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Joint MoRST–MED–Treasury Briefing

Economic Growth Agenda: Operational Details for Business R&D and Technology Transfer Initiatives

| MINISTER | PRIORITY | DEADLINE |
|----------------------------------------------|----------|---------------|
| Minister of Research, Science and Technology | High | 28 April 2010 |
| Minister of Finance | High | 28 April 2010 |
| Minister for Economic Development | High | 28 April 2010 |

CONTACTS

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Annex 1: Economic Growth Agenda: Operational Details for Business R&D and Technology Transfer Initiatives Officials Report

Joint MoRST–MED–Treasury Briefing

Economic Growth Agenda: Operational Details for Business R&D and Technology Transfer Initiatives

SUMMARY

1. In February, Cabinet agreed in principle to a set of initiatives that will form an ‘innovation package’ for Budget 2010. They delegated sign-off on operational details to the Minister of Research, Science and Technology, Minister of Finance and Minister for Economic Development. (CAB Min (10) 8/1).
2. This briefing provides operational details on three initiatives included in the February Cabinet paper and provides advice on profiling them in Budget 2010 communications, fiscal implications, risks and further implementation steps. This briefing contains all the decisions that Ministers need to make. A more detailed explanation of the three initiatives is provided in the attached report.
3. The three new initiatives will enhance existing Vote RS&T business R&D and technology transfer initiatives to create a single package of market-focussed initiatives with a single point of entry for firms (see paragraphs 27–29 for details).
4. The briefing is structured in sections as follows:
 - 4.1 Technology Development Grants
 - 4.2 Technology Transfer Vouchers
 - 4.3 National Network of Commercialisation Centres
 - 4.4 Achieving Excellence in Technology Transfer
 - 4.5 Profiling Initiatives in Budget 2010
 - 4.6 Fiscal Implications
 - 4.7 Testing with stakeholders
 - 4.8 Further Steps during 2010/11

TECHNOLOGY DEVELOPMENT GRANTS

5. Technology Development Grants will be the major component of new funding in the innovation package. They will help R&D intensive firms to undertake broad programmes of research and development that are likely to create benefits beyond the firm (spillover benefits) in the wider economy. Section one of the attached Report provides additional details on the material that follows.

Principles

6. We recommend that Ministers approve the following principles for Technology Development Grants (these principles will be reflected in the Ministerial Tools Notice issued by the Minister of RS&T):

TABLE 1. TECHNOLOGY DEVELOPMENT GRANT PRINCIPLES FOR APPROVAL

| |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Primary objective: improve New Zealand's economic performance by increasing the total level of the investment made by New Zealand's high technology businesses in research and development.</p> |
| <p>2. Targeted at: larger R&D-intensive firms that (i), have proven track records in R&D and ambition to grow by increasing their levels of investment in R&D, (ii) have R&D management capabilities that justify a hands-off from government and firm-centred control over the ways in which grants are used, and (iii), have programmes of R&D that are likely to generate significant benefits for the wider economy through generation of new products, processes, systems and services.</p> |
| <p>3. Balancing fiscal risk against access: minimise fiscal risk by using a combination of rules and judgements to determine which firms access the grant.</p> |
| <p>4. Eligibility criteria: publish eligibility criteria ('rules') so that firms can determine whether or not they are likely to be able to access the grant.</p> |
| <p>5. Selection based on judgement: officials will select the firms that will receive grants from amongst eligible applicant firms using judgements.</p> |

7. Table 1 contains a distinction between the eligibility rules that determine which firms can apply for Development Grants and the selection judgements that determine from amongst those that apply, which firms will get the grants. The selection process will be used to ensure that the firms with R&D programmes most likely to generate wider benefit to New Zealand gain access to the grant and that the total grants made in a year will fit within annual appropriations.

Operational details for approval

8. We have examined various combinations of eligibility rules and bases for judgement. There are uncertainties in the available data on levels of R&D expenditure by firms that create difficulties for precise design. There are also uncertainties about the way firms will respond to the new scheme under particular groupings of settings with flow-on consequences for patterns of uptake of grants.
9. With these caveats in mind, we recommend that Ministers approve the following operational settings for Technology Development Grants:

TABLE 2. TECHNOLOGY DEVELOPMENT GRANT OPERATIONAL DETAILS FOR APPROVAL

| |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Grant rate: 20% of eligible R&D expenditure (paid in arrears).</p> |
| <p>2. Eligibility criteria: (i) firms must have a R&D intensity (the ratio of R&D expenditure to revenue) of greater than or equal to 5%, (ii) revenues of greater than or equal to \$3 Million p.a., (iii) must be a person or entity that is in business and resident in New Zealand, and (iv) must not be an entity established under the Education Act 1989, Crown Research Institutes Act 1992, Local Government Act 2002 or the New Zealand Public Health and Disability Act 2000; or an entity that is 50% or more owned by one or more of those types of entities.</p> |
| <p>3. Judgement criteria: final selection for grants will be based on judgement that firms (i) are financially stable, (ii) have the necessary governance capabilities to manage R&D, (iii) have the R&D capabilities to deliver and exploit R&D, and (iv) have R&D programmes that are likely to generate wider benefits for New Zealand.</p> |
| <p>4. Cap to grants: Grants to firms will be capped at a maximum of \$2.4 M p.a. (i.e. at a maximum claimable R&D expenditure of \$12 M p.a. times the grant rate of 20%).</p> |
| <p>5. Duration and renewal: Recipient firms will get grants for three years and will then have to reapply alongside other applicants at the end of the grant period.</p> |

10. Using the most recent R&D data available from 2008, we estimate that the settings in Table 2 should single out about 100 of New Zealand’s larger, R&D intensive firms as potential applicants for Technology Development Grants. The potential cost of grants from these firms will be about \$55M (implying an average grant size of around \$550,000 p.a.).
11. The eligibility criteria and settings in Table 2 will need to be reviewed in the light of accumulated learning as the scheme is implemented and as funding for Development Grants increases from \$22.5M in 2010/11 to \$62M in 2013/14. We anticipate that a set of advice on the efficacy of the eligibility criteria and of other settings will be provided to Ministers in the first half of 2011.

