

# Coversheet: Research & Development Tax Incentive

Advising agencies	Ministry of Business, Innovation and Employment (MBIE) Inland Revenue (IR) The Treasury Callaghan Innovation
Decision sought	Implementation of a R&D Tax Incentive
Proposing Ministers	Hon Dr Megan Woods (Minister for Research, Science and Innovation) Hon Stuart Nash (Minister of Revenue)

## Summary: Problem and Proposed Approach

<p><b>Problem Definition</b></p> <p><b>What problem or opportunity does this proposal seek to address? Why is Government intervention required?</b></p>
<p>As the OECD (2017) outlined, New Zealand’s economic productivity has been below average for OECD countries for several decades, and this is a key explanation behind New Zealand’s relatively low per-capita Gross Domestic Product (GDP). It has been argued that New Zealand’s relatively low investment in knowledge-based capital may explain as much as 40 per cent of New Zealand’s productivity gap relative to the OECD average (de Serres, Yashiro &amp; Boulhol, 2014).</p> <p>New Zealand expenditure on Research and Development (R&amp;D) as a percentage of GDP is relatively low – currently 1.25 per cent, as compared to 2.40 per cent in the OECD as a whole, and the primary reason is low business investment in R&amp;D. As a subset of this, New Zealand business expenditure on R&amp;D (BERD) was 0.64 per cent of GDP in 2016 (Statistics New Zealand, 2017), compared to 1.64 per cent in the OECD as a whole.</p> <p>The Government has announced a goal of increasing total R&amp;D as a percentage of GDP to 2 per cent, and to reach this target a significant amount of growth is expected to come from BERD. The R&amp;D Tax Incentive is the Government’s primary mechanism for achieving this.</p> <p>It is common for governments to support BERD. Without government support, businesses tend to invest in less R&amp;D than is optimal for the country as a whole as they are unable to capture the full benefits of their investment. The knowledge created through R&amp;D spreads across the economy in various ways, including product imitation, reverse engineering, and worker mobility. While this generates wider societal gains, the business that generated it does not receive those benefits. Government support for business R&amp;D compensates businesses for those benefits that they are unable to capture in full, and thereby provides them with more appropriate incentives.</p>

## Proposed Approach

### How will Government intervention work to bring about the desired change? How is this the best option?

The R&D Tax Incentive will lower the cost of undertaking R&D for firms. The subsidy will incentivise those firms already doing R&D to do more, while encouraging other firms to start R&D activities.

New Zealand currently delivers R&D subsidies to businesses through Callaghan Innovation. The bulk of these subsidies are delivered through Growth Grants to firms that have stable, high-intensity R&D programmes. However, these grants are unavailable to the large majority of firms that are currently undertaking R&D or may undertake R&D in the future. While these remaining firms can obtain Project Grants, these are targeted at a specific type of R&D expenditure and involve significant compliance/transaction costs (ie, expenditure of time and resources) for firms.

It is only one part of the policy approach to lift BERD and innovation. It is also part of a system of wider government support for New Zealand Science and Innovation covering both public and private R&D.

## Section B: Summary Impacts: Benefits and costs

### Who are the main expected beneficiaries and what is the nature of the expected benefit?

The main expected beneficiaries of the R&D Tax Incentive are businesses that are currently undertaking R&D or will be undertaking R&D in future. The evidence suggests that around 1,500-2,000 businesses will be eligible for the R&D Tax Incentive in 2019, with this number rising as business R&D becomes more attractive.

A relatively small set of firms perform the vast majority of R&D. According to the R&D survey, in 2016 approx. 85 per cent of BERD is performed by around 330 firms that spend over \$1M (Statistics New Zealand, 2017). Accordingly, the financial benefits will be concentrated among the largest R&D performers. By significantly lowering the threshold for non-discretionary support of R&D, from \$300,000 to \$50,000, the R&D Tax Incentive will be available to a large number of firms that previously had no support.

The direct benefit to business of the R&D Tax Incentive is higher returns after tax for performing R&D, as compared to other types of activity. While international evidence suggests that the returns on R&D expenditure by businesses are generally high, often 20-30 per cent (Hall, Mairesse & Mohnen, 2009), the evidence available for New Zealand (Wakeman & Conway, 2017) suggests that the private returns for New Zealand firms may be considerably lower. Raising the returns for performing R&D through the R&D Tax Incentive is likely to increase the amount and number of firms engaging in R&D.

Business R&D also creates significant spillover benefits for other firms and people within an economy through movement of people, transfer of knowledge between firms, creation of demand for complementary goods, and consumer benefits not captured within the price of the goods. International literature indicates that the benefits to the economy as a whole from R&D (ie, the social R&D rates of return) may be up to 100 per cent (Hall, Mairesse & Mohnen, 2009), so the additional benefits that are likely to flow to other participants in the economy are significant.

### Where do the costs fall?

The primary cost of the R&D Tax Incentive will be a fiscal cost to the Government. In Budget 2018 the Government appropriated \$1,020M over four years for the R&D Tax Incentive. This is in addition to the \$528M already allocated for Growth Grants over the same period. Most of this is the costs of the payments to R&D-performing firms, but it is forecast that up to \$6M per annum in administration costs will be required to support the incentive.

Businesses will incur costs of complying with the requirements to receive a tax incentive. These have not been monetised but based on the Australian experience are expected to be around \$35,000-40,000 per claimant. The current Growth Grant recipients bear the cost of the foregone grants, but most if not all will receive a tax credit of an equivalent or greater amount. They also will receive a reduction in compliance costs of complying with the Growth Grant criteria that will offset the costs associated with the Tax Incentive. Participation in the system is voluntary and the compliance costs should be outweighed by the subsidy.

### What are the likely risks and unintended impacts, how significant are they and how will they be minimised or mitigated?

