

Treasury Report: Treasury/ MoRST Briefing: Meeting between Ministers English and Mapp re the Technology New Zealand scheme and other options for supporting business R&D

Date:	9 October 2009	Report No:	T2009/2287
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Action Sought

	Action Sought	Deadline
Minister of Finance (Hon Bill English)		

Contact for Telephone Discussion (if required)

Name	Position	Telephone		1st Contact
James Beard	Manager- Economic Performance Group	[deleted – privacy]	[deleted – privacy]	✓

Minister of Finance's Office Actions (if required)

None.

Enclosure: **No**



THE TREASURY

Kaitohutohu Kaupapa Rawa

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MoRST
TE MANATU PŪTAIAO

Treasury/ MoRST Briefing: Meeting between Ministers English and Mapp re the Technology New Zealand scheme and other options for supporting business R&D

MINISTER	PRIORITY	DEADLINE
Minister of Finance	Routine	13 October 2009
Minister of Research, Science and Technology	Routine	12 October 2009

Action Sought

	Action Sought	Deadline
Minister of Finance (Hon Bill English)	Read	Before meeting with Hon Mapp on Tuesday, 13 October
Minister of Research, Science & Technology (Hon Wayne Mapp)	Read	Before meeting with Hon English on Tuesday, 13 October

Contact for Telephone Discussion (if required)

NAME	POSITION	TELEPHONE	CONTACT
[deleted - privacy]	Senior Analyst, Productivity & Innovation, Treasury	[deleted - privacy]	Main Contact - Treasury
Margaret Davison	Director - Economic Development, MoRST	[deleted - privacy]	Main Contact - MoRST

annexes

Annex One: [Information deleted in order to maintain the current constitutional conventions protecting the confidentiality of advice tendered by ministers and officials]

Treasury/ MoRST Briefing: Meeting between Ministers English and Mapp re the Technology New Zealand scheme and other options for supporting business R&D

Executive Summary

1. The Ministers of Finance and Research, Science and Technology are meeting on Tuesday, 13 October 2009 to discuss the means the Government has for increasing business expenditure on R&D (BERD). This includes the focus of TechNZ, and possible additional options such as non-discretionary grants and vouchers for businesses.
2. New Zealand's business R&D is low by OECD standards, particularly amongst larger firms. Addressing this issue is important for improving our economic performance. In our view, Government initiatives to increase BERD should focus on spillovers and promote 'additionality' – that is funding should go to activities with wider benefits and should lead to businesses undertaking projects that would not otherwise occur.
3. With the removal of the R&D tax credit, TechNZ grants are the main form of Government support for business R&D. TechNZ is a strong brand, and is well regarded among recipient firms. However, an earlier evaluation of the scheme was not able, from the evidence available, to assess the extent of spillovers and 'additionality'. Concerns have been raised previously by the Minister of Finance about the effectiveness of TechNZ funding. In recent months, MoRST and Treasury have been assessing other options to lift business R&D including:
 - non-discretionary grants with a pre-specified upper limit, targeted towards larger firms that are already R&D intensive, that reimburse a percentage of R&D costs
 - vouchers for up to \$1M that focus on solving problems for smaller firms, and promote links with research institutions
 - prizes for research solutions to defined and significant problems.
4. These approaches to promoting business R&D need to be integrated with other Government initiatives to strengthen the RS&T system and encourage more innovation by firms. This means integrating these initiatives with the Economic Growth Agenda (EGA), and the proposals in the recent letter from the Prime Minister to Hon Mapp. Hon Brownlee has also received information on the proposed options, and they may be discussed at Premier House. This briefing may aid that discussion.
5. The following questions could be used as the basis for the discussion between Ministers at the meeting on Tuesday, 13 October 2009:

- How much priority should be given to work on promoting BERD, relative to other streams of work in the RS&T system (considering *[deleted - free and frank]* in the EGA)?
- If priority should be given, where should the focus be?
 - increasing the existing TechNZ grant funding
 - using one or more of the proposed options in this briefing
 - investigating other alternatives.
- How should any deployment and expansion of new options be funded?
- What are the next steps to progress the proposals in this briefing?
 - a) Funding scenarios of different scales are provided in the briefing notes. An indication would be useful, given the emerging fiscal situation, of the level of funding to be considered – recognising that any decisions on reprioritisation or new funding would need to be made within the wider 2010 Budget process.
 - b) MoRST and Treasury propose reporting back on the preferred options by the end of the year. This aligns with the reporting timetable *[deleted -free and frank]*. We will also seek to be consistent with reporting on the EGA work programme that seems likely to emerge from the Premier House discussions on Monday, 12 October.