Other operational details

12. Other operational details are being finalised and will be brought to Ministers for approval in September 2010. These cover:
 - 12.1 *Double dipping:* Firms will be prevented from claiming government funding twice for R&D work they carry out. This means that any TechNZ (or any form of public-good RS&T) funding they receive and any required co-funding the firm contributes to that project will be ineligible for Technology Development Grant claims.
 - 12.2 *Eligible R&D and eligible R&D expenditure.* The rules to be used here will be based on international best practice.

- 12.3 *Payments.* Payments will be made in arrears on the basis of eligible R&D expenditure. Details here will determine how much drawdown occurs during 2010/11.
- 12.4 *Taxation.* Whether or not the Technology Development Grant would be treated as assessable income is under consideration.
- 12.5 *Provisioning.* Processes are being developed for managing applications and payments of grants in ways that will 'get the money out the door' while minimising the risk to the Crown of exceeding appropriated funds and the potential misuse of funds by recipients.

Risks and risk mitigation

- 13. There are risks associated with Technology Development Grants:
 - 13.1 Government funding under this proposal will need to be considered against New Zealand's international trade obligations regarding subsidies under World Trade Organisation (WTO). While funding for R&D may be less likely to cause concern, it should be noted that some forms of support are prohibited outright, such as subsidies that are contingent on export performance. These rules have been taken into account through discussions with the Ministry of Foreign Affairs and Trade.
 - 13.2 There is a risk that little of the appropriation for Technology Development Grants will be used in 2010/11. This risk will be reduced by enabling firms that have extant R&D plans and are in the midst of annual R&D programmes to apply for grants (rather than restricting eligibility to firms applying for grants to cover their next financial years). The judgement process outlined in Table 2 should weed out firms that attempt to game at this point (e.g. by retrospectively dressing up existing bits and pieces as a coherent R&D programme).
 - 13.3 There is a risk that firms will create new R&D subsidiaries or attempt other constructions in an attempt to gain access to grants. Eligibility based on firms' RDI, revenue level and Foundation judgements about the quality of R&D plans should guard against this possibility.

TECHNOLOGY TRANSFER VOUCHERS

- 14. Technology Transfer Vouchers will be awarded to firms and will enable them to solve R&D problems or access R&D expertise and knowledge (Report, Section two). They will provide co-funding to purchase research services and expertise from accredited publicly funded research organisations. The vouchers will be piloted during 2010-11 and 2011-12.

15. The vouchers will provide an important mechanism to support the Crown Research Institutes (CRIs) Taskforce recommendations related to increased emphasis on technology transfer from CRIs to the private sector.
16. We recommend that Ministers approve the following principles for the Technology Transfer Vouchers pilot:

Table 3. Technology Transfer Voucher principles for approval

| |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Primary objective: to increase the transfer of technology and related knowledge between firms and accredited publicly funded research organisations by supporting business led projects that develop better linkages between the two.</p> |
| <p>2. Targeted at: firms that (i) lack the specific in house research capability to carry out a piece of research, (ii) have well defined problems or ideas that will benefit from the R&D expertise and services in a research organisation, and (iii) have, or have the ability to develop, the organisational capabilities required to manage R&D relationships with research organisations and to apply the R&D results in their businesses.</p> |
| <p>3. Control: firms will control relationships with R&D providers and negotiate all details of contracts once they receive vouchers.</p> |
| <p>4. R&D providers: vouchers will be used to purchase R&D services from accredited publicly funded research organisations.</p> |

17. We recommend that Ministers approve the following operational details for the Technology Transfer Vouchers pilot:

TABLE 4. TECHNOLOGY TRANSFER VOUCHER OPERATIONAL DETAILS FOR APPROVAL

| |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Voucher size: vouchers will have face values from \$100,000 to \$1 M (it is expected that most vouchers will be in the range \$100,000–\$200,000).</p> |
| <p>2. Co-funding: firms will be required to co-fund 50% of the R&D services purchased from research organisations.</p> |

DEVELOPING A NATIONAL NETWORK OF COMMERCIALISATION CENTRES

18. Currently New Zealand has commercialisation and technology transfer offices of one sort or another in all Crown Research Institutes (CRIs) and universities and in many research-active Polytechnics. With a few notable exceptions, these offices lack the scale of activity, breadth of contacts and depth in capabilities to be effective in direct commercialisation. These deficiencies could be overcome by encouraging commercialisation offices to work together as nodes in a national network for commercialisation (Report, Section three).
19. The objectives of this collaboration would be to:
 - 19.1 build scale and unique expertise at particular nodes

- 19.2 *[Information deleted in order to maintain the current constitutional conventions protecting the confidentiality of advice tendered by ministers and officials]*
 - 19.3 *[Information deleted in order to maintain the current constitutional conventions protecting the confidentiality of advice tendered by ministers and officials]*
 - 19.4 provide a focal point for interaction with venture capitalists and patent attorneys and other suppliers of commercialisation services
 - 19.5 enable better interactions with the researchers who are the sources of inventions and innovations across all public research organisations including, in particular, the smaller ones that have limited abilities in this area.
20. We recommend that implementation of the networking initiative proceed in two stages:
- 20.1 a request for proposals on ways to build the linkages and capabilities required for building a national network will be issued in September 2010
 - 20.2 learning from this set of initial projects will be assessed with the intention that more permanent organisational and funding arrangements be put in place by the second half of 2011/12.
21. This approach recognises the importance of taking the sector with us, and the need to leverage their expertise to help determine how government objectives can best be realised.

