activity analysis** which looks at the level of direct and indirect economic activity (e.g. jobs, output, value-added, wages, etc.) that a project will contribute to an economy. This can be undertaken using methods such as input-output analysis and computable general equilibrium modelling.

The following sections outline a high-level cost benefit analysis framework and an input-output analysis of the economic activity impacts of the project on the Western Sydney economy[1].

[1] Comprising the Local Government Areas of Hawkesbury, The Hills, Blacktown, Campbelltown, Camden, Wollondilly, Blue Mountains, Penrith, Liverpool, Fairfield, Cumberland, Parramatta

3.0 HIGH LEVEL COST BENEFIT ANALYSIS

3.1 Introduction

CBA looks at the costs and benefits of the project, relative to a "without" project scenario, and identifies whether the project would have net benefits to the local and wider economy, particularly Western Sydney.

3.2 Cost Benefit Analysis

Under the "without" project scenario, construction and development waste streams in Sydney are expected to continue to increase volume, and be transported to dispersed localities and landfill facilities, with limited opportunity for resource recovery.

With the project, there would be an increase in the level of resource recovery and hence reduced financial and environmental costs of land fill. In addition, there would be a reduction in financial and externality costs of road transport as a result of the more centrally located Luddenham ARRC. These benefits are in line with the NSW Government's 20-Year Waste Strategy and other policies to support waste reduction and enhance circular economy initiatives.

With the project, a producer surplus (economic benefit of production) would also be generated. This producer surplus is enhanced by the multiple revenue sources from the ARRC operations, such as waste acceptance fees and the sale of recycled products.

Potential adverse environmental, social, or cultural impacts need to be weighed against the project benefits. The Environmental Impact Statement for the project systematically addresses these potential impacts, with the majority being nil impact as a result of the ARRC being operated in a fully enclosed facility (including storage and materials handling).

In this respect, it should be noted that the legislative approval framework for the project aims to ensure that impacts are minimised, with many incorporated in the project delivery via design, mitigation measures, and management costs (and hence already included in any estimation of the producer surplus).

These potential incremental economic costs and benefits for the project are summarised in Table 3.1.

Table 3.1- Incremental Costs and Benefits of the Project

	Costs	**Benefits**
Production	Environmental impacts of project after mitigation, compensation and offset - refer to the full EIS for a detailed assessment	Producer surplus (revenues less opportunity cost of land, capital costs and operating costs, including mitigation, compensation and offset).
Other Externalities		Increased resource recovery and hence reduced financial and environmental costs of land fill. Reduction in financial and externality costs of road transport arising from a centrally located ARRC.

Based on the above, it is evident that provided the environmental impacts of the project are minimised, mitigated, and managed, and the project is financially viable, there are likely to be net benefits to the local and wider economy, particularly Western Sydney.

4.0 REGIONAL ECONOMIC ACTIVITY IMPACTS

4.1 Introduction

Economic activity impacts to the regional economy of the Western Sydney economy arise from both the construction and operation of the project.

4.2 Construction

Direct economic activity associated with the project construction is estimated to predominantly occur within four sectors of the economy, namely:

- the *non-residential building construction sector* which includes businesses involved in the construction of industrial buildings;
- the *heavy and civil engineering construction sector* which includes businesses involved in the onsite assembly of heavy electrical machinery from prefabricated components;
- the *construction services sector* which includes businesses involved in site preparation services, plumbing, electrical, mechanical, and other trades; and
- the *specialised and other machinery and equipment manufacturing sector* which includes the manufacturing of industrial machinery and equipment.

The average annual project construction workforce is estimated at 30 full-time jobs for a period of 18 months. To support 30 construction workers for a single year across the non-residential building construction sector, heavy and civil engineering construction sector, and construction services sector, reference to the input-output coefficients for the Western Sydney economy[2] shows that approximately $12 million of capital expenditure would be required in these sectors.

The direct and indirect economic impact of the above level of expenditure in the Western Sydney local economy is reported in Table 4.1. The total effect in Table 4.1 assumes that all construction workers reside in Western Sydney and have consumption spending in Western Sydney. However, the input-output table for the Western Sydney economy indicates that only 77% of the relevant construction workforce in Western Sydney also reside in Western Sydney. Consequently, the final column adjusts total effects to only include 77% of consumption-induced effects.