R&D Growth Grants (the current funding mechanism) for business R&D will be phased out with the introduction of the R&D Tax Incentive. There is a risk that business expenditure on R&D declines during the transition period from the R&D Growth Grants to the R&D Tax Incentive as firms adjust their R&D programmes to the new source of funding. The broader eligibility criteria of the R&D Tax Incentive compared to the Growth Grants means that overall business R&D expenditure is likely to rise over the short and long term.

To reduce the risk of uncertainty and reduction in BERD we will:

- Educate and develop appropriate guidelines so businesses understand how to claim the R&D Tax Incentive.
- Allow a transition period of 2 years during which existing Growth Grant recipients may continue to claim a Growth Grant (instead of the Tax Incentive).
- Provide clear information on transition arrangements for Growth Grant recipients to ensure a smooth transition to the Tax Incentive that supports businesses to maintain and grow their R&D over time.
- Develop an appropriate implementation strategy to ensure the successful uptake of the R&D Tax Incentive.

The other risk of the R&D Tax Incentive is re-characterisation of business-as-usual expenditure. This risk will be managed by:

- A robust definition of eligible R&D to create a clear boundary between R&D and non-R&D.
- Audit of claims, including in year approval of the R&D.

### Identify any significant incompatibility with the Government's 'Expectations for the design of regulatory systems'.

There is no incompatibility between this regulatory proposal and the Government's 'Expectations for the design of regulatory systems'.

**Section C: Evidence certainty and quality assurance**

**Agency rating of evidence certainty?**

We are confident of the evidence that R&D Tax Incentives are effective at increasing business R&D, which is based on a range of international studies. There is also strong evidence that business R&D leads to social returns that are higher than the private returns so the economy as a whole will benefit.

It is more difficult to predict the actual level by which R&D will increase as a result of the Tax Incentive, which in turn drives the fiscal cost, and the spillover benefits that will result to rest of the economy. We have estimated this based on the best information available, including evidence from international studies about the size of the benefits, but there are wide confidence intervals around these estimates.

*To be completed by quality assurers:*

**Quality Assurance Reviewing Agency:**

Treasury  
 Ministry of Business, Innovation and Employment  
 Inland Revenue

**Quality Assurance Assessment:**

A cross-agency Quality Assurance Panel with independent representatives from the Treasury, the Ministry for Business, Innovation and Employment (MBIE) and Inland Revenue (IR) has reviewed the *Regulatory Impact Statement: R&D Tax Incentive* prepared by MBIE and Inland Revenue and considers that it meets the Quality Assurance criteria.

**Reviewer Comments and Recommendations:**

The RIA meets the QA criteria of being clear, concise, convincing, complete and consulted and provides a good basis for informed decision-making by Ministers

# Impact Statement: R&D Tax Incentive

## Section 1: General information

<b>Purpose</b>	
<p>MBIE and IR are solely responsible for the analysis and advice set out in this Regulatory Impact Assessment, except as otherwise explicitly indicated. This analysis and advice has been produced for the purpose of informing key policy decisions to be taken by Cabinet.</p>	
<b>Key Limitations or Constraints on Analysis</b>	
<p>Estimating the amount of R&amp;D that will be eligible for the R&amp;D Tax Incentive and its impact on the economy is complicated and hence the evidence on both is imprecise. The estimates of eligible R&amp;D are based on the levels of business-funded R&amp;D expenditure estimates from the 2016 R&amp;D Survey (Statistics New Zealand, 2017). They are then projected forward into the future to account for expected increases in GDP and growth in R&amp;D intensity (based on historical estimates).</p> <p>The estimates are also adjusted to allow for an anticipated response to the Tax Incentive. As there has been no analysis or impact evaluation of the R&amp;D Tax Incentive implemented in New Zealand in 2008, there is no New Zealand evidence on which to base this. Instead, the estimates of the anticipated response are based on evidence from international studies that may not correspond to the situation in New Zealand. Nevertheless, this is the best information available.</p> <p>Given the campaign commitments of both Government parties to introduce a R&amp;D Tax Incentive, we have not considered the option of significantly reforming the Growth Grant scheme.</p>	
<b>Responsible Manager (signature and date):</b>	
	
<p>Richard Walley          Director, Science, Innovation and          International          Ministry of Business, Innovation and          Employment          29/ 08 / 2018</p>	<p>Keith Taylor          Policy Manager          Inland Revenue          29 / 08 / 2018</p>

## Section 2: Problem definition and objectives

### 2.1 What is the context within which action is proposed?

As discussed above, the primary explanation for New Zealand's low overall expenditure on R&D is low business investment in R&D in New Zealand.

R&D activities are those conducted using a systematic approach for the purpose of creating new knowledge or new or improved goods, services or processes; and resolving scientific or technological uncertainty. This definition contemplates both traditional "white coat" scientific research and broader digital development concepts.

New Zealand's low business investment in R&D is in part due to industrial structure – the low R&D intensity of New Zealand firms (Mazoyer, 1999), the small size of traditionally R&D-intensive industries such as pharmaceuticals and aircraft manufacturing (Di Maio and Blakeley, 2004), and the low number of very large firms, who tend to be more research-active (OECD, 2017).

There is more than industrial structure at play. Evidence suggests that the returns to innovation in New Zealand are relatively low (Wakeman & Conway, 2017), and hence New Zealand firms do not have the same incentive to invest in activities that will increase their innovative output. Moreover, OECD noted that the average rate of public support for business R&D is "well below the socially efficient level indicated by international empirical studies" (OECD, 2017). These factors indicate that there is scope for productivity gains from increasing the overall level of support for R&D expenditure.

The Government has announced a goal of increasing New Zealand's R&D expenditure to 2 per cent of GDP by 2027, and to reach this target a significant amount of the growth in R&D expenditure is expected to come from business. Across the OECD the average ratio of public to private expenditure is around 40 per cent to 60 per cent respectively. In New Zealand it is around 50:50. Lifting business investment in R&D to 60 per cent of our total R&D expenditure while achieving its 2 per cent target by 2027 will require growth in BERD of around 12 per cent per annum.

