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Cabinet Business Committee

CBC (13) 19

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Summary of Paper

28 March 2013

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LATE PAPER: This paper was submitted after the Cabinet deadline and has been accepted for the agenda by the Chair.

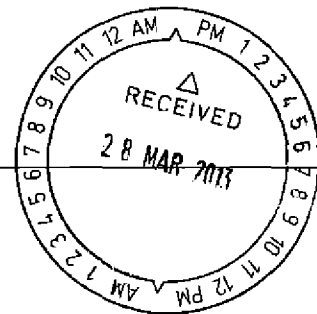
Smarter Research and Development Incentives to Support Innovation

Portfolio

Science and Innovation

See the recommendations on page 15 of the attached paper.

Bob Macfarlane
Committee Secretary



Smarter Research and Development Incentives to Support Innovation

Proposal

1. The paper presents the results of a detailed review of business research and development (R&D) support funded through Vote Science and Innovation and proposes a redesigned mix of programmes and funding for 2013/14 onwards as part of the development of Callaghan Innovation. It further outlines the direction of travel for enhancements to the Government's business incubator programme and support for start-ups.

Executive summary

Getting more value from business R&D grants

2. In these uncertain economic times, post the global financial crisis, firms need to be more innovative and competitive to succeed. Business R&D is a key input to the innovation needed to provide competitive advantage and increased productivity in New Zealand. There is strong evidence linking increased business R&D investment with long-term economic growth.
3. The Government has committed to supporting New Zealand businesses to double their expenditure on R&D to over 1 per cent of GDP as part of the Business Growth Agenda. With the establishment of Callaghan Innovation, the Government has concentrated its key tools for driving business R&D investment and innovative business growth in one organisation. Callaghan Innovation is developing a wide range of services, programmes, and research investment all focused around driving growth in New Zealand's innovative businesses. One of Callaghan Innovation's most significant tools for supporting growth in innovative businesses is its business R&D grant programmes.
4. Officials have undertaken a review of the business R&D grant programmes with the aim of leveraging greater private investment, simplifying the mix of programmes and generating greater total value in New Zealand from public business R&D support. There are currently four funding tools receiving a total of \$115 million in funding for 2012/13 and as part of Budget 2013 I am seeking an additional \$98 million (over four years). The current tools were assessed using available evidence and a number of issues and opportunities were identified.
5. To address these issues and more effectively support Callaghan Innovation's objective of increasing business R&D, I propose a reconfigured programme of business R&D grants. The new approach will be more market-led, utilise lower public co-funding rates and reduce the number of funding tools. I propose to operate two core programmes, an expanded Technology Development Grant (R&D

Growth Grants - \$394 million over four years) and targeted R&D Project Grants (\$147.5 million over four years) as well as funding students to gain experience working within R&D businesses (R&D Student Grants - \$15 million over four years).

6. The R&D Growth Grants would continue to fund 20 per cent of a business's R&D costs for three years. The programme would provide simple, efficient support to drive a long-term increase in business R&D. Eligibility would be expanded to businesses with a two year track record of at least \$300,000 in R&D spending and 1.5 per cent of revenue spent on R&D. The process would become more rules-based to provide businesses with certainty of funding and support long term investment. The cap on funding would be raised to \$5 million per annum per business to leverage higher levels of private investment.
7. The R&D Project Grants would be a flexible funding tool that would support most of the R&D activity currently funded through the three non-TDG programmes. Public co-funding would be variable, but average no more than 40 per cent. In general, only firms not receiving a R&D Growth Grant will be eligible for a R&D Project Grant, although R&D Growth Grant recipients can receive a R&D Project Grant for projects involving collaboration (maximum of 30% support).
8. It is critical that this funding be used to drive growth in New Zealand businesses and create high value jobs in New Zealand. The grants must not be used as a way for businesses to access inexpensive equity, just to sell the business on and capture the gain at the cost to the taxpayer. To ensure that value is captured in New Zealand I intend to strengthen the 'clawback' provisions and practice for R&D Project Grants to ensure that if the expected value is not created as expected, the funding is returned to the Crown.
9. Support for students to work in R&D active businesses would continue with little immediate change, although I intend to alter the criteria to have greater focus on benefit to the student than currently.

Enhancements to the Business Incubator programme

10. High-growth early-stage businesses play an important role in employment growth, commercialising intellectual property (IP) and growing emerging sectors. The Government's business incubator programme has helped many of these businesses succeed. The Government has also made substantial contributions to improving the capital raising environment, but a small, but critical, gap remains for businesses commercialising intellectual property that face significant start-up costs but are not investment ready.
11. To address this, I propose to introduce a new programme that will work with incubators to provide repayable funding for these businesses. Incubators operators will provide private sector funding and expertise to complement Government funding. The programme will only be available to start-ups in select incubators and will require the owners of the IP to relinquish some equity to the incubator operators to enter the programme. This approach will align the incentives of start-ups and incubator operators and address the gap in capital that currently exists. I am seeking an additional \$31 million over four years as part of Budget 2013 to fund this programme.