Given the largely specialist nature of the required machinery and equipment, for the purpose of this analysis an assumption is made that all such purchases and the leasing of machinery are made outside the Western Sydney local economy.

In summary, the total annual impact of construction on the Western Sydney local economy is estimated at up to:

- $28 million in annual direct and indirect output or business turnover (or $38 million present value at 7% discount rate over a 2-year period) ;
- $11 million in annual direct and indirect value-added (or $17 million present value at 7% discount rate over a 2-year period);
- $6 million in annual direct and indirect household income (or $8 million present value at 7% discount rate over a 2-year period); and

[2] The input-output table for the Western Sydney economy was developed using the Generation of Regional Input-Output Tables (GRIT) procedure developed by the University of Queensland and recognised internationally. Key inputs include the 2016-17 National Input-Output Tables, ABS 2016 Census of Population and Housing Data including 4 digit employment by industry data.

- 65 annual direct and indirect local jobs.

Table 4.1 – Annual Economic Impacts of Construction on the Western Sydney Economy

	Direct Effect	Production Induced	Consumption Induced	Total Flow-on	Total Effect	Adjusted Total Effect
Output ($M)	12.00	11.59	5.77	17.36	29.36	28.02
Type 11A ratio multipliers	*1.00*	*0.97*	*0.48*	*1.45*	*2.45*	*2.34*
Value Added ($M)	5.55	3.04	3.35	6.39	11.94	11.16
Type 11A ratio multipliers	*1.00*	*0.55*	*0.60*	*1.15*	*2.15*	*2.01*
Income ($M)	2.80	1.74	1.35	3.09	5.89	5.58
Type 11A ratio multipliers	*1.00*	*0.62*	*0.48*	*1.10*	*2.10*	*1.99*
Employment (No.)	30	19	20	39	69	65
Type 11A ratio multipliers	*1.00*	*0.63*	*0.68*	*1.30*	*2.30*	*2.15*
Note: Totals may have minor discrepancies due to rounding.						

4.3 Operation

For the analysis of the operation of the project, a project sector reflecting average annual revenue, expenditure by industry sector, wages (inside and outside the region) and employment (residing inside and outside the region) was developed[3] and inserted into the regional input-output table, and the impact on other sectors estimated using a computer program developed by Gillespie Economics.

The permanent operational workforce required for the ARRC is estimated at 70 full-time jobs (both day and night shifts).

The total and disaggregated annual impacts of the average operation of the project on the Western Sydney local economy in terms of output, value-added, income, and employment (in 2020 dollars) are shown in Table 4.2.

In summary, the total annual impact of ongoing operation on the Western Sydney local economy is estimated at up to:

- $141 million in annual direct and indirect output or business turnover (or $1,489 million present value at 7% discount rate over a 20-year period).
- $56 million in annual direct and indirect value-added (or $596 million present value at 7% discount rate over a 20-year period).
- $14 million in annual direct and indirect household income (or $143 million present value at 7% discount rate over a 20-year period).
- 178 annual direct and indirect jobs.

[3] The sector was developed based on annual revenue, profit, and major operational costs categories identified in the Business Case Analysis prepared by MRA consulting (2019) and more detailed sector allocations of operating costs provided by KLF Holdings based on its existing resource recovery operation. Purchaser prices for expenditure in each sector in the economy were adjusted to basic values and margins and taxes and allocated to appropriate sectors using relationships in the 2016-17 National IO Tables.

Table 4.2 - Annual Economic Impacts of Operation on the Western Sydney Economy

	Direct Effect	Production Induced	Consumption Induced	Total Flow-on	Total Effect
Output ($M)	102.54	24.75	13.24	37.99	140.53
Type 11A ratio multipliers	*1.00*	*0.24*	*0.13*	*0.37*	*1.37*
Value Added ($M)	36.98	11.60	7.68	19.28	56.27
Type 11A ratio multipliers	*1.00*	*0.31*	*0.21*	*0.52*	*1.52*
Income ($M)	4.47	5.95	3.11	9.06	13.53
Type 11A ratio multipliers	*1.00*	*1.33*	*0.70*	*2.03*	*3.03*
Employment (No.)	70	61	47	108	178
Type 11A ratio multipliers	*1.00*	*0.87*	*0.67*	*1.54*	*2.54*
Note: Totals may have minor discrepancies due to rounding.					