After several years of being flat or declining, New Zealand BERD grew significantly in 2016-7 (Statistics New Zealand, 2017, 2018). However, it is still relatively low and it remains concentrated among a small set of firms. To achieve a further boost in BERD, as well as to transform the economy to become more knowledge intensive, requires broadening the base of R&D performing firms within New Zealand while continuing to increase the BERD of existing R&D-performing firms.

The other element of context is that the New Zealand tax system operates within a broad-base, low-rate framework. The essence of this framework is that the tax system operates neutrally and as much in the background as possible.

One implication is that a high burden of proof is required to move away from the general proposition that the tax system is not used to address externalities. Inland Revenue has expressed its reservations about using the tax system to incentivise R&D. However, it also notes that in this regard a majority of OECD countries have R&D tax incentive, and that its concerns may be moderated by a well-designed tax incentive.

## 2.2 What regulatory system, or systems, are already in place?

New Zealand currently provides R&D subsidies through a range of grants administered by Callaghan Innovation, including:

- **Growth Grants:** A non-discretionary grant paid to all businesses that spend more than \$300,000 and 1.5 per cent of revenue on R&D over the prior two years. The grant funds 20 per cent of a business R&D programme up to a limit of \$5 million per year (i.e., \$25M of R&D spending), initially for a period of three years with automatic two-year extensions conditional on continuing to meet the criteria. The aim is to provide experienced R&D performers with the funding certainty and stability they need to grow their R&D spending in the long term. There were 316 recipients in 2017/18 at an (estimated) fiscal cost of \$172.2M.
- **Project Grants:** A discretionary grant, allocated to less-experienced R&D performers that do not meet the conditions for a Growth Grant for R&D. It funds 40 per cent of the first \$800,000 of the eligible costs of a pre-specified project and 20 per cent of the remainder. There were 344 recipients in 2017/18 at an estimated fiscal cost of \$20.3M.

There has been no formal study or evaluation of the impact of Growth Grants on R&D spending, innovative activity, or economic outcomes, but there have been three studies done of the set of grants that existed prior to the formation of Callaghan Innovation on a range of outcomes (Ministry of Economic Development, 2011; Jaffe & Le, 2015; Wakeman, 2017). Wakeman (2017) did not find a significant impact of receiving a grant on R&D expenditure. Jaffe & Le (2015) and Wakeman (2017) found that grant recipients are more likely to patent and to introduce new products, but not to engage in process innovation. Wakeman (2017) found that recipients experience faster employment and labour productivity growth than non-recipients, and are more likely to survive. MED (2011) and Wakeman (2017) found that receiving a grant did not have a significant impact on multi-factor productivity.

New Zealand also provides support for businesses performing R&D through the R&D loss tax credit (also known as the R&D tax-loss cash out). New Zealand-resident businesses are able to apply for 28 per cent of their losses associated with eligible R&D expenditure (up to a cap) to be paid out in cash, rather than carrying forward those losses until future years. 350 firms currently claim R&D loss tax credits.

## 2.3 What is the policy problem or opportunity?

As discussed above, the objective of the policy is to increase business investment in R&D, which has a central role in driving innovation and economic growth. Increasing investment in R&D is especially important in the New Zealand context because of the relative lack of complexity of the economy's production base, which arguably hinders its potential economic performance (Hidalgo et al. 2007). R&D investment will help to diversify the New Zealand economy and create high-value jobs by building expertise in high-technology areas. At the same time, increasing the number of firms performing R&D will also mean that more firms are in a position to benefit from existing technology developed outside the firm, including at universities and Crown Research Institutes.

It is especially difficult for firms to appropriate all the benefits of R&D, as compared to other types of investment, because it is difficult to prevent the benefits of new knowledge 'spilling over' to other firms. This occurs both by other firms imitating new products and processes (intellectual property rights are only partially effective in preventing this) and by the firm's employees moving elsewhere and taking the knowledge with them. Moreover, due to the uncertainty of the returns associated with R&D investment, R&D-performing firms have

difficulty in obtaining external finance. This means that – all else being equal – firms are likely to underinvest in R&D.

There are several existing incentives for innovation (beside government subsidies), including the ability to deduct R&D expenditure from revenue for tax purposes and the commercial returns a firm receives for innovation. However, the rationale for public subsidisation of R&D is that these incentives on their own are not enough to ensure that the total level of investment in R&D reaches the socially optimal level.

All OECD countries provide some form of subsidy to businesses for R&D (Appelt et al., 2016), and the OECD has also argued that the level of R&D subsidy is too low in New Zealand (OECD, 2017). R&D Grants and tax incentives are the two main mechanisms used internationally to incentivise business R&D. In general, the advantage of grants is that they can be directed toward specific projects that the Government deems are likely to offer high social returns (eg, Project Grants are targeted at a new R&D expenditure). However, they depend on the discretion of government officials – in the case of Project Grants, Callaghan Innovation – and as a result can entail significant compliance costs (eg, expenditure of time and resources on the application process) for firms. By contrast, tax incentives leave the choice of how to conduct and pursue R&D in the hands of the private sector and hence are likely to lead to R&D that is more market orientated.

Growth Grants are designed to act in similar way to a tax incentive in that they are non-discretionary. However, while they provide substantial subsidies to a specific set of larger firms, they are unavailable to the large majority of R&D-performing firms. As a result around 300 firms received a Growth Grant in the 2017 year, compared with approximately 4500 firms that reported undertaking R&D in that year (Statistics New Zealand, 2018). The ubiquity of the tax system means that the R&D Tax Incentive is likely to have a broader reach.

The policy opportunity is to provide government support in a way that complements the existing incentives that encourage firms to spend up to the optimal amount on R&D while creating the minimum distortion to their business activities.