Background

12. In these uncertain economic times post the global financial crisis, firms need to be more innovative and competitive to succeed, grow and add jobs. Some firms seek to restructure to become more efficient. To boost employment across the economy we therefore need many other firms to be growing through developing and selling more innovative products and services. As part of the Business Growth Agenda, we also want to lift the ratio of exports to gross domestic product to 40% by 2025.
13. Business research and development is a key input to the innovation needed to provide competitive advantage and increased productivity in New Zealand. There is strong evidence linking increased business R&D investment with long-term economic growth. R&D can enable businesses to compete in export markets on the basis of quality and distinctiveness, rather than price. R&D driven businesses can lead growth in highly productive sectors and create high value jobs. Additionally, there is strong evidence that because businesses cannot capture all of the benefits from R&D (some is captured by consumers or other businesses) economies tend to under-invest in R&D.
14. For these reasons, the Government has committed to supporting businesses to double their expenditure on R&D to over 1 per cent of GDP as part of the Business Growth Agenda. The Government's first role in achieving this is by creating the right macroeconomic business conditions, providing competitive tax rates and prudent fiscal and monetary policy to give firms the confidence to invest in R&D.
15. There are also more targeted microeconomic policies that can help businesses access the resources, expertise and funding to manage the risks and challenges of R&D investment. With the establishment of Callaghan Innovation, the Government has concentrated its key tools for driving business R&D investment in one organisation. Some of the most important tools Callaghan Innovation has to support business R&D growth are the Government's grants to support business R&D investment.
16. In recent years the Government has increased the funding for Vote Science and Innovation business R&D grants to \$115 million in 2012/13. This funding has supported hundreds of New Zealand companies to expand and improve their R&D programmes. The TIN100 report for 2012 showed that spending on R&D in our top exporting firms increased as they shifted their focus from business survival to stimulating profitability. The StatsNZ R&D Survey results released on Wednesday 25 March also show that spending on R&D by businesses in New Zealand nudged \$1.2 billion in 2012, up almost 25 per cent since 2010. This is significant improvement, however, to meet our commitment of increasing business expenditure on R&D to over 1 per cent of GDP, it is critical that we maximise the leverage we get from government co-investment, and grow our investment when possible.

Review of Business R&D Grants

17. Given the importance of the grant programmes to the Government's role in increasing business R&D investment, I directed officials to undertake a detailed review that would consider how these programmes could better contribute to increasing business R&D. In particular the review was intended to identify ways to:
 - (a) Leverage greater private investment from government funding.

- (b) Simplify the mix of programmes to reduce overlap and make it simpler for businesses to understand.
 - (c) Ensure that as much value is created and retained in New Zealand from government funding as possible.
18. The review included an analysis of the state-of-play for business R&D in New Zealand; an intervention logic for government support of business R&D; an assessment of the current programmes; policy options and illustrative policy mixes; case studies of specific contracts and workshops with R&D active businesses.

Current Programmes

19. Callaghan Innovation currently has access to four funding tools to administer business R&D grant funding. The tools all share the objective of increasing business R&D investment and in nearly all cases have the requirement that businesses receiving the grant provide co-funding. All tools have a set of judgement criteria which form the basis for funding decisions. Brief descriptions of the four tools and their allocated funding are below.

Technology Development Grant (TDG) (\$60m for 2012/13)

20. The TDG provides three year grants that fund 20 per cent of a recipient business's entire R&D programme capped at \$2.4 million per annum per eligible business.

Technology New Zealand Targeted Grants (Project Grants) (\$40m for 2012/13)

21. Project Grants provide public funding for specific R&D projects. On average, the total amounts allocated must not be more than 50 per cent of the proposed cost of the projects.

Technology New Zealand Capability Grants (\$10m for 2012/13)

22. Capability Grants are used to fund a wide range of programmes and types of activity broadly focused on increasing R&D capability. This includes internships and fellowships that support undergraduate and graduate students to work in New Zealand R&D active businesses. The level of public co-funding varies by activity but is typically 50 per cent or 100 per cent.

Technology Transfer Vouchers (TTV) (\$5m for 2012/13)

23. Technology Transfer Vouchers (TTV) were introduced in 2010/2011 as a two year pilot. Vouchers provide 50 per cent public funding for a R&D project undertaken by certain 'accredited research organisations' on behalf of the business.

Assessment of current funding tools

24. The current business R&D funding tools were assessed by officials against a series of principles for support. The assessment drew on available formal evaluations, discussions with MBIE operational staff and businesses, case studies of contracts, academic literature and international policy settings and research. The key findings of that assessment were:
- (a) The certainty provided by the TDG through three-year programme funding is valuable. However, there is room to strengthen this feature of the programme to provide more stable and predictable funding to support businesses to make long-term R&D investments.

- (b) The eligibility criteria for the TDG are overly restrictive. Successful and expanding businesses may suddenly become excluded and businesses with activities across the value chain may never be eligible. Additionally, foreign owned businesses resident in New Zealand, but with strategic centres elsewhere, are unnecessarily excluded to the detriment of increasing business R&D within New Zealand and making New Zealand an attractive location for foreign R&D investment.
- (c) The cap on TDG funding reduces support for marginal R&D in some businesses and is therefore likely to be leading to substantial deadweight loss for some grants. This reduces the efficiency of the programme. It also reduces the potential to incentivise further growth in R&D in some of our most effective R&D performing businesses.
- (d) Targeted grants for individual projects form an important part of New Zealand's business R&D support, as they do in most developed countries, and should be retained. However, the evaluation evidence on the effectiveness of Project Grants is mixed; suggesting funding should be stable or reduced.
- (e) For Project Grants, the typical co-funding rate of 50 per cent of all eligible costs appears higher than necessary to incentivise firms to invest in R&D and does not accurately reflect the substantial private benefits relative to public benefits from most R&D. The proportion of funding provided by the Government could be reduced.
- (f) There is substantial overlap for the type of activity that can be funded through Project Grants, Capability Grants and the TTV. In particular, all activity funded through a TTV is also eligible to be funded through a Project Grant. Partially as a result, there has been relatively slow uptake of the TTV. Additionally, the wide range of activities eligible to be funded through Capability Grants leads to ambiguity over what types of activity are appropriate to be funded.
- (g) Although there are 'clawback' provisions for the government to recover funding following a change of ownership, these provisions are rarely used and could be strengthened. Currently, there is too much potential to use grants as a means of accessing inexpensive equity and then capturing a capital gain by selling the business or intellectual property.