recommendations

6. We recommend that you:

a.	Agree that the Government should aim to lift BERD levels through the TechNZ scheme and other business R&D interventions.	Yes / No
b.	Indicate preferences regarding which options you wish to receive further advice on: <ul style="list-style-type: none"> - non-discretionary – targeted grant - ‘What’s your problem’ vouchers - Vouchers to encourage firms to purchase R&D from TEIs and CRIs - Prizes for research solutions to defined problems. 	Yes / No Yes / No Yes / No Yes / No
c.	Indicate preferences regarding the funding options	Yes / No

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For Secretary to the Treasury

Yelena Thomas
Acting General Manager, Investment and
Performance
Ministry of Research, Science & Technology

Hon Bill English
Minister of Finance

Hon Wayne Mapp
Minister of Research, Science & Technology

Purpose of the Meeting

7. The Ministers of Finance and Research, Science and Technology are meeting on Wednesday, 14 October 2009 to discuss the means the Government has for increasing business expenditure on R&D (BERD), including the focus of TechNZ, and possible additional options such as non-discretionary grants and vouchers for businesses.
8. Officials are seeking your views on the objectives you want met so we can design appropriate intervention options across R&D incentives to meet the deadline of December 2009, set by the Prime Minister.
9. This meeting follows earlier work on R&D Incentives, a joint meeting on 16 June 2009 and a report on the programmes, and their costs, delivered by the Foundation for Research, Science and Technology (the Foundation).

Background

Update on work underway in the RS& T System

10. The proposals presented in this paper are designed to contribute to the Prime Minister's recent letter to Hon Mapp, which requested progress by December on the following issues:
 - 10.1 Setting priorities and simplification of the science system
 - 10.2 Strengthening Crown research institutes (CRIs)
 - 10.3 Improving the R&D interface between the private sector and public research organisations (PROs).

11. Work on how to reduce the transaction costs within the RS&T system is under way. In addition there are two other streams of work under way that will contribute to simplification of the RS&T system:
 - 11.1 Setting science priorities– the Vote RS&T structure is being simplified to make it more transparent and improve reporting on the impact that RS&T is having on the economy and society. Two particular areas of the new structure, High Technology Industries and the Biological Economy, aim to lift the contribution of research to innovation and economic performance in these two sectors.
 - 11.2 Strengthening CRIs – work is under way to ensure each CRI has a clear purpose and that each is able to contribute more effectively to New Zealand’s economic growth and wellbeing. A small taskforce, that includes external input, will be established to provide recommendations by December.