#### **2.4 Are there any constraints on the scope for decision making?**

The coalition parties both campaigned on the basis of introducing a R&D Tax Incentive to lift NZ's R&D expenditure by encouraging businesses to research and innovate. Moreover the Coalition Agreement contains a stated objective to increase R&D spending to 2 per cent of GDP by 2027.

Subsequent analysis and stakeholder consultation has confirmed an appetite for broader government support for business R&D and that New Zealand's R&D expenditure is below the OECD average. The Minister of Research, Science and Innovation is also now consulting on a proposed Research, Science & Innovation Strategy that sets out how the Government proposes to reach its goal of lifting New Zealand's spending on R&D to two per cent of GDP. The R&D Tax Incentive is a central component of that Strategy.

We have assumed that some form of non-discretionary public subsidy for R&D would continue – i.e., either a Growth Grant or a R&D Tax Incentive. Moreover, we have assumed that the Callaghan Innovation Project Grants and the R&D tax-loss cash out would continue as complementary schemes. There is scope to revisit the design of these in future, particularly to align the R&D Tax Incentive and the R&D tax-loss cash out schemes, but it is not necessary as part of this decision.

## 2.5 What do stakeholders think?

As noted previously, the coalition parties campaigned on the basis of introducing a R&D Tax Incentive to lift NZ's R&D expenditure by encouraging businesses to research and innovate. Subsequently, the Government has consulted widely on the proposal to introduce a R&D Tax Incentive, contained in the Research and Development Tax Incentive Discussion Document.

Prior to the public release of the Discussion Document, it was circulated to a wider group of government agencies for comment. Following the release of the Government Discussion Document on 19 April, MBIE, together with IR and Callaghan Innovation conducted targeted consultation with stakeholders.

This consultation confirmed an appetite for broader government support for business R&D. The submissions corroborated that increasing R&D was important in improving New Zealand's productivity, helping create high skilled jobs, and supporting diversification of our economy.

Around a third of submissions stated strong support for the R&D Tax Incentive, another third favoured Growth Grants (as against the R&D Tax Incentive proposed in the Discussion Document), and the final third expressed a range of different views – from wanting to see a mixture of the R&D Tax Incentive and Growth Grants to preferring a different mechanism altogether.

The technology sector found the proposed definition limited valid R&D with its focus on traditional scientific research. We have taken this feedback on-board and worked with industry representatives to ensure the revised definition captures valid R&D performed across all sectors.

Feedback suggested the minimum R&D expenditure threshold of \$100,000 was too high. Many submissions also viewed the 12.5 per cent tax credit rate was too low to incentivise additional R&D, particularly given it was lower than the 20 per cent (14.4 per cent post tax) Growth Grant and the prior 2008 R&D tax credit.

There was concern that refundability was not available for loss-making companies in year one impacting firms most likely to need support and many of whom had received Growth Grants. Officials initially considered it would not be practicable to design this mechanism in year one. Given the significant feedback received on this point, the scheme includes a mechanism to allow limited refundability in year one of the Tax Incentive with a view to expanding this pending further policy work in future years.

Other specific proposed design features were viewed as overly restrictive or difficult to apply commercially. We have consulted on many of these points and developed alternative suggestions that are still consistent with the policy objectives.

Following analysis of the submissions on the Discussion Document, there has been an ongoing programme of targeted engagement with key stakeholders, such as tax advisors, to test design features of the Tax Incentive.

## Section 3: Options identification

### 3.1 What options are available to address the problem?

The main options available to government are:

- Continue with Growth Grants (status quo)
- Replace Growth Grants with a R&D Tax Incentive.

As described above, the Growth Grant provides a pre-tax payment of 20 per cent of a business's R&D expenditure, up to a limit of \$5 million per year (i.e., \$25M of R&D

spending). It is paid to all businesses that spend more than \$300,000 and 1.5 per cent of revenue on R&D over the prior two years. The initial contract is for a period of three years, with repeating two-year extensions conditional on continuing to meet the criteria. It is administered by Callaghan Innovation, under a Ministerial Direction from the Minister of Research, Science & Innovation.

The proposed R&D Tax Incentive operates by providing the taxpayer with a credit to their tax payable of 15 per cent of their eligible expenditure on R&D activities. The key design elements proposed are:

- a credit rate of 15 per cent
- a minimum R&D spending threshold of \$50,000 per year
- a maximum cap on R&D expenditure of \$120 million
- no R&D intensity threshold

Businesses with insufficient tax liability to use their credits immediately will be able to obtain a refund of their tax credits (at the end of the year for the first two years, and in year from 1 April 2021). It also features various rules that will limit a business's ability to re-characterise business as usual expenditure as R&D.

Following consultation, the credit rate was increased (from 12.5 per cent) and the threshold was lowered (from \$100,000). In addition, the ability to obtain a refund was brought forward to the first year of the Tax Incentive (albeit subject to limitations).

We have treated the Growth Grant and R&D Tax Incentive options as mutually exclusive, as they both subsidise the same R&D activity through different mechanisms. While in theory both schemes could operate side by side (eg, targeted at different types of firms), operating two broad-based subsidy regimes would be inefficient.

Neither option will stand alone as a solution to the problem. We have assumed that the Callaghan Innovation Project Grants and the R&D tax-loss cash out will continue as complementary schemes. It is also part of a system of wider government support for New Zealand Science and Innovation covering both public and private R&D. The Government makes an investment of around \$1.5B in scientific research through the Strategic Science Investment Fund. It also invests around \$400M in R&D through the Tertiary Education and Primary Industries portfolios.

### **3.2 What criteria, in addition to monetary costs and benefits, have been used to assess the likely impacts of the options under consideration?**

The framework for assessing the key policy elements and trade-offs of the proposal is captured by the following criteria:

- Impact on business R&D expenditure
- Impact on innovative activity, employment, output, economic productivity, etc.
- Compliance costs for firms
- Impact on business certainty over time
- Administrative feasibility
- Fiscal costs/risk

### **3.3 What other options have been ruled out of scope, or not considered, and why?**

We have assumed that some form of non-discretionary public subsidy would continue, either a Growth Grant or a R&D Tax Incentive. We have therefore not considered the option of no subsidy for R&D.