Proposed future mix of business R&D programmes

25. In order to address some of the issues identified with the current mix of programmes and achieve the aims of the review, I propose a reconfigured mix of business R&D programmes characterised by the following key changes:
- (a) A shift towards a more market-led approach to the portfolio by making the Technology Development Grant (re-named R&D Growth Grants) a simpler, rules-based programme that will provide certainty for businesses to better promote a long-term increase in business R&D.
 - (b) A lower rate of public co-funding to leverage greater private investment. This will be achieved by shifting a greater portion of total funding to the R&D Growth Grants and decreasing the co-funding rates for targeted grants (renamed R&D Project Grants).
 - (c) Maintaining a portion of the portfolio for higher co-funded, project-based R&D grants to support firms that are new to R&D or have small R&D

programmes, as well to support firms with established R&D programmes to collaborate.

- (d) Continuing to support students to work within New Zealand R&D active businesses, with a focus on both benefit to the business and the student, and operating as a distinct programme (R&D Student Grants).
 - (e) Discontinuing the pilot of the TTV to reduce duplication and simplify the mix of programmes. With the establishment of Callaghan Innovation and its mandate to generate connections between businesses and public research organisations, the need for a distinct grant programme trying to achieve this has been reduced.
26. Specifically, I propose operating two programmes as core business R&D co-funding: an expanded version of the current Technology Development Grant (R&D Growth Grants) and targeted R&D Project Grants. Additionally, funding for students to gain experience working within R&D businesses will be maintained, but as a distinct programme (R&D Student Grants). The key features of these programmes and their objectives are described below.

R&D Growth Grants (proposed \$394 million over four years)

27. The bulk of support would be provided by an expanded version of the current TDG (R&D Growth Grants). It would be the primary tool to address the underinvestment in R&D that occurs due to businesses being unable to capture the full value of their innovations (spill-overs). There is substantial evidence of the effectiveness of this type of market-led support and it is critical to New Zealand increasing business expenditure on R&D to 1 per cent of GDP.
28. The objective of this programme is to provide the certainty and stability of support needed to drive a long term behaviour change in New Zealand businesses. Providing a modest reduction in the cost of performing R&D that businesses can rely on and plan around will support a steady shift towards more R&D and innovation.
29. The current TDG would undergo a number of changes:
- (a) R&D Growth Grants would be expanded to include more substantial R&D performers than it does currently.¹ Businesses with a minimum of \$300,000 of R&D spending in New Zealand and R&D spending that is at least 1.5 per cent of revenue (over the most recent two years) will be eligible, subject to financial and management due diligence prior to receiving a grant. This will reduce the risk of the funding not being applied to R&D due to business failure.
 - (b) The subjective judgement criteria will be eliminated; all eligible firms would receive a R&D Growth Grant subject to vetting by Callaghan Innovation to ensure that claimed R&D activity is legitimate and that financial and ownership arrangements have not been altered for the purpose of receiving the grant.
 - (c) Eligibility would be more conducive to businesses with foreign ownership operating in New Zealand, to encourage R&D to be located in this country.
 - (d) The public co-funding rate will remain at 20 per cent. The cap on funding (currently \$2.4m per annum) will be raised to \$5 million.

¹ Currently, a minimum of \$3m in annual revenue and a minimum R&D intensity of 3% over the previous three years is required.

- (e) Two years into the grant period, the business will be reassessed. Businesses that still meet the eligibility criteria, have been reporting legitimate R&D activity, and have maintained or increased their private R&D expenditure, will receive a three year extension on their grant.
 - (f) Businesses that fail to meet these criteria will receive their final year of funding and then, in most cases, be removed from the programme. However, the Callaghan Innovation Board will have the authority to allow businesses that fail to maintain R&D expenditure to stay in the programme under appropriate circumstances. In particular, I will direct the Board to consider broad economic conditions over the grant period as the primary reason for allowing such businesses to continue to receive funding.
 - (g) As part of their applications, businesses will be required to submit plans for their intentions to grow their businesses through R&D. These plans will not be used to determine entry into the programme, but will be used by Callaghan as the basis for engaging with the business to determine other support and services that Callaghan Innovation may be able to provide.
 - (h) Those plans will also be the basis for Callaghan Innovation to undertake annual progress reviews of the business. These annual reviews will ensure Callaghan Innovation is able to engage on an on-going basis with the business and ensure it receives the support it needs beyond grant funding.
30. Unlike the current programme, businesses will not be eliminated as a result of judgement about the quality or promise of their R&D programmes. Although the Government is providing significant funding, the business is investing at least four times as much. I see the substantial investment the business is undertaking as a better test of quality and value than the Government can devise.
31. This programme would avoid many of the negative features of an R&D tax credit, such as distorting and complicating the tax system, and disguising spending in the tax system. However, it would maintain many of the positive features such as predictability, stability and clarity. Direct funding also provides greater flexibility for the Government to respond to unforeseen gaming of the scheme. This programme will incentivise R&D investment, not clever accounting.