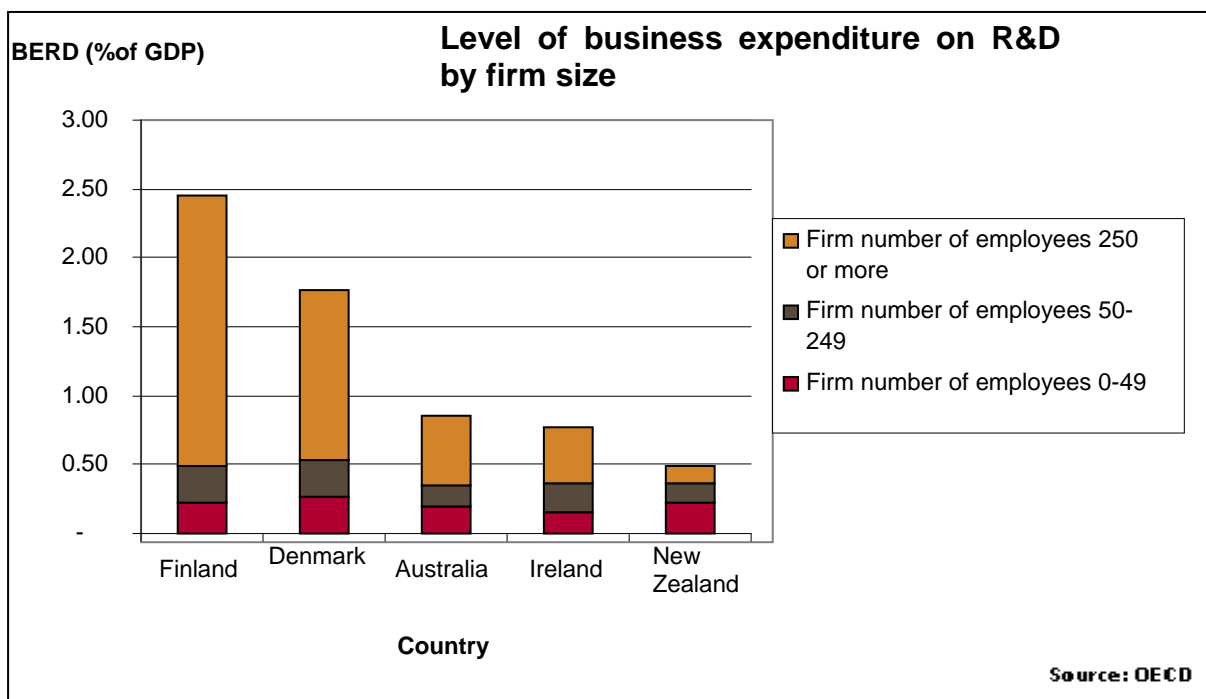
Work on improving business R&D

12. The Medium Term Economic Growth Agenda (EGA) has set challenging goals of lifting New Zealand’s economic performance by 2025. The goals include increasing New Zealand’s exports to 40% of GDP and matching our GDP per capita to Australia’s. The EGA has identified that innovation is critical for economic growth. In addition to sector priorities, it identifies key cross-economy interventions including: non-discretionary incentives for business R&D; more industry-driven and industry-relevant RS&T; and technology transfer from offshore, and better connections between researchers in public research organisations and business.
13. The Prime Minister’s letter noted one output as ‘analysis and recommendations on the merits and design of a non-discretionary business R&D support system and the merits of such approaches in relation to existing discretionary programmes such as TechNZ’. The letter also asked for recommendations on the linked issue of how to gain more value from the existing commercialisation capability in New Zealand’s PROs.
14. Furthermore, the Prime Minister’s Chief Science Adviser has proposed a R&D support scheme for industry. His view is that the cost for SMEs to access the infrastructure of universities and CRIs is too high, due to our full cost recovery model. He suggests a non-discretionary scheme to support business R&D by co-funding indirect costs charged by research institutes. *[Deleted – confidentiality of advice]*
15. Minister Brownlee has received information on the proposed options presented in this paper, as part of EGA submissions.

16. Options to replace the R&D Tax Credit have been discussed for some time. Suggestions have been made in various forums including: the Technology Investment Network (TIN100), the Capitalising on Research and Development Action Group (CRAG) Business R&D investment Forum in April, and the Prime Minister's Chief Science Adviser's report.

Low levels of BERD in New Zealand

17. Business Expenditure on R&D (BERD) is low in New Zealand (even when you account for industry composition). By international standards our SMEs' R&D intensity is adequate but our large firms are under investing in R&D. One of the main ways to lift productivity substantially is by lifting the growth rates of R&D



intensive sectors and businesses so they become larger and more significant. Interventions to increase R&D can contribute to this.

Graph showing BERD level by firm size

Government's role in supporting R&D

18. Well-designed support for the R&D activity of emerging, rapidly growing, high-value businesses, especially in sectors such as high value manufacturing and services, and food processing will benefit the New Zealand economy. Innovation is an important aspect in the success of these firms. Other countries, such as Australia and Singapore, are targeting innovation and growing high-value firms.
19. There are strong reasons for Government to support business R&D. Some firms will always invest in R&D activities. It is well understood that firms do not generally invest an optimal level in R&D where high risks are involved or because benefits can 'leak' to other parties. The potential external benefits from supporting firms to invest in these areas are the main rationale for Government support. It encourages firms to invest in R&D that they would not otherwise have undertaken.
20. External benefits (i.e. spillovers) from businesses' R&D should be one rationale for Government support. However, the existence of external benefits does not, on its own, justify Government support. The challenge is to support projects that

would not otherwise have taken place ('additionality') and that generate total private and public returns that are still sufficiently positive to exceed the costs associated with the policy measure.