ACHIEVING EXCELLENCE IN TECHNOLOGY TRANSFER

- 22. \$13.76 Million has been set aside over four years for technology transfer initiatives in addition to the National Network of Commercialisation Centres. The Network will not be sufficient on its own to create the change required.
- 23. For the purposes of this paper, 'technology transfer' focuses on transferring knowledge and technology from public research organisations to firms and sectors and includes the narrower ideas of direct commercialisation, localised commercialisation and general knowledge transfer.
- 24. New Zealand needs excellence in each of these forms of technology transfer. Achieving this will require a range of initiatives aimed at strengthening existing organisations and capabilities, creating new organisational arrangements and building new capabilities. There is no single approach that can meet all these needs.

25. Technology transfer aims to promote co-ordination and collaboration between researchers, users and other parties within innovation systems. Knowledge transfer mechanisms enable the translation and communication of research findings in ways that assist its application by firms and industries. Local innovation networks connect the R&D capabilities and knowledge bases across a large number of institutions, and draw together the parties needed to make large complex projects happen.
26. With this in mind, we recommend that an action plan be brought to Ministers for approval as part of the September 2010 report back. This action plan will provide recommendations on steps for strengthening technology transfer for implementation in 2010–11, as summarised in Table 5. *[Information deleted in order to maintain the current constitutional conventions protecting the confidentiality of advice tendered by ministers and officials]*

TABLE 5. 2010–11 PLAN FOR WORK ON WAYS TO IMPROVE TECHNOLOGY TRANSFER

| | |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Addressing direct commercialisation | Start an initiative in the second half of 2010–11 designed to increase networking between existing commercialisation offices in public research organisations. |
| 2. Addressing commercialisation through local links | Provide Ministers with comprehensive advice on the ways in which government can enable more effective technology transfer in September 2010. This advice will: |
| 3. Addressing knowledge transfers | <ul style="list-style-type: none"> • cover the work areas in Section four of the Report (annex 1) • take account of work on ways in which CRIs will become more active in knowledge transfer • balance the ‘user pull’ and ‘science push’ dimensions of technology transfer • provide advice on funding, including use of the 2010 Budget contingency fund for further business R&D and technology transfer initiatives. |

27. We recommend that Ministers approve the set of principles in Table 6 to guide this work programme.

TABLE 6. PRINCIPLES GOVERNING THE DEVELOPMENT OF TECHNOLOGY TRANSFER INITIATIVES

| |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Objective: to accelerate, facilitate and coordinate the development of national infrastructures and capabilities that will support high levels of technology transfer from research organisations to firms and other users. |
| 2. Provision of Government support: The role of government should be, as far as possible, to facilitate the development of technology transfer processes, services, capabilities and organisational arrangements by others rather than to provide these elements as government services. |
| 3. Stakeholder engagement: Effective and targeted stakeholder engagement will underpin both |

the design and delivery of the technology transfer work programme.

PROFILING INITIATIVES IN BUDGET 2010

Single door entry for firms

28. The three new initiatives outlined in previous sections will augment existing Vote RS&T business R&D and technology transfer initiatives. These initiatives will be delivered to firms through a ‘single door’ entry process as follows:
- 28.1 the Foundation (and the operational unit that succeeds it) will set up a single point of entry for firms wishing to access new and existing business R&D and technology transfer initiatives
 - 28.2 client managers will recommend the most appropriate form of assistance to firms
 - 28.3 where appropriate, there will be joint client management between the Foundation and New Zealand Trade and Enterprise.
29. Ministers may want to brand this approach and the associated package of initiatives. Options, with pros and cons, are summarised in Table 7.

Table 7. Options for branding new and existing business R&D and technology transfer initiatives with pros and cons.

| <i>Brand</i> | <i>Pros</i> | <i>Cons</i> |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Innovation NZ | Fits with Government’s innovation focus. Chance to refresh and rebrand all activities Captures the breadth and scope beyond just research and development Opportunity to get rid of old product acronyms and give a clear new brand, which would be useful for Budget communications. Supports the ‘single door entry’ approach | Innovation is a vague concept used in a wide variety of other contexts. Successful innovation requires other conditions beyond R&D to come together, e.g. access to capital Similar names – Innovate NZ, Innovating NZ and Innovations NZ – are all in use Similar to previous Government’s Growth and Innovation Framework. |
| TechNZ | Recognised brand for government support for business R&D Saves costly rebranding Supports Budget communications by providing one-brand to tie all business R&D initiatives together Supports the ‘single door entry’ approach | Firms may not have a strong attachment to this brand. Firms may get confused when additional schemes are added under the same brand. TechNZ is strongly associated with the Foundation as a brand Three years ago TechNZ was simplified from approximately 14 schemes down to 2. This will be seen as product proliferation under the same brand. |

30. We do not recommend branding the single door entry process and the associated package of initiatives at this stage. We believe this step would be premature in

the light of the merger of the Ministry and the Foundation with the consequential need to re-examine a number of existing operational and funding arrangements and because of the need to carry out market research on alternative brand names. Decisions about branding can be developed in the next few months before the schemes are marketed and open for applications later in October of this year. It also offers the opportunity for the brand to be aligned with the name of the new agency.

Profiling initiatives in Budget 2010 communications

31. New and existing business R&D and technology transfer initiatives will be given a high profile in communications associated with Budget 2010. They could be aligned with other science and innovation initiatives and developments to give an overall communications 'package' made up of:
 - 31.1 an 'innovation (sub) package' covering the three initiatives in this briefing and a story about the way they will combine with existing initiatives to provide a step change in the way government approaches business R&D and technology transfer
 - 31.2 a 'science (sub) package' that covers Top Talent, RS&T Infrastructure (including High Performance Computing) and explains how the new funding structure (Vote RS&T) will enable sharper priority setting and better strategic steering of all science investments
 - 31.3 a 'system change (sub) package' that emphasises how implementation of CRI Taskforce recommendations and the MoRST-Foundation merger will help to make the science and innovation system into a true driver of economic growth.