5.0 CONCLUSION

A high-level cost benefit analysis of the project indicates that provided the environmental impacts of the project are minimised, mitigated, and managed, and the project is financially viable, there are likely to be net benefits to the local and wider economy, particularly Western Sydney.

These net benefits include an increase in the level of resource recovery and hence reduced financial and environmental costs of land fill. In addition, there would be a reduction in financial and externality costs of road transport as a result of the more centrally located Luddenham ARRC. These benefits are in line with the NSW Government's 20-Year Waste Strategy and other policies to support waste reduction and enhance circular economy initiatives.

The proposed ARRC has the potential to deliver a range of incremental economic, social, and planning benefits over the alternative of leaving the partially rehabilitated former quarry site undeveloped. In our view, these benefits include:

- A capital investment which would be a major early private investment initiative for the area surrounding Western Sydney Airport;
- Development of an ARRC to recover, manage, and reuse Sydney's construction waste, and the repurposing of those materials that cannot be recovered;
- A sustainable and economically viable method of rehabilitating the quarry void to facilitate the future development of a high-tech agribusiness hub as envisaged in the Aerotropolis Plan;
- Environmental benefits in line with the NSW Government's 20-Year Waste Strategy and other policies to support waste reduction and enhance circular economy initiatives;
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- Creation of 178 direct and indirect jobs from the ongoing operations, as well as 65 direct and indirect jobs during construction; and
- Employment creation around Western Sydney Airport resulting in enhanced employment containment within Western Sydney.

ATTACHMENT 1 – DR GILLESPIE CURRICULUM VITAE

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Technical expert in benefit cost analysis and non-market valuation with extensive private and government sector experience

Profile

An experienced senior economist with nationally recognised technical expertise in cost benefit analysis and non-market valuation as well as environmental and resource economics, regional economic impact assessment, financial appraisal, pricing policies, economic and financial instruments, and policy development, analysis and review.

Successful delivery of economic analysis of wide ranging issues within tight timeframes drawing on multidisciplinary inputs for a wide range of infrastructure and other clients.

High level communication skills with experience in oral and written presentations to students, government, non-government and private sector agencies, academics, technical groups, Planning Assessment Commissions, land and environment court and government inquiries.

Qualifications

Qualifications

Doctor of Philosophy (Australian National University) – Valuing the Environmental, Social and Cultural Impacts of Coal Mining Projects in NSW, 2010 - 2014.

Master of Economics - Macquarie University, 1995 - 1998. Research Project was "Economic Value and Regional Economic Impact of Minnamurra Rainforest Centre, Budderoo National Park."

Master of Planning - University of Technology, Sydney, 1992-1994 - Thesis topic was “Economic Analysis in Environment Impact Assessment”.

Bachelor of Economics - Macquarie University majoring in micro-economics, 1986-89.

Bachelor of Science - Macquarie University majoring in Land Management, 1982-84.

Additional Short Courses

Practical General Equilibrium Modelling - Centre of Policy Studies, Monash University - November 2014

Discrete Choice Analysis - Institute of Transport and Logistic Studies, University of Sydney - January 2010

Regional Economic Impact Analysis-Estimating Regional Multipliers - Sydney University - May 1993