At the same time, given the campaign commitments of both Government parties to introduce a R&D Tax Incentive, we have not considered the option of significantly reforming the Growth Grant scheme.

## Section 4: Impact Analysis

**Marginal impact: How does each of the options identified at section 3.1 compare with the counterfactual, under each of the criteria set out in section 3.2?**

	Growth Grants (Status quo)	R&D Tax Incentive
Impact on business R&D expenditure	Targeted at firms with stable, high-intensity R&D activity. Out of 4500 R&D performers estimated by the Business Operations Survey 2017, only 316 firms received a Growth Grants in 2017/18 (albeit those that perform the majority of BERD).	Expected to have wider coverage, particularly among smaller firms. The 2008 tax credit had over 600 participants. It is estimated that approx. 1500-2000 R&D performing firms will be eligible in 2019. The higher total amount of subsidy and the wider coverage is expected to lead to significantly higher R&D expenditure. (++)
Impact on innovative activity, employment, output, economic productivity, etc.	Although no direct evidence, it is expected that Growth Grants increase the likelihood of both patenting and introducing new products, and result in higher employment and labour productivity for recipients than they would otherwise. It also leads to spillovers benefits for other participants in the economy.	Increased coverage of R&D-performing firms (and higher incentives for firms to engage in R&D) expected to result in some increase in innovative activity, employment, and labour productivity growth, particularly among firms that did not receive Growth Grants. A higher level of R&D expenditure will result in greater spillover benefits to other participants in the economy. (+)
Compliance costs	Growth Grants recipients incur costs in order of \$10,000 to \$30,000 to apply, and ongoing annual costs for audit of between \$10,000 to \$50,000 per year. <sup>1</sup> However, participation in the grant system is voluntary and the costs should be outweighed by the subsidy.	Applications for R&D Tax Incentive expected to incur annual costs of an average of \$35-40000 per year to comply with the filing requirements. <sup>2</sup> As for Growth Grants, participation is voluntary and the costs should be outweighed by the amount of the subsidy. (0)

<sup>1</sup> Information submitted as part of the R&D Tax Incentive consultation process indicated Growth Grant application process costs approx. \$22,000. Claimants are required to submit an audited certificate of expenditure to claim.

<sup>2</sup> The 3-F Review in Australia estimated the compliance cost for business for the R&D tax credit were \$19,000 to \$35,000 for small firms and \$79,000 to \$157,000 for large companies, with an overall average of \$37,000. Without any other evidence, the anticipated costs for New Zealand firms are assumed to be similar.

Impact on business certainty over time	Implemented by a Ministerial Direction to Callaghan Innovation issued by the Minister for Research, Science, & Innovation. May be changed at her discretion following consultation with Callaghan Innovation, but a Cabinet decision is required if changes have wider implications (eg, fiscal).	Implemented by tax legislation so harder to change (although 2008 tax credit was repealed). OECD research finds stable policy settings are important to achieve a BERD growth). (+)
Administrative feasibility	Administered by Callaghan Innovation. Costs were estimated to be \$2.1M in 2017/18.	Based on high-level estimates, Inland Revenue's cost of administering the R&D Tax Incentive is forecast to be up to \$6m per annum, although may be lower depending on the final design decisions. <sup>3</sup> (-)
Fiscal costs/risk	Fiscal costs estimated to be \$172.2M in 2017/18. If it continues, costs are forecast to be \$748.2M from 1 April 2019 to 30 June 2022. The appropriation for this period is \$528M.	Wider coverage of firms and slightly more generous subsidy rate/terms will result in higher fiscal costs. Fiscal costs are forecast to be \$1215M (direct costs) plus \$19.5M (administration costs) from 1 April 2019 to 30 June 2022. In Budget 2018 the Government allocated \$1,020M for the R&D Tax Incentive, in addition to the amount already allocated for Growth Grants. There is also a slightly greater fiscal risk associated with the R&D Tax Incentive as, unlike a Growth Grant, it is legislated so more difficult for the Government to refuse payment in the event the costs exceed the appropriation. Experience from other countries suggests design of rules is important to minimise reclassification of expenses. (-)

**Key:** ++ much better than doing nothing/the status quo  
+ better than doing nothing/the status quo  
0 about the same as doing nothing/the status quo  
- worse than doing nothing/the status quo  
-- much worse than doing nothing/the status quo

<sup>3</sup> The 3-F Review in Australia estimated that the administration cost at \$22-25M, which equates to a bit less than \$2,000 per claimant.

## Section 5: Conclusions

### 5.1 What option, or combination of options, is likely best to address the problem, meet the policy objectives and deliver the highest net benefits?

We consider that introducing a R&D Tax Incentive, complemented by carefully targeted direct grants (ie, Project Grants or something similar) will better support the Government's objectives. Most if not all countries deliver a R&D subsidy through tax credits, direct grants, or a mixture of both.<sup>4</sup> While no two designs of a R&D Tax Incentive internationally are the same, there is consistent international evidence that R&D Tax Incentives have positive effects on business R&D spending. Most available evaluation studies find that R&D tax incentives lead to additional R&D investment. For example, out of 17 methodologically sound evaluations on the topic (What Works Centre for Local Economic Growth, 2015), ten indicate positive results, five find mixed results, and only two report no statistically significant relationship between the tax incentives and R&D investment. The review also points out that the seven studies rated as being methodologically more rigorous all find positive results.

Moreover, the international evidence indicates that on average one dollar of tax credit generates around one dollar of additional R&D spending and some studies find greater impact in specific contexts (Appelt et al., 2016). The most robust study from the What Works Centre available takes advantage of a natural experiment as a result of UK policy changes, and found that across its R&D Tax Incentive scheme each £1 of government investment resulted in an additional £1.7 of investment by businesses. Results for small and medium enterprises were even higher rate at 2.5:1 (Dechezleprêtre et al., 2016).