FISCAL IMPLICATIONS

32. Provision has been made for funding the three new initiatives in Budget 2010 from the Prime Minister's Emerging Priorities Fund and reprioritisation of Vote RS&T. The total funding for the three new initiatives and a contingency fund for technology transfer is \$31.5 M in year 2010/11, \$55.6 M in 2011/12, \$72.5 M in 2012/13 and \$74.67 M in 2013/14 (Table 8, next page).
33. We will provide advice on funding for further technology transfer initiatives, including use of the Budget 2010 technology transfer contingency fund, in September 2010. The current fiscal provisions may not be enough to generate a significant improvement in the delivery of technology transfer service.
34. When experience has been obtained on the operation of commercialisation centres it will be *[Information deleted in order to maintain the current*

constitutional conventions protecting the confidentiality of advice tendered by ministers and officials]

Table 8. New and existing funding for business R&D and technology transfer initiatives.

| | \$m | \$m | \$m | \$m | \$m |
|-------------------------------------------------------------------------------------------------|--------------|---------------|---------------|---------------|---------------|
| | 2010/11 | 2011/12 | 2012/13 | 2013/14 | Four year |
| 2010 Budget initiatives to support a step up in business R&D and technology transfer | | | | | |
| Technology Development Grant | 22.50 | 45.00 | 60.00 | 62.00 | 189.50 |
| Technology Linkages Voucher | 5.00 | 5.00 | 5.00 | 5.00 | 20.00 |
| Network of commercialisation centres | 2.00 | 3.00 | 3.00 | 3.00 | 11.00 |
| Contingency for other business R&D transfer initiatives (to be agreed by Cabinet) | 2.00 | 2.57 | 4.52 | 4.67 | 13.76 |
| Sub-total | 31.50 | 55.57 | 72.52 | 74.67 | 234.26 |
| Existing funding for business R&D and technology transfer in Vote RS&T | | | | | |
| Technology New Zealand | 44.53 | 45.40 | 45.65 | 45.65 | 181.23 |
| Existing funding for pre seed development | 5.27 | 5.27 | 5.27 | 5.27 | 21.08 |
| R&D Facilitation and Promotion Service | 5.00 | 5.00 | 5.00 | 5.00 | 20.00 |
| Global Expert | 0.40 | 0.40 | 0 | 0 | 0.80 |
| Sub-total | 55.20 | 56.07 | 55.92 | 55.92 | 223.11 |
| Grand total | 86.70 | 111.64 | 128.44 | 130.59 | 457.37 |

35. Costs for the Foundation for running the three new initiatives should be met from its existing baselines within Research Contract Management. Operational costs in future years will need to be reviewed as part of the process of sorting out funding details arising out of the MoRST–Foundation merger. Advice on necessary adjustments will be provided during the development of Budget 2011.

TESTING WITH STAKEHOLDERS

36. Officials are currently testing the proposed innovation package with key business sector leaders, including Tin100 and Business New Zealand. Reactions so far have been positive.

FURTHER STEPS DURING 2010–11

37. An evaluation plan for the initiatives is under development. The efficiency and effectiveness of the package would be evaluated by the Ministry (and its successor) with support from the Ministry of Economic Development. The evaluation plan and any cost implications will be presented to Ministers in September 2010.

38. Key dates for business R&D and technology transfer work during the first part of 2010–11 will be:

38.1 Follow up report for Ministers on Technology Transfer Initiatives – September 2010

38.2 Request for Proposal for the Networks of Commercialisation Centres issued – September 2010

38.3 Launch of the technology development grant – October 2010

38.4 Launch of the technology transfer voucher – November 2010

RECOMMENDATIONS

39. We recommend that Ministers:

| | | |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| a. | Note that Cabinet delegated approval of the operational details for Technology Development Grants, Technology Transfer Vouchers and initiatives associated with centres for technology transfer to the Ministers of Research, Science and Technology, Economic Development, and Finance. | Yes / No |
| b. | Note that this briefing covers operational details for Technology Development Grants, Technology Transfer Vouchers and a scheme for developing National Network of Commercialisation Centres that are essential for Budget announcements and that responsible Ministers will receive advice on other operational details on a scheme by scheme basis. | Yes / No |
| c. | Agree that the Foundation for RS&T will have initial responsibility for operational implementation of the three schemes above (with this responsibility shifting to an operational unit in the merged MoRST–Foundation entity at some stage in the future). | Yes / No |
| d. | Agree to forward this briefing to the Prime Minister for his information. | Yes / No |

Technology Development Grants

| | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| e. | Agree to the principles governing the implementation of Technology Development Grants in Table 1 above. | Yes / No |
| f. | Note that specification of best settings for eligibility criteria for Technology Development Grants is affected by uncertainties in available data on levels of R&D expenditure by firms and by uncertainties about the way firms will respond to the new scheme under particular groupings of settings. | Yes / No |

| | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| g. | Agree to the operational details for Technology Development Grants in Table 2 above. | Yes / No |
| h. | Note that the settings in Table 2 should single out about 100 of New Zealand's larger R&D intensive firms as potential applicants for Technology Development Grants. | Yes / No |
| i. | Note that officials will review the efficacy of eligibility and other settings as implementation proceeds and provide advice on adjustments when the need become apparent. | Yes / No |
| j. | Note that steps are being taken to deal with implementation risks associated with World Trade Organisation rules, adequacy of uptake of funds during 2010/11 and gaming by firms to gain access to grants. | Yes / No |

Technology Transfer Vouchers

| | | |
|----|---------------------------------------------------------------------------------------------------------------|----------|
| k. | Agree to the principles governing the implementation of Technology Transfer Vouchers in Table 3 above. | Yes / No |
| l. | Agree to the operational settings for Technology Transfer Vouchers in Table 4 above. | Yes / No |