Input-output Analysis - Centre for Agricultural and Regional Economics

Advanced Excel - Department of Planning In-house Course

Project Management - Department of Planning In-house Course

Career Summary

Full time employment

Gillespie Economics	**March 1997 – Present**
Principal	
NSW National Parks and Wildlife Service	**November 1994 – March 1997**
Manager, Environmental Economics Policy Unit	
NSW Department of Planning	**April 1990 - November 1994**
Acting Deputy Manager, Natural Resources Branch	August 1994
Resource Economist, Natural Resources Branch	Oct 1992 - Nov 1994
Acting Senior Planner, Sydney Region West	July 1990
Town Planner, Sydney Region West	Nov 1990 – Oct 1992
Assistant Town Planner, Sydney Region West	April 1990 – Nov 1990
NSW Department of Lands	**May 1986 – April 1990**
Land Management Officer, Land Resources and Environment Branch	June 1989 – April 1990
Land Inspector, Metropolitan Lands Office	Oct 1987 – June 1989
Research Officer, Land Resources and Environment Branch	May 1986 – Oct 1987
Land Titles Officer, Land Titles Office	Jan 1986 – May 1986
Maritime Services Board	**August 1985 - January 1986**
Clerk, Statistics Branch	
NSW Department of Youth and Community Services	**February 1985 - August 1985**
Temporary Clerical Assistant, Personnel Section	

Part time employment

Macquarie University	**2002 - 2009**
Lecturer -Introduction to Environmental Economics	
Sydney University	**2002 - 2003**
Lecturer - Non-market Valuation Techniques	2002 to 2003
Lecturer - Benefit Cost Analysis	2003
University of Technology, Sydney	**2002 to 2009**
Lecturer - Benefit Cost Analysis and Non-market Valuation	

Employment Details

Gillespie Economics, Principal **March 1997 – Present**

- Gillespie Economics is a resource and environmental economic consultancy practice focused on providing high quality and independent economic analysis for its clients including Commonwealth and State government agencies, private sector organisations (including Rio Tinto and BHP), non-government organisations and individuals. Gillespie

Economics is a sole trader firm that operates independently or in collaboration with other environmental and resource economists and multi-disciplinary teams as the situation requires.

- Gillespie Economics has a particular focus on benefit cost analysis incorporating externality effects via non-market valuation and has undertaken benefit cost analyses of a wide range of activities/proposals including sewerage infrastructure, water supply proposals, road realignments, catchment programs and plans, mines, quarries, national park visitor centres, world heritage nominations, recreation facilities, forestry, transitways, native vegetation clearing, urban growth strategies, residential developments, industrial developments, agricultural activities and Council Agenda 21 plans. Primary non-market valuation studies undertaken include the application of choice modelling, contingent valuation, hedonic pricing and the travel cost method. Other areas of expertise include environmental and resource economics, regional economic impact assessment, financial appraisal, pricing policies, economic and financial instruments, and policy analysis, development and review.
- This position involves management of inputs from multidisciplinary teams to ensure timely delivery of high quality complex economic analyses. It also requires communication of complex technical matters to a variety of forums and stakeholders (including Planning Assessment Commissions, Land and Environment Court, Government Inquiries, Government agencies, non-government organisations, developers, community representatives etc).
- Examples of consulting experience is provided in Attachment 1.

NSW National Parks and Wildlife Service, Manager, Environmental Economics Policy Unit, November 1994 – March 1997

The Environmental Economics Policy Unit was one of the four environmental policy units in the Environmental Policy Division of the NPWS.

This position was responsible for:

- integration of economic considerations in the development of government policy recommendations;
- undertaking economic appraisals of NPWS development and policy proposals;
- investigating the application of economic incentives to off-park conservation;
- undertaking and overseeing studies of the economic value and regional economic impact of protected areas;
- investigating and reviewing NPWS pricing policies;
- representing the NPWS on the socio-economic committees overseeing economic studies undertaken by the Natural Resources Audit Council and the Resource and Conservation Assessment Council;
- reviewing and providing advice on Cabinet Minutes addressing a range of environmental issues;
- preparation of advice, correspondence, briefing notes, house-folder notes and draft Cabinet Minutes on a range of environmental issues; and
- liaison/negotiation with government agencies, industry and the community.

NSW Department of Planning, Resource Economist, Natural Resources Branch, Oct 1992 - Nov 1994

This position was responsible for:

- assessing economic and social information provided in Environmental Impact Statements for forestry proposals on the north and south coast of NSW;
- managing a team of environmental specialists in the preparation of Environmental Impact Assessment reports of forestry proposals;
- preparing guidelines outlining the social and economic information that is required in Environmental Impact Statements for forestry activities;
- representing the Department of Planning on the committee overseeing the preparation of socio-economic studies commissioned by the Natural Resources Audit Council;
- preparation of other advice, correspondence, briefing notes etc. on environmental impact assessment and in particular economic impact assessment; and
- liaison/negotiation with government agencies, industry and the community;
- making benefit cost analysis a requirement to address economic considerations in Environmental Impact Statements.