There is less evidence about the impact of grants, although it suggests that they are most effective when they are targeted towards small firms, firms that are new to R&D, and when the grants are intermediate-sized.

The papers conclude that the most effective way to increase business expenditure on R&D is through a combination of tax incentives and carefully targeted grants. There is an opportunity to move towards this design, by replacing the Growth Grants with a R&D Tax Incentive, whilst retaining the targeted approach of Project Grants. We recognise that policy stability is important for improving business investment in R&D, and that (as a non-discretionary grant) Growth Grants have some important features of a tax incentive. Nevertheless we believe that the R&D Tax Incentive will be more effective than Growth Grants because of wider coverage of R&D-performing firms and greater flexibility around the types of R&D that can receive the subsidy.

The restrictions on Growth Grants mean that they have had limited uptake (only 316 firms received Growth Grant in 2017/18). The experience with 2008 credit and R&D tax-loss cash-out provide evidence that tax measures have higher uptake than grants. The 2008 tax credit had over 600 participants, while there are currently 350 firms that access the R&D tax-loss cash-out mechanism despite tight eligibility and targeting criteria. We expect that 1500-2000 we expect will be eligible for the Tax Incentive.

At the same time, the accounting treatment of R&D expenditure does not influence its

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<sup>4</sup> No subsequent evaluation was done of the impact or effectiveness of the R&D Tax Incentive introduced by the Labour-led Government in 2008 (and repealed by the National-led Government in 2009). There are a number of evaluations of the initiatives introduced elsewhere, and two reports that provide an overview of the international evidence: an OECD paper on the design, incidence and impact of R&D Tax Incentives (Appelt et al., 2016); and an MBIE occasional paper on the effectiveness of different levers for lifting BERD (Pells, 2014).

eligibility for the R&D Tax Incentive. This allows valid, yet unsuccessful, R&D that would be excluded under the accounting standards used for Growth Grants to be recognised for the purposes of the Tax Incentive.

## 5.2 Summary table of costs and benefits of the preferred approach

Affected parties (identify)	Comment: <i>nature of cost or benefit (eg ongoing, one-off), evidence and assumption (eg compliance rates), risks</i>	Impact <i>\$m present value, for monetised impacts; high, medium or low for non-monetised impacts</i>	Evidence certainty (High, medium or low)
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### Additional costs of proposed approach, compared to taking no action

R&D performing firms	Those that choose to seek the tax credit will incur the costs of demonstrating their eligibility and ongoing compliance costs (eg, auditing). Expected that existing Growth Grants recipients will incur similar costs but non-recipients will incur additional costs. Participation in the system is voluntary and should be outweighed by the subsidy.	Per annum: \$37.5M <sup>5</sup> FY 18/19-21/22: <sup>6</sup> \$103M after discounting at 6%	Low
Administering agency	IR will administer Tax Incentive (vs Callaghan Innovation for Growth Grants). IR costs expected to be higher because larger number of firms eligible. Callaghan Innovation will lose direct connection to large R&D performers, and hence ability to use R&D grants to increase uptake and effectiveness of the other services/programmes.	Per annum: \$6M <sup>7</sup> - \$2.1M = \$3.9M FY 18/19-21/22: \$11M after discounting at 6%	Low
Wider government	Higher fiscal costs because of wider coverage of firms and slightly more generous rate. The cost of the tax credit will continue	FY 18/19-21/22: \$1215M - \$749M <sup>8</sup> = \$466M without	Medium

<sup>5</sup> Assuming 1000 new recipients at \$37,500 per recipient.

<sup>6</sup> From 1 April 2019 to 30 June 2022.

<sup>7</sup> This is an upper estimate and the actual costs are expected to be lower.

<sup>8</sup> Forecast fiscal costs of Growth Grants from 1 April 2019 to 30 June 2022 if it had continued.

	to be met from Vote: BSI and managed by MBIE in a similar way.	discounting \$395M after discounting at 6%	
Other parties	No anticipated costs.	\$0	
<b>Total Monetised Cost</b>		FY 18/19-21/22: \$509M after discounting at 6%	Low
<b>Non-monetised costs</b>		n/a	

Expected benefits of proposed approach, compared to taking no action			
R&D performing firms	<p>Eligible firms will receive a tax credit equivalent to 15% of their R&amp;D expenditure. For existing Growth Grants this is roughly equivalent to a 20% pre-tax subsidy (as per the Growth Grant),<sup>9</sup> all else being equal.<sup>10</sup> For non-recipients this will be a new subsidy. These benefits are equivalent to the costs to wider government (as above).</p> <p>In addition, firms receiving new or additional funding are expected to experience higher employment and labour productivity growth, but effects have not been monetised.</p>	<p>FY 18/19-21/22: \$1215M - \$749M = \$466M without discounting \$395M after discounting at 6%</p> <p>Medium</p>	<p>Medium</p> <p>Medium</p>
Administering agency	None	0	n/a
Wider government	Higher investment in R&D and resulting business innovation expected to result in more productivity growth over time, leading to high incomes and hence	Medium	Low

<sup>9</sup> Given a 28% corporate tax rate, a 20% subsidy pre-tax corresponds to 14.4% subsidy after tax, which is less generous than a 15% tax credit for firms that have a sufficient tax liability (or will have in the future) against which to apply the tax credit. Firms with insufficient tax liability will be able to apply for a refund of their 15% tax credit. Nevertheless, these firms still may be marginally better off with a 20% pre-tax cash subsidy because they receive a higher amount cash payment, albeit in exchange for a reduction in the losses that they can carry forward to tax purposes.