Developing a national network of commercialisation centres

| | | |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| m. | Agree to an initiative focussed on encouraging commercialisation offices to work together as nodes in a national network for commercialisation. | Yes / No |
| n. | Agree that the national network for commercialisation will be implemented in two stages: <ul style="list-style-type: none"> • a request for proposals on ways to build the linkages and capabilities required for building a national network will be issued in September 2010 • learning from this set of initial projects will be assessed with the intention that more permanent organisational and funding arrangements be put in place by the second half of 2011/12. | Yes / No |
| o. | Note that there is provision of \$2 M p.a. for funding this initiative. | Yes / No |

Achieving excellence in technology transfer

| | | |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| p. | Agree that New Zealand needs excellence in the three components of technology transfer from public research to business: (i) direct commercialisation to produce new firms, (ii) commercialisation through links into local innovation networks and firms, and (iii) transfer of know-how, expertise, knowledge and technologies to firms and sectors. | Yes / No |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|

| | | |
|----|-------------------------------------------------------------------------------------------------|----------|
| z. | Note that a plan for evaluating the new initiatives will be presented by September 2010. | Yes / No |
|----|-------------------------------------------------------------------------------------------------|----------|

Margaret Davison
Director Economic Development
Ministry of Research, Science and Technology

Wayne Mapp
Minister of Research, Science and Technology

Date: / /2010

Siobhan Routledge
Manager, Industry Policy
Ministry of Economic Development

Hon Gerry Brownlee
Minister for Economic Development

Date: / /2010

Kirsty Flannagan
Team Leader, Economic Performance Overview
& Coordination
For Secretary to the Treasury

Hon Bill English
Minister of Finance

Date: / /2010

Annex 1

Joint MoRST–MED–Treasury Report

Economic Growth Agenda: Operational Details for Business R&D and Technology Transfer Initiatives Officials' Report

CONTEXT

40. The Prime Minister identified science and innovation as key elements of the Government's Economic Growth Agenda for 2010 and future years in his February Statement to Parliament. He also singled out getting more firms using science, research and technology to deliver more valuable products and services and raise competitive exports as the central challenge within this grouping.
41. In February 2010, Cabinet agreed an integrated package of business R&D and technology transfer initiatives to complement and enhance existing support to firms (CAB min (10)8/1). Three elements were agreed to in principle:
 - 41.1 a new technology development grant
 - 41.2 a pilot for a technology transfer voucher
 - 41.3 a centre, or centres of excellence in technology transfer.
42. Responsibility for approving operational details for these initiatives was delegated to the Minister of Research, Science and Technology, Minister of Finance, and Minister for Economic Development. This report outlines operational details that need to be agreed to by Ministers before the new schemes are announced as part communications surrounding Budget 2010 in May. Responsible Ministers will receive advice on less critical operational details on a scheme by scheme basis in the lead-ups to implementation of each of them.

How the new initiatives contribute to the overall science and innovation agenda

43. Figure 1 (next page) illustrates where the initiatives covered in this report fit into the Government's overall approach to enhancing science and innovation.
44. The report has the following structure:
 - 44.1 sections one and two provide operational details for two initiatives aimed at increasing business R&D – Technology Development Grants, and Technology Transfer Vouchers
 - 44.2 section three provides operational details on an initiative to increase networking between the commercialisation offices of public research organisations

44.3 section four provides a framework for the thinking about technology transfer and sets up a work programme in this area.

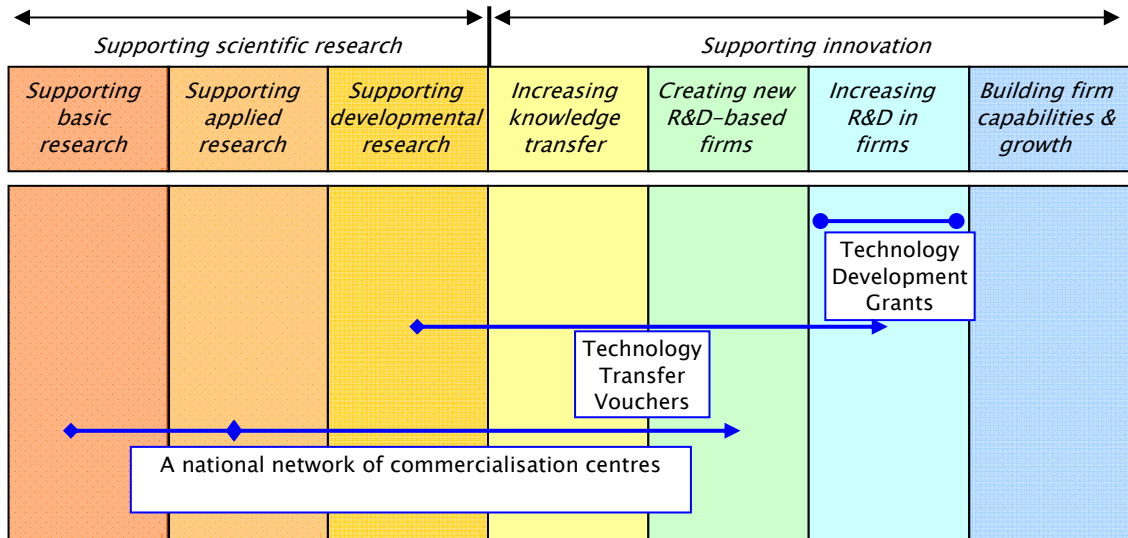


Figure 1. The new business R&D and technology transfer initiatives for Budget 2010. The elements listed across the page span from basic research supported by Vote Education and Vote RS&T on the left to the activities of NZTE on the right.