NSW Department of Planning, Town Planning Positions, April 1990 – October 1992

Duties for this position included implementation and review of regional environmental plans such as Sydney Regional Environmental Plan No. 11 (SREP 11) - Penrith Lakes Scheme and Sydney Regional Environmental Plan No. 9 - Extractive Industries, as well as examination and reporting on matters relating to major planning and development proposals such as:

- HMAS Nirimba/Schofields Aerodrome Planning Study;
- s.91A matters - matters where government authorities dispute council conditions;
- development application pursuant to SREP 11.

This position was also responsible for:

- consideration of the approach to the review of SREP 20 - Hawkesbury Nepean River;
- investigating and reporting on the preparation, exhibition, objection to and gazettal of Local Environmental Plans;
- investigating and reporting on ministerial and other representations;
- administration of the provisions of the Environmental Planning and Assessment Act 1979 and Heritage Act 1977 ;
- investigation and reporting on statutory submissions from Council on planning matters, as they affected, or were affected by current regional planning and policy;
- provision of advice on the potential environmental impacts of specific developments and consequently issues that should be addressed in any development application; and
- liaison with other divisions of the Department, government bodies, Councils, Community groups and the general public on all relevant planning matters.

NSW Department of Lands, Land Management Officer, Land Resources and Environment Branch, May June 1989 – April 1990

The primary objective of this position was to co-ordinate, plan, develop and promote a range of recreational programs, undertake and provide advice on environmental management, land assessment and land use planning as well as to provide advice and support to Lands Offices and the Executive on some specific land use matters.

Specific duties included:

- advising on the preparation and review of reports, plans of management and studies relating to the Department's recreation programs and Crown land generally;
- undertaking and providing advice on land assessment;
- co-ordinating and assisting in the design and preparation of artwork for interpretative material, logos and signs;
- co-ordinating Branch printing matters;
- supervising technical and drafting staff;
- liaising with other government authorities and the community; and
- presenting talks on environmental and land management matters.

NSW Department of Lands, Land Inspector, Metropolitan Lands Office, Oct 1987 – June 1989

This was a field oriented position involving investigation and reporting on a variety of environmental, land use planning and land management issues in the Metropolitan area including:

- review of environmental documents including environmental impact statements;
- inspection and reporting on land use applications, disposal of urban lands, extractive industry, compliance with lease and permissive occupancy conditions, management and disposal of Crown land, allocation of financial assistance to Reserve Trusts;
- undertaking land assessment studies;
- preparation of plans of management for Crown reserves; and
- liaison with Councils, consultants, industry representatives, government Departments and the general public

Information on other positions can be provided on request.

Professional Memberships

Australian Agriculture and Resource Economics Society

NSW Economics Society

Society of Benefit Cost Analysis

Publications and Conference Papers

Gillespie, R. (1993) Do Retail Hierarchies Exist? An Investigation in the Epping-Eastwood-Ryde Area, *Land Economics Review*, Vol. 4, No. 2, pp 24-30.

Bennett, J., Gillespie, R., Powell, R. and Chalmers, L. 1995 *The Economic Value and Regional Economic Impact of National Parks*. Proceedings of Ecological Economics Conference, Coffs Harbour 1995.

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Gillespie, R. (1997) *The Economic Value and Regional Economic Impact of Minnamurra Rainforest Centre, Budderoo National Park*, NSW National Parks and Wildlife Service, Environmental Economics Series.

Gillespie, R. and Bennett, J. (1999) Using Contingent Valuation to Estimate Environmental Improvements Associated with Wastewater Treatment, *Australian Journal of Environmental Management*, Vol. 6, No. 1, pp. 14 - 20.

Gillespie, R. (1999) What do I need to know about benefit cost analysis? In: *Valuing Tourism: Methods and Techniques*, Bureau of Tourism Research, Occasional Paper No. 28, Edited by Corcoran, K., Allcock, A., Frost, T., and Johnson, L.