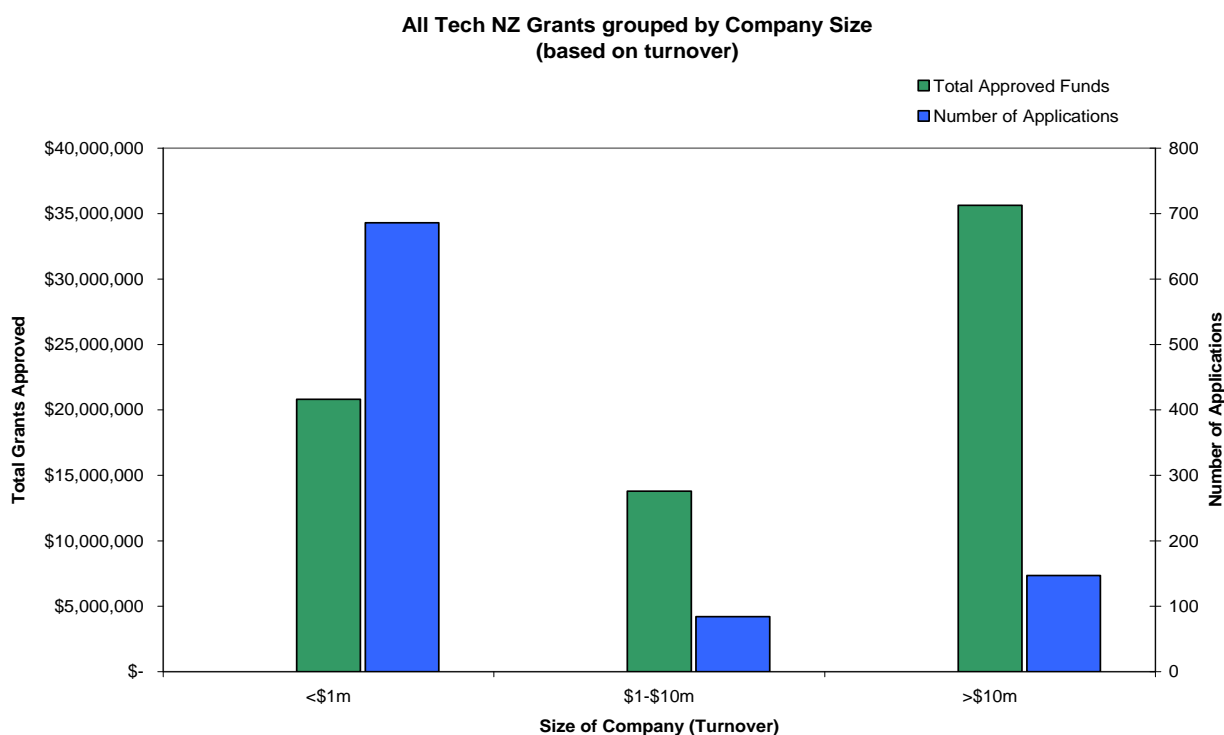
Non-discretionary business support vs. discretionary

21. Broad-based interventions such as R&D tax credits and non-discretionary R&D grants allow business-led choices on what R&D is undertaken. They provide business with greater certainty and help reduce transaction costs. The greater certainty results in a long term improvement in R&D intensity, compared to discretionary support that may only result in a one off boost. Targeted interventions allow concentration of resources and (theoretically) greater ability to select projects with transformative potential. However, targeted interventions can involve high overhead costs and take some decision making away from the private sector, raising incentive issues.
22. In most comparator countries, a mixture of discretionary and non-discretionary support is offered to firms.

The Current TechNZ Scheme

23. New Zealand has a single business-focused R&D grant scheme called TechNZ. It is managed by the Foundation. TechNZ invests approximately \$50m annually. The scheme is a strong brand among New Zealand businesses. Its focus is to help firms grow through developing high-value exports. It is a 'discretionary' scheme in that firms must apply to the Foundation. The Foundation decides whether or not to award a grant.
24. There are two parts to the current TechNZ scheme:
 - Targeted grants (approximately 80% of TechNZ funding) support businesses to do high risk 'stretch' R&D activities in areas of Government priority. These grants require 50% co-funding by businesses. Firms of any size can receive a TechNZ grant.
 - Capability grants (approximately 20% of TechNZ funding) encourage businesses seeking to develop new or more sophisticated R&D skills and related business management practices. This funding can also support staff transfer from public research organisations into firms. Co-funding is not required.
25. Small and medium sized businesses (turnover under \$10 million) received a greater proportion of funding compared to large firms through TechNZ for the 2008/09 year.
26. As the green bars in the graph below illustrate, about 45% of targeted project funding is received by firms earning less than \$1million revenue and up to 10 employees; 35% of targeted funding is received by medium sized firms earning between \$1-\$10 million in revenue; larger firms (revenue over \$10million) receive 20% of targeted funding. In the last three years 83 of the TIN100 firms

have received TechNZ funding (63 of the TIN 100 companies are SME's.) The blue bars give an indication of the size of the firms that apply for TechNZ grants (includes successful and unsuccessful applicants).