SECTION ONE: TECHNOLOGY DEVELOPMENT GRANTS

45. In February, Cabinet agreed in principle to fund ‘a new technology development grant that will support our high technology, R&D intensive firms to undertake broad programmes of research and development’.
46. Technology Development Grants will be aimed at larger firms with a strong track record in R&D. By selecting an appropriate R&D intensity level we will be targeting the high value manufacturing and services firms identified in the Economic Growth Agenda as important drivers of future economic growth in New Zealand.

Principles governing operation

47. Table 1 provides a set of principles governing the operation of the grant scheme for Ministers to approve. These principles will flow through to the Ministerial Tools Notice.
48. Table 1 contains a distinction between the eligibility rules that determine which firms can apply for Development Grants and the selection judgements that determine from amongst those that apply, which firms will get the grants. The selection process will be used to ensure that the firms with R&D programmes most likely to generate wider benefit to New Zealand gain access to the grant and that the total grants made in a year will fit within annual appropriations.

TABLE 1. TECHNOLOGY DEVELOPMENT GRANT PRINCIPLES FOR APPROVAL

| |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Primary objective: improve New Zealand’s economic performance by increasing the total level of the investment made by New Zealand’s high technology businesses in research and development.</p> |
| <p>2. Targeted at: larger R&D-intensive firms that (i) have proven track records in R&D and ambition to grow by increasing their levels of investment in R&D, (ii) have R&D management capabilities that justify a hands-off from government and firm-centred control over the ways in which grants are used, and (iii) have programmes of R&D that are likely to generate significant benefits for the wider economy through generation of new products, processes, systems and services.</p> |
| <p>3. Balancing fiscal risk against access: minimise fiscal risk by using a combination of rules and judgements to determine which firms access the grant.</p> |
| <p>4. Eligibility criteria: publish eligibility criteria (‘rules’) so that firms can determine whether or not they are likely to be able to access the grant.</p> |
| <p>5. Selection base on judgement: officials will select the firms that will receive grants from amongst eligible applicant firms using judgements.</p> |

Eligibility criteria (rules)

- 49. We recommend that the eligibility for Development Grants should be determined using two main criteria:
 - 49.1 **Research and development intensity (RDI).** RDI is the ratio of a firm’s R&D expenditure to its revenue, usually expressed as a percentage. Grants can be targeted at R&D-intensive firms (Table 1, principle 2) by making them available only to firms that have RDI greater than or equal to a threshold value averaged over the past three years.
 - 49.2 **Floor for revenue.** Development Grants can be directed towards larger firms that are more likely to generate benefits for the wider economy (principle 2) by, in addition, making them available to firms with annual revenues greater than or equal to a floor value. This will exclude the smaller R&D-intensive firms that do not yet have significant revenue flows.
- 50. Standard eligibility criteria for TechNZ grants will also apply to Technology Development Grants. Eligible firms:
 - 50.1 must be a person or entity that is in business and resident in New Zealand, and
 - 50.2 must not be an entity established under the Education Act 1989, Crown Research Institutes Act 1992, Local Government Act 2002 or the New Zealand Public Health and Disability Act 2000; or an entity that is 50% or more owned by one or more of those types of entities.

Capping grants

- 51. We recommend that grants be capped at an upper annual limit to avoid excessive subsidies to very large RDI-intensive firms and enable grants to be spread to a larger number of firms.
- 52. The way in which RDI threshold, the revenue floor and R&D expenditure cap operate together is illustrated schematically in Figure 2.

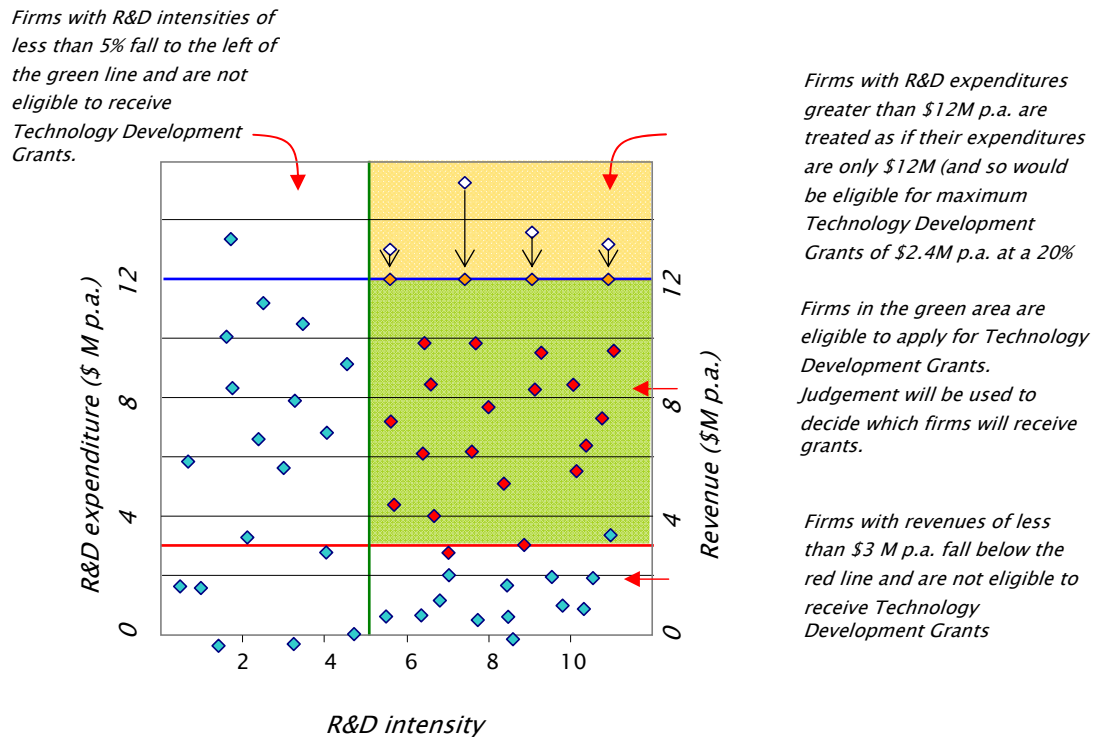


Figure 2. Schematic illustration of the way in which RDI threshold, a revenue-based floor and R&D expenditure cap work together to define the population of firms that are eligible to apply for Technology Development Grants.