R&D Project Grants (proposed \$147.5 million over four years)

32. Substantial support will continue to be provided by targeted grants, typically for individual projects. However, this will be a lower proportion of total funding for business R&D than it is currently. In addition to addressing underinvestment in R&D due to spillovers, this programme would also address information gaps for new-to-R&D firms and coordination failures that occur.
33. These grants will differ from the R&D Growth Grants in that they will primarily be targeted at firms with smaller R&D programmes and those that are new to R&D. These businesses require a different approach to funding; one that recognises the greater risk and barriers these businesses face and the need for closer engagement and assessment by Callaghan Innovation.
34. The R&D Project Grants would be a flexible funding tool that would fund most of the types of R&D activity currently funded through three programmes (Project Grants, Capability Grants, and TTV). R&D Project Grants would have the following features:
- (a) Provide public co-funding that is, on average, 40% of eligible costs. However, there would be variation between grants with a typical range of 30-50%. The level of co-funding for the individual project would be based

on an assessment of how to most effectively leverage government investment and the public benefits expected from that project. This reduction from the current maximum of 50% co-funding is to drive greater private investment from targeted government funding and better reflect the substantial private gain that can be achieved by investing in R&D.

- (b) Selection criteria will focus on the expected additional R&D created, how the project will support R&D driven growth within the firm and any expected benefits that will accrue outside the firm (spill-overs).
 - (c) They would be available to one or more firms resident in New Zealand to undertake an R&D project, or occasionally, a series of projects.
 - (d) Firms that are receiving a R&D Growth Grant will not be eligible to receive R&D Project Grants except when undertaking collaborative R&D. R&D Growth Grant recipient firms can apply to receive 15-30 per cent additional funding maximum on top of their R&D Growth Grant when undertaking collaborative projects with other firms or organisations. The aim is to use a higher rate of support to break down barriers to coordination and help New Zealand businesses overcome issues of scale while maximising public benefit through collaboration.
35. Additionally, I intend to strengthen the 'clawback' provisions for R&D Project Grants. It is critical that the value from the publicly supported business R&D be retained in New Zealand, particularly when the Government has provided a substantial portion of total investment. When a business commits to using an Innovation Grant to grow their business through R&D in New Zealand, and then decides to seek that growth elsewhere, it is reasonable that they repay the funding, and potentially some additional amount.
36. It is also important that we avoid R&D Project Grants being used as a form of inexpensive capital for investors. When business owners that have received R&D Project Grants achieve a substantial capital gain, it is reasonable that funding as much or greater than they previously received be returned.
37. I am directing officials at MBIE and Callaghan Innovation to develop stronger clawback provisions and practice that will ensure as much value as possible is captured in New Zealand and that the programmes are not abused, while not needlessly impairing the free flow of capital.

R&D Student Grants - Student Internships and Fellowships (proposed \$16 million over four years)

38. The R&D Student Grants will provide specific support to undergraduate and postgraduate students to work within R&D active businesses. It will focus on connecting students to innovative businesses in order to increase their skills and increase the likelihood that they will choose a career that supports business R&D in New Zealand. It would have an additional focus on promoting R&D within businesses and providing a practical way to connect businesses to universities and facilitate knowledge transfer. On the whole, it will operate similarly to the current business R&D internship and fellowship programmes funding through Capability Grants, although I intend the criteria to have a greater focus on benefit to the student than currently.

Remaining design and implementation choices

39. Although the key features of the programmes are established in this paper, there are a number of substantive policy design and implementation questions remaining including:
- (a) The legal eligibility settings for the programmes.
 - (b) Specific judgement criteria for R&D Project Grants.
 - (c) The vetting and review approach for the R&D Growth Grants to mitigate gaming of the programme.
 - (d) The rules and terms for clawing back funding for R&D Project Grants.
40. I propose to begin implementing these programmes as soon as 1 July 2013. That will require that remaining design features be developed as quickly as can be managed while ensuring they are fit for purpose. I request that Cabinet delegate the decisions on remaining design features and implementation to the Minister of Science and Innovation to be set out in a Ministerial Direction.

Responsibilities of Callaghan Innovation

41. The business R&D grant programmes are one of a suite of tools that Callaghan Innovation currently has, and is developing, to drive growth in innovative New Zealand businesses. I consider there to be an opportunity for valuable connections between the delivery of business R&D grants and the other areas of Callaghan Innovation's business model.
42. As part of the development of its business case and the detailed design and implementation of the business R&D grant programmes, I expect Callaghan Innovation to ensure that where appropriate these programmes complement the other tools Callaghan Innovation will be using to unlock the potential of New Zealand's innovation businesses through increased commercialisation of research, science, engineering, technology and design led innovation.
43. Callaghan Innovation's key responsibilities with regard to delivering the business R&D grant programmes will vary based on the programmes features. However, for all three programmes they would be required to:
- (a) Efficiently and effectively administer the programme according to guidelines set by Cabinet and the Minister of Science and Innovation.
 - (b) Market the programme and provide easy to access public information explaining its features.
 - (c) Actively seek out applicants from inside and outside the businesses it works with.
 - (d) Develop and implement processes for vetting and auditing businesses to ensure that claimed R&D is legitimate. This would be particularly critical for the R&D Growth Grants.
 - (e) Ensuring that applicants and recipients of grants have access to complementary advice and services where appropriate.
 - (f) In addition to addressing underinvestment in R&D due to spillovers, this programme would also address information gaps for new-to-R&D firms and coordination failures that occur.

- (g) Gather data on applicant businesses during and following the grant period to support programme evaluation.
 - (h) Monitor funded businesses activities during and after the grant period and seek to claw-back funding as appropriate.
44. For R&D Project Grants and R&D Student Grants, Callaghan Innovation's responsibilities would be broader given its role in actively selecting which projects and businesses to support. Callaghan Innovation's specific accountabilities would be set out by the Minister of Science and Innovation.