27.

28. New Zealand Trade and Enterprise (NZTE) and the Foundation are working to coordinate service delivery for firms with high growth potential. This is aimed at increasing the impact firms will have on the economy. Work is underway to develop a list of shared high value firms.

The Foundation has suggested increasing the total budget and flexibility for the existing TechNZ scheme. One suggestion is to allow the provision of grants for capital expenditure for pilot plants. *[Deleted – confidentiality of advice]*

Evaluations of the TechNZ scheme

29. The purpose of TechNZ is well understood and delivers gains for firms in the form of improved business capabilities and technological capabilities. A major independent evaluation of the scheme was carried out in 2001. Although it considered an earlier format of TechNZ, it found that the scheme was achieving good progress towards its outcomes. However, on the evidence available it was not possible to assess the extent of spillovers and additionality associated with TechNZ grants. It is difficult to determine the effectiveness of this scheme.

30. The Foundation is currently undertaking a qualitative analysis of 35 firms that have been past recipients of TechNZ funding. This analysis will estimate the impact that participation in the scheme has had on firm growth. The findings will be reported by December 2009.
31. It is Treasury's view that the Foundation does not give sufficient weight to additionality or external benefits when determining whether to award a Tech NZ grant to a firm. Treasury recommend that if the TechNZ programme is continued then additionality and external benefits need to be emphasised as criteria for grants.
32. MoRST favours retaining the existing TechNZ 'brand' because it is well recognised and there are significant levels of pre-committed grants to firms. However, there is a need to grow and target larger firms. New initiatives would be either additional to what is already supported or would, over time, replace existing grants.

Instruments to increase business engagement in R&D

33. The objectives of the proposals are to:
 - 33.1 increase the investment firms make in R&D capability and capacity, so that they grow in size and productivity to contribute to New Zealand's economic growth
 - 33.2 ensure support schemes are easy for firms to understand and access
 - 33.3 introduce firms to R&D as a means to improve their business, through access to publicly funded support.
34. Options include:
 - 34.1 Non-discretionary targeted grants
 - 34.2 'What's your problem' vouchers
 - 34.3 Vouchers to encourage firms to purchase R&D from TEIs and CRIs
 - 34.4 Prizes for research solutions to defined problems
35. These options are not mutually exclusive and it may well make sense to put together two or more options into a single coherent reform 'package'.

Proposed design of a non-discretionary – targeted grant:

- This is the 'tax credit replacement' - a non-discretionary grant but targeted towards selected firms to contain fiscal costs. It would operate in a similar manner to a tax credit, reimbursing a percentage of R&D performed by the firm, but with a pre-specified upper limit. The scheme could operate on an incremental basis. This would mean that eligible spend would be based on additional expenditure above a pre determined base-line.
- Due to fiscal constraints the grant would be restricted to firms that meet 'objective' criteria. Firms meeting these criteria could opt into the

programme and receive grants. Careful consideration will need to be given to the criteria used to identify target areas.

- Possible targeting criteria:
 - a) Restrict firms by size. The rationale behind this is that it is New Zealand's large firms that are poor performers in R&D compared with large firms in other OECD economies
 - b) Restrict firms to those in the high-value manufacturing and services and processed food as identified in the EGA. The rationale for this would be to focus limited resources on the Government's priority areas.
- There is a risk that having an upper limit on the grant per firm could restrict the additionality the programme could achieve (since firms that already do enough R&D to receive the upper limit will lack the incentive to increase R&D further – in which case Government will simply be subsidising existing R&D). However, Treasury acknowledges that an upper limit would help to limit fiscal costs and that the criteria will need to be flexible depending on funding availability.
- The programme could be managed by the Foundation as part of the TechNZ brand and would co-ordinate with New Zealand Trade and Enterprise (NZTE) to ensure the two agencies have a cohesive approach to businesses that have high growth potential.
- Non-discretionary grants would allow firms to test more innovative ideas, provide them with more certainty and potentially encourage a more long-term response from firms.