<sup>10</sup> Assuming eligible R&D expenditure is the same.

	tax paid, but effects have not been monetised.		
Other parties	Higher investment in R&D expected to generate large positive spillovers to rest of the economy (other firms, researchers, etc.), but effects have not been monetised.	High	Low
<b>Total Monetised Benefit</b>		\$395M after discounting at 6%	Low
<b>Non-monetised benefits</b>		High	

### 5.3 What other impacts is this approach likely to have?

There is a potential risk that by providing an incentive, businesses are motivated to recharacterise non-R&D expenditure or business as usual as R&D. Steps are being undertaken in the incentive design to reduce the likelihood of, and opportunities to recharacterise non-R&D expenditure. These steps include requiring a close nexus between the R&D activity and the expenses claimed.

### 5.4 Is the preferred option compatible with the Government's 'Expectations for the design of regulatory systems'?

There is no incompatibility between this regulatory proposal and the Government's 'Expectations for the design of regulatory systems.'

## Section 6: Implementation and operation

### 6.1 How will the new arrangements work in practice?

Legislation will need to be passed to give effect to the R&D Tax Incentive policy. A stand-alone bill is proposed to make changes to the Income Tax Act 2007.

The short timeframes for implementing the R&D Tax Incentive and receiving Royal Assent by June 2019 means that the bill will need to progress through the house swiftly. June 2019 is the latest date for enactment without disrupting companies' payment of provisional tax.

IR will be leading the implementation of the Tax Incentive through the tax system and will identify and mitigate operational risk so that it can be delivered successfully.

IR has the necessary capabilities and capacity to implement changes to tax rules through its systems. Work requirements associated with the R&D Tax Incentive have been factored into the wider departmental planning associated with IR's Business Transformation programme.

An important element of the scheme is to have in-year approval of the R&D activity. This has the benefit of providing certainty to applicants that their R&D complies with the legislative requirements, as well as helping maintain the integrity of the Tax Incentive. The start date of this feature will be conditional on operational capacity and readiness. Because of Business Transformation constraints, it may not come into effect until the second year (2020/21).

Not all implementation decisions have been completed yet, but IR expects to be able to resolve all issues by the start date. IR has begun assessing the skills and capacity that will be needed to implement the Tax Incentive. This involves identifying whether the required skills are available in-house or whether they reside in other organisations, such as MBIE and Callaghan Innovation, and if so how they will be accessed.

Communication of the proposed changes started with the release of a Discussion Document in April. There is currently a programme of engagement with key stakeholders, such as the tax advisory community. These organisations each have networks of R&D performing firms.

Officials from all agencies (MBIE, Callaghan Innovation and IR) are taking opportunities to inform and discuss changes with representative groups, eg., the Chartered Accountants Australia and New Zealand (CA ANZ). Callaghan Innovation will use its network of grant recipients to inform them of the changes.

IR, again working with the other agencies, has commenced developing guidance material to explain the legislation. Developing this material will require discussion with firms engaged in R&D so will provide opportunities to communicate the changes to potential Tax Incentive recipients. A constraint in the communications is that formal guidance about the legislation cannot be released until the legislation has been passed. However, consideration will be given to how to provide useful information while respecting legislative conventions.

Because the R&D Tax Incentive is a new policy, there are no particular transition issues. However, it is noted that a goal in introducing the Tax Incentive is to not disrupt the R&D programmes of existing R&D performers. A significant part of the wider policy is that there will be, subject to Cabinet approval, a two-year transition period for Growth Grant recipients before this Grant is phased out. During this period, transitioning from the Growth

Grant to the Tax Incentive is at the R&D performer's discretion. This enables them to plan in a measured way so will avoid disruption.

The Tax Incentive will come into effect for the tax year ending 31 March 2020. Early-balance-date firms will be able to claim the incentive for the full 12 months of their equivalent 2019/20 income-tax year.

Taxpayers' income-tax year will have started by the time the legislation receives Royal Assent. This may cause some difficulties for taxpayers since data collection obligations will apply for the whole period for which they are performing R&D. However, claims will only be submitted with taxpayers' income tax returns. It is anticipated that the legislation will be enacted by then.

## 6.2 What are the implementation risks?

In terms of the claim process most submissions through the consultation process requested that compliance burdens be kept light and that the process to claim be streamlined, clear and low cost. Feedback also highlighted the need for clear guidance and education material to support firms in making claims. Most submitters were also keen on being able to submit claims via third party software providers provided they would minimise compliance cost and increase the overall efficiency of the scheme.

Overall, the time for policy implementation is tight. IR has made the following administrative decisions to increase certainty and predictability of support for firms.

In terms of year one of the R&D Tax Incentive, firms will be required to register their interest in applying for the incentive and to file their claims online through IR's e-service (myIR) at the end of the tax year. As part of the online claim process firms will be required to submit and upload supporting information that details the R&D activity and expenditure. By year three the intention is to allow R&D returns only from approved accounting software packages.

The goal is to have strong uptake of the incentive by R&D performing firms. Unfamiliarity with the Tax Incentive and uncertainty about how to apply for it is an acknowledged risk, which might frustrate this goal. In the short term there will be some confusion because there will be multiple Government instruments for supporting business R&D. Growth Grants were referred to above. In addition, there is the R&D tax-loss cash out scheme that already operates within the tax system. It will operate with a separate definition of eligible R&D and firms will have to apply for this separately from applying for the Tax Incentive. For the first year, the education and guidance material described in 6.1 is the main means of addressing this. A review of the tax-loss cash-out scheme is scheduled for late 2018/early 2019, the goal being to harmonise this scheme with the R&D Tax Incentive, from Year 2 of the Tax Incentive (2020/21). Resource and time constraints have meant this could not be achieved any earlier.

Another potential impediment to firms participating in the Tax Incentive is the experience from 2008 when a similar scheme was introduced but then closed after one year. The design of the Tax Incentive has been motivated by three objectives: promotion of R&D, management of fiscal risks, and maintaining integrity of the tax system. Keeping a focus on all three of these objectives gives the best chance of creating an enduring scheme.