Enhancements to Business Incubator Programmes

45. Business R&D funding supports a wide range of businesses to undertake innovation-driven growth. However, it is most appropriate for businesses with some degree of established operations. The grants are not a means to provide start-ups with inexpensive equity. Nevertheless, it is important that the Government take a role in supporting high-potential innovative start-ups to grow.
46. High-growth early-stage businesses play an important role in employment growth, commercialising intellectual property (IP) and growing emerging sectors. We have few high growth firms in New Zealand relative to the rest of the OECD and the proportion of firms that are high growth has been declining since 2004.
47. These businesses face a unique set of challenges, particularly the need to be capable of coordinating the acquisition and effective use of a range of inputs early on. Although New Zealand's early-stage capital markets are still developing, investment-ready firms – those with good governance, capable managers, a well thought out business plan and a marketable product – maximise their chances of raising risk capital and many are successful.
48. The Government has made significant progress in supporting the development of private equity markets through the Venture Investment Fund (VIF) and Seed Co-Investment Fund (SCIF). These programmes have played a major part in helping early-stage businesses that are investment-ready to access private capital and the market expertise associated with it. The VIF and SCIF schemes invest government capital, alongside private sector capital, in to businesses (or funds that invest in businesses). Over time, the Crown should receive a return on this capital investment, commensurate with the risk.
49. Additionally, the Business Incubator programme run by New Zealand Trade and Enterprise (NZTE) has helped more businesses become investor-ready through the services the independent incubator operators provide. The Incubator programme has recently been evaluated positively, and shows most New Zealand incubators are achieving best international practice.
50. However, there remains a small, but critical, gap in our support here. Some very early-stage start-ups, particularly those commercialising IP, have immediate capital needs prior to being investment ready. Where those entrepreneurs do not have access to internal funds, the project can easily stall before it can be brought to market and the opportunity is missed.
51. I propose to trial some enhancements to the Incubator programme that would provide a new funding tool to address this issue and support complementary development of some of the incubators. These changes are based on a model successfully developed in Israel that has subsequently been adopted by Singapore and Finland.

52. I propose to introduce a new tool for business incubators to address these issues for very early-stage, technology-based high growth potential start-ups - repayable grants for start-ups. Repayable Grants will be available to capital intensive start-ups in selected incubators where the risk and uncertainty is greatest, but where the potential return may be the highest. These grants will help more technology-based start-ups get off the ground and provide a route for commercialisation of publicly funded IP.
53. This tool would work in conjunction with the current incubator programme by providing selected incubators that can access private capital and have sufficient capabilities to take a more active role in accelerating the development of capital intensive start-ups. The incubators operators would be driven to take substantially greater equity stakes in the businesses they work with. The support Repayable Grant recipients receive in the incubators should enhance their capabilities, make them investment-ready and attract further private capital.
54. The programme will also support existing programmes such as VIF and SCIF. The programme will generate more investable opportunities for 'angel' and venture capital investors, including the Government's VIF and SCIF partners.
55. I am still considering the detailed design of the funding tool and the complementary changes that would be needed in the existing incubator programme. However, some indicative features of the programme are:
- (a) Repayable Grants would be available to support start-ups with novel technology and exports-focused high-growth potential in certain accredited incubators with sufficient expertise and access to private capital.
 - (b) It is proposed the grants would be for up to \$375,000. The grants would provide two years of funding. The incubator would have to match this funding at a rate of 1:3. The funding could be used for any of the costs associated with further developing or commercialising IP.
 - (c) The owner of the IP will grant the incubator equity of 20 – 50 per cent, negotiated on a case by case basis.
 - (d) Repayable Grants will be normally repaid as a royalty on the firm's revenues. International experience is that the repayment rate has averaged about 60 per cent.
 - (e) It is anticipated that about twelve firms per year will be funded in the early years of the programme.
 - (f) Firms that receive a Repayable Grant will most likely not be eligible to apply for R&D Project Grants.
56. Assuming that 60 per cent of the Repayable Grants are repaid and the trial programme continues, the net cost to the Government is \$5 million per annum once repayments begin. However, this will vary by business and it may be a number of years before significant repayments are received. Until the incubated businesses are at a stage where they can repay the grant, the cost will be higher. Initial costs will be around \$3.1 million in the first year, \$7.8 million in the second year, \$10.2 million in the third year, and \$10.2 million in fourth year and out-years which I am seeking through Budget 2013.
57. The returns on the equity the incubators receive will allow them to become more self-sufficient and allow a decrease in operational funding for the Incubator Programme over the medium term. Nevertheless, at this time, we do not see a way forward for the NZTE incubator programme that does not include continued

government funding to support their operation in the short to medium term. This will be reviewed over time as the incubator model develops.

58. The success of this programme will require cooperation between government, incubator operators, private equity investors and developers of IP such as universities and Crown Research Institutes. Further policy design will require consultation with these groups as well as further consideration of how a programme designed overseas can best be adapted to fit New Zealand. I propose to report back to Cabinet by 30 September 2013 with a more detailed proposal of the design of the funding tool and its implementation. I intend to begin implementing this programme in early 2014.

Financial Implications

59. The changes to business R&D schemes, particularly the changes to the R&D Growth Grants and proposed Repayable Grant programme will require additional funding. I will be funding the changes through re-prioritisation of Vote Science and Innovation and I am seeking additional funding from Budget 2013. In Budget 2013 I am seeking an additional \$106.5 million over four years for these programmes (as set out in Tables One and Two below). I am also seeking additional funding for the National Science Challenges, Marsden Fund, and Health and Society Research.