36. *'What's your problem' vouchers*

- This builds on the competition idea, 'What's Your Problem New Zealand', that was run successfully by IRL earlier this year. Firms would compete for a voucher that would be redeemed with a nominated PRO. This will help foster links between business and PROs.
- Vouchers would be up to \$1m with the firm contributing the same amount. The focus will be on solving a problem identified by a firm. The scheme does not have to be centrally mandated since it can be encouraged as an approach for PROs to consider.
- The Prime Minister's Chief Science Adviser has suggested this type of scheme be targeted at SMEs to promote public-private sector linkages.

37. *Vouchers to encourage firms to purchase R&D from TElS and CRIs*

- A small pilot could be run through the TechNZ regional partner's network. A \$20k Voucher would be provided with the firm contributing matching funding. Added support could be provided via a Global Expert search. It

could be targeted towards SMEs in key sectors and would help build a pipeline of firms who are 'R&D literate' and aspire to lift their productivity and growth.

- The objective is to encourage firms and PROs to work closer together by subsidising the cost of buying research from PROs. It would introduce firms to R&D as a means to lift their performance and profitability. It would make better use of under-utilised research capability in PROs and to stimulate research programmes with firms that are ready to engage. However, it may not encourage firms to develop or increase their in-house research capabilities.
- This varies from the Prime Minister's Chief Science Adviser's proposal for a R&D support scheme for industry, regardless of firm size. The above mentioned 'What's Your Problem Voucher' will address the issue of PRO and industry linkages so this voucher will be specifically directed at SME's. Also large firms have the option of accessing the non- discretionary targeted grant.

38. *Prizes for research solutions to defined problems*

- There are many issues facing NZ industries today, for example, our ship building and maintenance firms often cite the problems of barnacles on ship hulls, our dairy industry faces the problem of methane gas from cows.
- Firms and industry groups would be encouraged to work together to identify their key problems. The Government (with the industry or a group of firms) would then offer a significant prize (funding dependent on size of the problem and the value of a solution) that would be paid to whoever came up with a successful solution.

39. **Table summarising how the options could contribute to the principles of the Economic Growth Agenda.**

Options	Greater R&D capacity / capability	Stronger Linkages	Lower compliance costs	Feasibility / cost effectiveness	Large firms	Small firms	Potential economic impact
Non Discretionary targeted grant	√√	√	√√	√√	√√		√√
What's your problem voucher	√√	√√		√√	√√		√√
Access Voucher	√√	√	√	√√		√√	√
Purchasing solution prize	√	√	√	√√	√	√	√√

Funding Scenarios for the proposed tools

40. It is MoRST's opinion that for any of the initiatives to have a material impact on economic growth and deliver on the ambitious targets of the EGA, significant new funding will be required. Although some funding may be found from re-prioritisation within Vote RS&T, additional funding will also be needed.
41. The different options we have put forward can be scaled depending on what funding is available. Some alternative funding scenarios are:
- 41.1 Small reprioritising within Vote RS&T (\$25– \$50 million):
- advantage – fiscally prudent
 - disadvantage – will not make a significant impact (the repealed R&D Tax Credit forecast was to cost up to \$375 million per annum).
- 41.2 Large-scale reprioritising within Vote RS&T (\$100 million–\$200 million):
- advantage – potential to make a impact
 - disadvantage – Government Expenditure on Research and Development is already below OECD average and cutbacks will be difficult given commitment to existing funding contracts. It will also have an impact on the Public Good Science that Government funds.
- 41.3 Possibility of reprioritising from Votes other than RS&T:
- advantage – potential to make an impact
 - disadvantage – will require co-ordination across Vote Ministers and existing funding may already be committed to other priorities.
42. The table below shows some indicative funding figures for the various options using a phased approach. To maximise impact and return will require significant early investment.

MoRST's preferred funding scenario is highlighted below – \$100m year 1 with \$200m available in year 2 and outyears. The funding scenarios include one off set-up costs. They also include the on-going administrative costs of implementing the schemes.

Options	Year 1			Year 2	
	Alternative 1 (\$M per annum)	Alternative 2 (\$M per annum)	Preferred Option (\$M per annum)	Alternative 1 (\$M per annum)	Preferred Option (\$M per annum)
Non-discretionary grants	20	35	69	110	140
"What's your problem" vouchers	5	9	20	23	32
"Purchasing R&D from PRO's"	0	1	1	2	3
"A research solution" prize	0	5	10	15	25

Total	25	50	100	150	200
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