Values for eligibility criteria, capping and grant rate

- 53. Interactions between possible values for RDI, revenue floor and R&D expenditure cap and possible grant rates (size of grant as a percentage of annual R&D expenditure) are illustrated in Table A (next page). Estimates of the number of eligible firms and of the potential maxima for grants are shown for each combination of parameters.
- 54. On the basis of this table, we recommend the following as settings for Technology Development Grants:
 - 54.1 a grant rate of 20% which provides a good incentive to increase R&D expenditure without being high enough to cannibalise business

engagement with major TechNZ grants where 50% grant rates apply for projects

- 54.2 a RDI threshold of 5% (averaged over the preceding three years) which filters out the top 13% of approximately 2400 R&D active firms and provides a target for the rest to aim at
- 54.3 a revenue floor of \$3M p.a. which selects out the larger R&D intensive firms
- 54.4 a cap of \$2.4M pa. (\$12M R&D expenditure times 20%) for the grant that is likely to affect fewer than five potential applicants while ensuring that these firms would not take an unduly high proportion of the available funding, particularly in the first few years of the scheme.

TABLE A. ESTIMATES OF THE NUMBERS OF FIRMS THAT WOULD BE ELIGIBLE FOR TECHNOLOGY DEVELOPMENT GRANTS AND THE TOTAL COST OF GRANTS IF ALL FIRMS APPLIED AND PRIOR TO ANY SELECTION. THE ESTIMATES ARE BASED ON SELF-REPORTED DATA FROM THE 2008 BUSINESS OPERATIONS SURVEY (STATISTICS NZ) AND ASSUME CAPS FOR GRANTS OF \$1.8 M P.A. (15% GRANT RATE), \$2.4 M P.A. (20% RATE) OR \$3 M P.A. (25% RATE).

| Threshold RDI | Revenue floor | Grant rate (% of annual R&D expenditure) | | | | | |
|---------------|-----------------|------------------------------------------|------------------------|--------------------------|------------------------|--------------------------|------------------------|
| | | 15% | | 20% | | 25% | |
| | | Number of eligible firms | Maximum cost of grants | Number of eligible firms | Maximum cost of grants | Number of eligible firms | Maximum cost of grants |
| RDI ≥ 3% | \$1 M/yr | 380 | \$51 M | 380 | \$68 M | 380 | \$85 M |
| | \$3 M/yr | 166 | \$45 M | 166 | \$60 M | 166 | \$75 M |
| RDI ≥ 5% | \$1 M/yr | 242 | \$46 M | 242 | \$62 M | 242 | \$77 M |
| | \$3 M/yr | 99 | \$41M | 99 | \$55 M | 99 | \$69 M |
| | \$10 M/yr | 46 | \$32 M | 46 | \$43 M | 46 | \$54 M |

55. The settings in paragraph 53 should single out the top 100 R&D intensive firms as potential applicants for Technology Development Grants. The estimated cost of providing grants to these firms is about \$55M and potential average value of these grants is around \$550,000. Because this total is close to the Budget 2010 provision for an appropriation of \$62M in 2013/14. However, caveats must be applied:

- 55.1 The data in Table A are uncertain because scaled up from the self-reported values for R&D expenditure from the sample of firms in the 2008 Business Operations Survey. The settings in paragraph 53 are therefore

simply the best available estimates based on available data for firm-based R&D.

- 55.2 We have no information on the likely uptake of grants or on the way demand for funds might grow over the next four years.
56. For these reasons, we consider it will be necessary to review the settings in the light of experience as the scheme is implemented and make adjustments if required.

Duration of grants and renewals

57. We recommend that:
- 57.1 recipient firms get Technology Development Grants for three years
- 57.2 there will be no automatic right of renewal – firms at the end of a three-year grant must re-apply and be re-assessed alongside other applicants.

Selection judgements

58. The Foundation and its successor will need to make judgements about the firms that will receive grants both to ensure quality and to ensure that total grants do not exceed appropriations. We recommend that judgement be based on assessments that firms:
- 58.1 are financially stable
- 58.2 have the necessary governance capabilities to manage R&D
- 58.3 have the R&D capabilities to deliver and exploit R&D
- 58.4 have R&D programmes that are likely to generate wider benefits for New Zealand.

Operational details for approval

59. Table 2 (next page) summarises the operational details for approval at this stage.
60. Other operational details are being finalised and will be brought to Ministers for approval in September 2010. These cover:
- 60.1 *Double dipping*: firms that receive TechNZ Project or any form of public-good funding for R&D will not be able to count this as part of their R&D expenditure.
- 60.2 *Eligible R&D and eligible R&D expenditure*. The rules to be used here will be based on international best practice. There will also be alignment to ensure that the rules used are complementary with the criteria that NZTE applies in the International Growth Services Fund.
- 60.3 *Payments*. Payments will be made in arrears on the basis of eligible R&D expenditure.

60.4 *Provisioning.* Processes are being developed for managing applications and payments of grants in ways that will ‘get the money out the door’ while minimising the risk to the Crown of exceeding appropriated funds and the potential misuse of funds by recipients.