Business R&D Grants

60. To successfully implement the revised policies I am proposing to increase funding for Vote Science and Innovation business R&D support by \$98 million over four years to a baseline of \$148.5 million in 2016/17. This represents an average annual increase of about 7 per cent, enough to keep pace with increasing business R&D investment while using the improved effectiveness of the programmes to drive further growth in private investment.
61. I have identified \$22.8 million (over four years) of spending currently within Vote Science and Innovation that can be more effectively used by supporting business R&D investment. \$5.7 million per annum (\$22.8 million) over four years can be re-prioritised from the Fellowships for Excellence output expense. It was intended to fund the Entrepreneurial Fellowships Fund but the original policy had a number of competing problem definitions and was never implemented. The remaining \$75.2 million (over four years) is being sought through Budget 2013.

Financial Uncertainty for the R&D Growth Grants

62. Although officials have made estimates of expected demand for the programme, the actual cost of the programme will depend on how many eligible businesses choose to access it and economic conditions. It is therefore not fully predictable.
63. I propose that officials at MBIE, in consultation with the Treasury, develop a plan for managing the demand uncertainty while ensuring the programme provides the crucial certainty for businesses. [6]

Table 1: Business R&D grant funding Implications

Proposed funding for Business R&D support programmes	2013/14 \$000	2014/15 \$000	2015/16 \$000	2016/17 \$000	Total \$000
Estimated cost of expanded R&D Growth Grants	85,000	94,000	103,000	111,000	394,000
R&D Project Grants and R&D Student Grants	50,600	44,900	40,000	37,500	173,500
Total funding for Vote S&I business R&D grants	135,600	138,900	143,000	148,500	566,000
Current funding appropriated for business R&D grants	117,000	117,000	117,000	117,000	468,000
Proposed increase for business R&D grants	18,600	21,900	26,000	\$31,500	98,000
Funding available for reprioritisation	5,700	5,700	5,700	5,700	22,800
<i>New funding through Vote Science and Innovation for Business R&D Grants</i>	12,900	16,200	20,300	25,800	75,200

Repayable Grants for Start-Ups

64. The proposed Repayable Grant programme will require an estimated \$31.3 million in funding over four years. I am seeking new funding through Budget 2013.

Table 2: Repayable Grants funding Implications

	2013/14 \$000	2014/15 \$000	2015/16 \$000	2016/17 \$000	Total \$000
<i>New funding through Vote Science and Innovation for Repayable Grants</i>	3,100	7,800	10,200	10,200	31,300

New Appropriations Required

65. Currently, the business R&D grants are funded through two Vote Science and Innovation non-departmental output expenses, High Value Manufacturing and Services Research and Biological Industries Research. These output expenses are also used to fund mission-led science and other science and innovation activities administered by MBIE. With the business R&G grant programmes now being administered by Callaghan Innovation, combining the funding with programmes administered by MBIE is no longer practical.
66. I propose to create two new appropriations for the business R&D grant programmes. The first appropriation would be for the R&D Growth Grants. Funding the R&D Growth Grants through a separate appropriation is critical for the managing the financial uncertainty of the programme. The second would be for R&D Project Grants and the R&D Student Grants. The objectives of the R&D Project Grants and the R&D Student Grants are closely aligned. Funding both through a single appropriation will make modest fluctuations in demand for internships and fellowships easier to manage.

67. I further propose that both appropriations be established as multi-year appropriations (MYAs). The business R&D grant programmes are highly suitable for MYAs for the following reasons:
- (a) The purpose of the policies (increasing business R&D activity) and the activities that are eligible for funding (private R&D) are both well-defined and self-contained.
 - (b) Total costs over a multi-year period can be well defined due to Callaghan Innovations control over the number of successful applications for R&D Project Grants and R&D Student Grants, and the ability of the Government to adjust the parameters of the R&D Growth Grants as needed to fit medium-term available funding.
 - (c) R&D Growth Grants provide three-year grants and many R&D Project Grants will cover multiple financial years.
 - (d) As the funded activity is business driven, there is likely to be fluctuations in the opportunities available in a given year and this will lead to an uneven distribution of costs.
 - (e) Requiring an even distribution is not conducive to a market-led decision making. It would not be possible for MBIE to predict accurately the exact level of demand or of high-quality applications in a particular year in advance. An MYA would reduce the risk of overfunding in years with lesser opportunities and underfunding in years with greater opportunities.
68. The proposed Repayable Grants programme does not fit with the objectives of any existing Vote Science and Innovation appropriations. I propose the creation of a new appropriation for this funding.
69. Table three contains the proposed new non-departmental output expenses to be included in the 2013/14 Estimates of Appropriations.
Table 3: Proposed new non-departmental output expenses

Appropriation Title	Scope statement
R&D Growth Grants	This appropriation is limited to co-funding for private businesses to invest in a multi-year programme of research and development.
Targeted business research and development funding	This appropriation is limited to co-funding for private businesses to undertake research and development projects and for funding students to work in research and development active businesses.
Repayable grants for start-ups	This appropriation is limited to start-up funding for early-stage businesses.

Other implications

70. This paper has no human rights, legislative, regulatory impact, business compliance cost, gender, or disability implications.

Consultation

71. The following ministries and agencies have been consulted: the Department of the Prime Minister and Cabinet, the Ministry of Primary Industries, the Treasury, Callaghan Innovation and New Zealand Trade and Enterprise.