Implementation risks arise where firms recharacterise non-R&D expenditure as R&D in order to claim a larger incentive. The policy and legislation has been developed to manage this risk (though it cannot be eliminated). Mechanisms include: the definition of eligible R&D activity, the lists of eligible and non-eligible expenditure, and the various integrity measures described in section 7.1. This will be backed up by administrative processes,

such as in-year approval of the R&D (likely to be from 2020/21) and audit.

#### Successful uptake of the R&D Tax Incentive

To ensure the successful implementation of the R&D Tax Incentive there needs to be strong uptake of it by R&D performing businesses. The submission process has shown that there is a lack of awareness of the benefits of the scheme and some of the design features within it. Specifically, there was confusion about the credit in comparison with the Growth Grants, concern about the lack of support for start-ups and businesses in tax loss, and concern that software businesses may be excluded from the scheme.

To address these issues, officials from MBIE, IR and Callaghan Innovation are developing an implementation strategy to ensure there is widespread awareness and understanding of the R&D Tax Incentive before its implementation date in April 2019. Part of this process will be the development of guidelines which will sit alongside the tax legislation to inform businesses of the detailed parameters of scheme.

**Section 7: Monitoring, evaluation and review**

**7.1 How will the impact of the new arrangements be monitored?**

System-level monitoring

System-level monitoring will take place as part of the Research, Science and Innovation portfolio (e.g. through publication of the annual System Performance Report).

Evaluation and data collection

Officials have recommended including a legislative requirement that the government commission an evaluation on the R&D Tax Incentive every five years from the commencement of the scheme.

Statistics New Zealand runs a business R&D survey every two years, and MBIE is currently working with Statistics New Zealand to increase the frequency of this survey to annual from 2019. This will provide the official information required to assess the impact of the R&D Tax Incentive.

It has also been recommended that IR have the ability to make taxpayer-specific information in relation to R&D Tax Incentive claims available to MBIE, Treasury and Callaghan Innovation officials to support evaluation and policy development. In addition, it is proposed that anonymised claim information be integrated into Statistics New Zealand Longitudinal Business Database (LBD) and the National Research Information System (NRIS). This will allow researchers and evaluators to use data from the R&D Tax Incentive to monitor the impact more frequently than using the R&D Survey results (albeit R&D Survey provides the official statistics).

Integrity measures

Various measures are proposed to enhance the integrity of the scheme. Collection and dissemination of data, as described above, forms part of these. In addition, the names and the amounts of tax incentive received will be published, because it is considered that there could be public interest in who the recipients are and how much they are receiving. This data will be published with a two-year lag so as to not reveal the extent of firms' current R&D activity, which might be commercially sensitive. Some firms considered publication of the amount of the tax incentive would breach their rights to taxpayer secrecy. Officials do not agree, but as a compromise the amount of the incentive will be presented in bands rather than the exact amount.

**7.2 When and how will the new arrangements be reviewed?**

In addition to the scheme being evaluated every five years, there will on-going monitoring of the policy by MBIE and IR in the shorter term. This is to speedily identify and remedy issues that could compromise the integrity of the incentive.

It is proposed that the R&D Tax Incentive policy can be adjusted when serious issues occur as a result of monitoring. For example, officials consider a variety of second and third order regulatory mechanisms could be used to this effect. The proposed legislation will allow for schedules containing specific R&D activity and expenditure exclusions to be amended via Order in Council. The ability to make changes to the schedules outside of primary legislation is necessary so that the Government can quickly close off problem areas identified that could impact on the fiscal sustainability of the R&D Tax Incentive.

Officials consider the goal of an enduring scheme will be supported by developing a community of stakeholders who share that goal. It is proposed to establish a consultative

committee comprising officials and private sector representatives which will function as a forum for identifying and resolving problems.

# Bibliography

- Appelt, S. , M. Bajgar, C. Criscuolo, & F. Galindo-Rueda (2016). R&D Tax Incentives: Evidence on design, incidence and impacts. *OECD Science, Technology and Industry Policy Papers, No 32*.
- Conway, P. (2016). *Achieving New Zealand's productivity potential: Research Paper 2016/1*. The New Zealand Productivity Commission.
- Di Maio, M., & N. Blakeley (2004). "Business Research and Development and Industry Structure". New Zealand Treasury.
- Hall, B. & J. Mairesse & P. Mohnen (2009). "Measuring the Returns to R&D," NBER Working Papers 15622, National Bureau of Economic Research, Inc.
- Hidalgo, C., Klinger, B., Barabasi, A., & Hausmann, R. (2007). The Product Space Conditions the Development of Nations. *Science*, 317(5837).
- Jaffe, A. and T. Le (2015). The impact of R&D subsidy on innovation: a study of New Zealand firms. *Motu Working Paper 15-10*.
- Johnson, R., & W. Razzak & S. Stillman (2007). "Has New Zealand benefited from its investments in research & development?", *Applied Economics*, Taylor & Francis Journals, vol. 39(19), pages 2425-2440.
- Mazoyer, P. (1999). "Analysis of R&D structure and intensities". Wellington, New Zealand: Ministry of Research, Science & Technology.
- OECD. (2017). *OECD Economic Surveys: New Zealand 2017*. Paris: OECD Publishing.
- Pells, S. (2014). *MBIE Occasional Paper: How can we lift BERD?* Wellington: MBIE.
- Statistics New Zealand (2017). *Research and Development Survey: 2016*.  
<https://www.stats.govt.nz/information-releases/research-and-development-survey-2016>
- Statistics New Zealand (2018). *Business Operations Survey: 2017*.  
<https://www.stats.govt.nz/information-releases/business-operations-survey-2017>
- Wakeman, S. (2017). *The impact of R&D grants on the performance of New Zealand firms*. Wellington: New Zealand Productivity Commission Working Paper.
- Wakeman, S. & P. Conway (2017). *Innovation and the performance of New Zealand firms*. Wellington: New Zealand Productivity Commission Working Paper.