Gillespie, R (2000) *The Economic Values of Native Vegetation*, Background Paper No. 4, Native Vegetation Advisory Council of NSW.

Gillespie, R. (2000) *Multi-criteria Analysis: A Critique from an Economist's Perspective*, Presented to the 2000 Australian Agricultural and Resource Economics Society Conference, Adelaide.

Gillespie, R. (2002) *Measuring the Benefits of Reticulated Sewerage: Expectations and Expert Property Valuation*, Presented to the 2002 Australian Agricultural and Resource Economics Society Conference, Canberra.

Gillespie, R. (2004) *Linking Science, Community Consultation and Economics: The Living Murray Project*, Presented to be presented to the 2004 Australian Agricultural and Resource Economics Society Conference, Melbourne.

Gillespie, R (2004) Economic evaluation and market based instruments, *Journal of Ecological Management and Restoration*, V5, Issue 3, pg 225.

Crase, L. and Gillespie, R (2006) *A Preliminary Consideration of Use and Non-Use Values Circumscribing the Lake Hume Water and Foreshore Management Plan*, Presented to the 2006 Australian Agricultural and Resource Economics Society Conference, Melbourne.

Gillespie, R. (2007) *Mine Subsidence at Waratah Rivulet: A Case Study of the Consideration of Environmental Costs and Benefits of Underground Longwall Mining*, Presented to the Mine Subsidence Technical Society Conference, Wollongong, 26-27 November.

Gillespie. R. (2008) *Economics of Global Warming*, Paper Presented at the 52nd AARES Conference, Canberra, Australia, February 2008

Bennett, J., Dumsday, R. and Gillespie, R. (2008) *Analysing Options for the Red Gum Forests Along the Murray River*, Paper Presented at the 52nd AARES Conference, Canberra, Australia, February 2008

Bennett, J., Dumsday, R. and Gillespie, R. (2008) *Australian Economic Development and the Environment: Conflict or Synergy*, Paper Presented at the 52nd AARES Conference, Canberra, Australia, February 2008

Crase, L. and Gillespie, R. (2007) The impact of water quality and water level on the recreation values of Lake Hume, *Australasian Journal Of Environmental Management*—Volume 15, pg. 31-39.

Gillespie, R. (2008) *Estimating Community Values for Environmental Impacts of Mining Using Choice Modelling*, NSW Minerals Council Environment and Community Conference 2008.

Gillespie, R. and Kragt, M. (2010) *Valuing the Impacts of Underground Coal Mining in the Southern Coalfield*, Paper Presented At The 54th AARES Conference, Adelaide, Australia, February 2010

Gillespie, R. and Bennett, J. (2011) *Willingness to Pay for Kerbside Recycling*, Environmental Economics Research Hub.

Gillespie, R. and Bennett, J. (2010) *Willingness to Pay for Recycling Food Waste*, Environmental Economics Research Hub.

Gillespie, R. and Bennett, J. (2010) *Non Use Economic Values Of Marine Protected Areas In The South-West Marine Region*, Environmental Economics Research Hub.

Gillespie, R. and Bennett, J. (2012) Valuing the Environmental, Cultural and Social Impacts of Open Cut Coal Mining in the Hunter Valley of NSW, Australia, *Journal of Environmental Economics and Policy*, Volume 1, Issue 3, 1-13.

Gillespie, R. and Kragt, M. (2012) Accounting for nonmarket impacts in a benefit-cost analysis of underground coal mining in New South Wales, Australia, *Journal of Benefit Cost Analysis*, 3(2): article 4.

Gillespie, R. and Bennett, J. (2012) Willingness to pay for kerbside recycling in Brisbane, Australia, *Journal of Environmental Planning and Management*, 1-16.

Gillespie, R. and Bennett, J. (2014) *Benefit Cost Analysis of Coal Mine Projects in New South Wales, Australia,* presented to the Sixth Annual Conference and Meeting of the Society for Benefit-Cost Analysis, George Washington University, Washington DC.

Gillespie, R. and Bennett, J. (2015) Challenges in including BCA in planning approval processes: Coal mine projects in New South Wales, Australia, *Journal of Benefit Cost Analysis, Vol. 6(2).*

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