Recommendations

The Minister of Science and Innovation recommends that the Committee:

Review of business R&D

1. **Note** that officials have completed a review of the business R&D grant programmes funded through Vote Science and Innovation (\$115 million in 2012/13) with the purpose of leveraging greater private investment in business R&D and creating greater value from business R&D Grants. The programmes reviewed were the Technology Development Grant (TDG); Technology New Zealand Targeted Grants (Project Grants); Technology New Zealand Capability Grants; and Technology Transfer Vouchers (TTV).
2. **Note** the key findings of the assessment:
 - (a) The certainty provided by the TDG is valuable, but currently insufficient.
 - (b) The eligibility criteria for the TDG are overly restrictive, excluding businesses that are a good fit for the programme.
 - (c) Project Grants for individual projects are an important part of the business R&D support, but evaluation on the effectiveness of the programmes grants is mixed.
 - (d) Large Project Grants could focus more strongly on increasing public benefit and ensuring that the co-funding rate is appropriate.
 - (e) There is substantial overlap between three of the four grant programmes (Project Grants, Capability Grants and TTV). In particular, the TTV serves little unique purpose.
 - (f) There is room to strengthen claw-back provisions.
3. **Agree** that the business R&D programmes be redesigned with the following key changes:
 - (a) A shift toward a more market-led approach to the portfolio.
 - (b) A lower rate of public co-funding to leverage greater private investment.
 - (c) Maintaining a portion of the portfolio for higher co-funded, targeted R&D Grants.
 - (d) Shifting discretionary grants to a more flexible funding model targeting public benefit.
 - (e) Discontinuing the pilot of the TTV.
4. **Note** that these changes will require new funding which I am seeking through Budget 2013.
5. **Note** that I propose the following funding increases and reprioritisation to support these policy changes subject to approval by Budget Ministers:

Increased Funding	2013/14 \$000	2014/15 \$000	2015/16 \$000	2016/17 \$000	Total \$000
New funding for Business R&D Grants	12,900	16,200	20,300	25,800	75,200
New funding for Repayable Grants	3,100	7,800	10,200	10,200	31,300

New funding for National Science Challenges	31,000	23,000	16,500	11,000	81,500
New funding for Marsden, and Health Research	13,000	13,000	13,000	13,000	52,000
Total	60,000	60,000	60,000	60,000	240,000

6. **Note** that reprioritisation of \$22.8million (over four years) will be from Fellowships for Excellence to support these changes.
7. **Note** that new appropriations will be needed for the business R&D grant programmes to give effect to the decisions in this paper.
8. **Note** that the corresponding financial recommendations for the changes above will be made through the Budget Cabinet Paper, subject to approval by Budget Ministers.
9. **Agree** to operate two programmes as core business R&D support: an expanded, rules-based version of the current Technology Development Grant R&D Growth Grants) and targeted R&D Project Grants. Additionally, to continue to support students to work in R&D active businesses (R&D Student Grants).

R&D Growth Grants

10. **Note** that the current TDG provides certainty and stability of support to drive a long-term increase in business R&D in a wide range of R&D active businesses.
11. **Agree** that recipients of the R&D Growth Grants will continue to receive funding equal to 20% of a businesses eligible New Zealand-based R&D expenditures subject to a cap.
12. **Agree** that the R&D Growth Grants will expand eligibility from current settings. Firms will be eligible if:
 - (a) they have spent a minimum of \$300,000 on R&D spending in New Zealand per annum on average over the most recent two years; and
 - (b) they have spent at least 1.5% of revenues over the most recent two years; and
 - (c) they are able to meet financial and management due diligence requirements; and
 - (d) they are resident in New Zealand (even if the business foreign owned or has its strategic centre outside of New Zealand).
13. **Agree** that the cap on funding for an individual firm will be raised from \$2.4 million to \$5 million per firm per annum to better support increasing R&D in our highest R&D performing businesses and reduce the deadweight cost of the programme.
14. **Agree** to discontinue the use of subjective judgement criteria to determine which businesses receive R&D Growth Grants and replace it with a rules based approach. All eligible firms will receive a R&D Growth Grant that provides funding for eligible expenditures subject to upfront vetting by Callaghan Innovation to avoid abuse of the programme. This will provide certainty to make long-term investments.
15. **Agree** that, two years into the grant period, the businesses will be reassessed. Businesses that still meet the eligibility criteria, have been reporting legitimate R&D activity, and have maintained or increased their private R&D expenditure, will receive a three year extension on their grant.

16. **Agree** that the Callaghan Innovation Board will have the authority to allow businesses that failed to maintain R&D spending to stay in the programme under appropriate circumstances, in particular, if the lower R&D spending results from poor economic conditions.
17. **Agree** that businesses applying for a R&D Growth Grant will be required to submit a plan outlining how their business intends to grow through R&D investment and that this plan form the basis of required annual reviews of the business by Callaghan Innovation. This will better enable to Callaghan Innovation to engage with businesses and provide complementary support and services.
18. **Note** the plans will not be used to determine entry into the R&D Growth Grant programme,

R&D Project Grants

19. **Agree** that targeted grants for individual projects will be provided by a single programme, R&D Project Grants. This grant will target businesses that are not eligible for the R&D Growth Grants and those undertaking collaborative R&D.
20. **Agree** that R&D Project Grants should fund, on average, a maximum of 40% of eligible R&D costs supporting projects for businesses not receiving a R&D Growth Grant.
21. **Agree** that co-funding will vary within a typical range of 30-50% for businesses not receiving a R&D Growth Grant.
22. **Agree** that businesses receiving a R&D Growth Grant will only be eligible to receive R&D Project Grants if they are engaging in collaborative R&D and that this will provide an additional 15-30% maximum in addition to the businesses R&D Growth Grant funding.
23. **Agree** that selection criteria for R&D Project Grants will focus on the expected additional R&D created, how the project will support R&D driven growth within the firm and any expected benefits that will accrue outside the firm (spillovers).

R&D Student Grants

24. **Note** that student programmes provide a valuable opportunity for students and businesses to increase their capabilities and generate connections between business and tertiary education institutions.
25. **Agree** that Callaghan Innovation will continue operating the internship and fellowship programme currently funded through 'Capability Grants' with little immediate change.
26. **Agree** that the selection criteria will include consideration of benefit to the student.
27. **Agree** that these programmes will be distinguished from R&D Project Grants to increase clarity.

Responsibilities of Callaghan Innovation

28. **Agree** that Callaghan Innovations accountabilities for administering the grant programmes will include:
 - (a) Administering the programme efficiently and effectively.
 - (b) Marketing the programme and actively seeking out applicants.
 - (c) Developing and implement vetting and auditing processes.

- (d) Ensuring that complementary advice and services are offered to applicants.
 - (e) Collecting data on businesses to support programme evaluation.
 - (f) Monitoring businesses during and after the grant period and claw-back funding as appropriate.
29. **Note** that for R&D Project Grants and R&D Student Grants, Callaghan Innovation's responsibilities would be broader given its role in actively selecting which projects and businesses to support.
30. **Agree** that the Minister of Science and Innovation will set out the Callaghan Innovation's full accountabilities with regard to delivering the grant programmes.

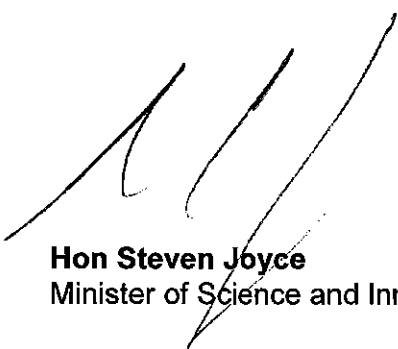
Further work

31. **Note** that further policy design work is needed for some features of the grants including setting specific legal and judgement criteria and establishing the rules for clawing back funding.
32. **Agree** that the Minister of Science and Innovation will have responsibility for remaining design and implementation decisions of the business R&D grant programmes.
33. **Note** that a rules-based approach to the R&D Growth Grants provides valuable certainty for businesses, but increases the financial uncertainty of the programme for the Government, although it is broadly predictable and its cost is likely to be relatively stable.
34. **Agree** that:
- (a) Officials from MBIE in consultation with the Treasury will develop a plan for managing the financial uncertainty while ensuring the programme provides certainty for businesses by 30 April 2013.
 - (b) This plan will be approved by the Minister of Finance and Minister of Science and Innovation.

Enhancements to Incubator Programmes

35. **Note** that high-growth early-stage businesses play an important role in the employment growth, commercialising intellectual property (IP) and growing emerging sectors.
36. **Note** that the Government has in place a number of successful programmes to support the growth of these firms such as the Seed Co-Investment Fund, Venture Investment Fund and support for business incubators.
37. **Note** that there remains a small, but critical, gap in the Governments support for some start-ups commercialising IP that have immediate capital needs but are not investment ready.
38. **Agree** to trial a new Repayable Grant for capital-intensive start-ups that are resident in certain business incubators, subject to funding approval by Budget Ministers.
39. **Note** that these grants would help more innovative technology-based start-ups get off the ground and provide a route for the commercialisation of publicly funded IP while requiring the businesses to repay funding when they begin to generate revenues.
40. **Agree** that this funding tool will work in conjunction with the current incubator programme, but be limited to those incubators with access to private capital and sufficient capabilities.

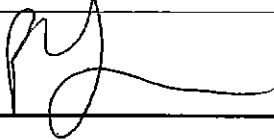
41. **Note** that officials are still developing the full design of the programme, but that some indicative features of the programme are:
- (a) Repayable Grants would be available to support start-ups with novel technology and exports-focused high-growth potential in certain accredited incubators with sufficient expertise and access to private capital.
 - (b) It is proposed the grants would be for up to \$375,000. The grants would provide two years of funding. The incubator would have to match this funding at a rate of 1:3. The funding could be used for any of the costs associated with further developing or commercialising IP.
 - (c) The owner of the IP will grant the incubator equity of 20 – 50 per cent, negotiated on a case by case basis.
 - (d) Repayable Grants will be normally repaid as a royalty on the firm's revenues. International experience is that the repayment rate has averaged about 60 per cent.
 - (e) It is anticipated that about twelve firms per year will be funded in the early years of the programme.
42. **Note** that estimated costs for the programme are \$3.1 million in the first year, \$7.8 million in the second year, \$10.2 million in the third year, and \$10.2 million in fourth year and out-years which I am seeking through Budget 2013.
43. **Invite** the Minister of Science and Innovation to report back to Cabinet by 30 September 2013 with a more detailed proposal for the Repayable Grants and complementary changes to the business incubator programme.



Hon Steven Joyce
Minister of Science and Innovation

28/3/2013

Consultation on Cabinet and Cabinet Committee Submissions

Certification by Department:	
Guidance on consultation requirements for Cabinet/Cabinet committee papers is provided in the CabGuide (see Procedures: Consultation): http://www.cabguide.cabinetoffice.govt.nz/procedures/consultation	
Departments/agencies consulted: The attached submission has implications for the following departments/agencies whose views have been sought and are accurately reflected in the submission: The Treasury, New Zealand Trade and Enterprise, Ministry for Primary Industries, and Callaghan Innovation.	
Departments/agencies informed: In addition to those listed above, the following departments/agencies have an interest in the submission and have been informed: Department of Prime Minister and Cabinet.	
Others consulted: Other interested groups have been consulted as follows:	
Name, Title, Department: Philippa Yasbek, Policy Manager, Ministry of Business, Innovation and Employment	
Date: 20/03/2013	Signature 

If this form covers two pages ensure that both certification sections are completed and attached at the back of the Cabinet/committee submission