TABLE 2. TECHNOLOGY DEVELOPMENT GRANT OPERATIONAL DETAILS FOR APPROVAL

| |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Grant rate: 20% of eligible R&D expenditure (paid in arrears).</p> |
| <p>2. Eligibility criteria: (i) Firms must have a R&D intensity (the ratio of R&D expenditure to revenue) of greater than or equal to 5%, (ii) revenues of greater than or equal to \$3 M p.a., (iii) Must be a person or entity that is in business and resident in New Zealand, and (iv) Must not be an entity established under the Education Act 1989, Crown Research Institutes Act 1992, Local Government Act 2002 or the New Zealand Public Health and Disability Act 2000; or an entity that is 50% or more owned by one or more of those types of entities.</p> |
| <p>3. Judgement criteria: final selection for grants will be based on judgement that firms (i) are financially stable, (ii) have the necessary governance capabilities to manage R&D, (iii) have the R&D capabilities to deliver and exploit R&D, and (iv) have R&D programmes that are likely to generate wider benefits for New Zealand.</p> |
| <p>4. Cap to grants: Grants to firms will be capped at a maximum of \$2.4 M p.a. (i.e. at a maximum claimable R&D expenditure of \$12 M p.a. times the grant rate of 20%).</p> |
| <p>5. Duration and renewal: Recipient firms will get grants for three years and will then have to re-apply alongside other applicants at the end of the grant period.</p> |

SECTION TWO: TECHNOLOGY TRANSFER VOUCHERS

Context

61. In February, Cabinet agreed in principle to pilot a voucher to enhance linkages between firms and research organisations and improve technology transfer from the latter to the former.
62. Existing TechNZ schemes provide support for R&D in firms and for R&D-related capability building. Technology Transfer Vouchers will fill a gap by enabling firms that are either not R&D active or that have particular R&D problems to solve to access the research services and expertise that accredited publicly funded research organisations can provide. This will create a new channel for technology transfer from research organisations to firms.

Principles

63. Table 3 gives principles governing operation of the pilot for Technology Transfer Vouchers for Ministers to approve. These principles will flow through to the Ministerial Tools Notice.

Table 3. Principles governing operation of Technology Transfer Vouchers

| |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Primary objective: enable firms to solve R&D problems or access R&D expertise and knowledge by co-funding purchases of research services and expertise from an accredited publicly-funded research organisation.</p> |
| <p>2. Targeted at: firms that (i) lack the specific in house research capability to carry out a piece of research, (ii) have well defined problems or ideas that will benefit from the R&D expertise and services in a research organisation, and (iii) have, or have the ability to develop, the organisational capabilities required to manage R&D relationships with research organisations and to apply the R&D results in their businesses.</p> |
| <p>3. Control: firms will control relationships and with R&D providers and negotiate all details of contracts once they receive vouchers.</p> |
| <p>4. R&D providers: vouchers will be used to purchase R&D services from accredited publicly funded research organisations.</p> |

Operational details

64. The voucher will be awarded to firms and will enable them to solve R&D problems or access R&D expertise and knowledge by co-funding purchases of research services and expertise from an accredited publicly funded research organisation.
65. A firm (or a syndicate of firms) that has a particular research problem that it thinks could be solved by a research organisation will apply to the Foundation (or the newly merged MoRST-Foundation entity) for a voucher of a particular value. If quality criteria are met and the firm can provide matched co-funding, it will be issued with a voucher with an agreed face value. The firm will then negotiate a contract for supply of the required R&D services or expertise with a targeted research organisation.
66. The following operational details need to be approved by Ministers:

TABLE 4. TECHNOLOGY TRANSFER VOUCHER OPERATIONAL DETAILS FOR APPROVAL

| |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. Voucher size: vouchers will have face values from \$100,000 to \$1 M (it is expected that most vouchers will be in the range \$100,000-\$200,000).</p> |
| <p>2. Co-funding: firms will be required to co-fund 50% of the R&D services purchased from research organisations.</p> |

SECTION THREE: DEVELOPING A NATIONAL NETWORK OF COMMERCIALISATION CENTRES

67. Currently New Zealand has commercialisation and technology transfer offices of one sort or another in all CRIs and universities and in many research-active Polytechnics. With a few notable exceptions, these offices lack the scale of activity, breadth of contacts and depth in capabilities to be effective in direct

commercialisation. These deficiencies could be overcome by encouraging commercialisation offices to work together as nodes in a national network for commercialisation.

68. The objectives of this collaboration would be to:
 - 68.1 build scale and unique expertise in particular nodes
 - 68.2 *[Information deleted in order to maintain the current constitutional conventions protecting the confidentiality of advice tendered by ministers and officials]*
 - 68.3 *[Information deleted in order to maintain the current constitutional conventions protecting the confidentiality of advice tendered by ministers and officials]*
 - 68.4 provide a focal point for interactions with venture capitalists and patent attorneys and other suppliers of commercialisation services
 - 68.5 enable better interactions with the researchers who are the sources of inventions and innovations across all public research organisations including, in particular, the smaller ones that have limited abilities in this area.
69. Collaborations that are producing some of these benefits already exist between various commercialisation offices (e.g. Unicom, a commercialisation consortium led by Waikato University, involves Canterbury, Lincoln and AUT Universities and AgResearch). The networking initiative we are proposing here will provide incentives to increase this type of collaboration. It will also start to give effect to the 'hub and spoke' and 'centre of excellence in technology transfer' ideas promoted by Sir Peter Gluckman.
70. In order to develop such a network it is vital to take the sector with us and leverage their expertise to help determine how government objectives could be implemented. We have therefore, recommend that implementation of the networking initiative proceed in two stages:
 - 70.1 a request for proposals on ways to build the linkages and capabilities required for building a national network will be issued
 - 70.2 learning from this set of initial projects will be assessed with the intention that more permanent organisational and funding arrangements be put in place.

SECTION FOUR: ACHIEVING EXCELLENCE IN TECHNOLOGY TRANSFER

71. Figure 3 clarifies the interpretation of technology transfer. For the purposes of this paper, ‘technology transfer’ focuses on transfers of knowledge and technology from public research organisations to firms and sectors and includes the narrower ideas of direct commercialisation and general knowledge transfer.

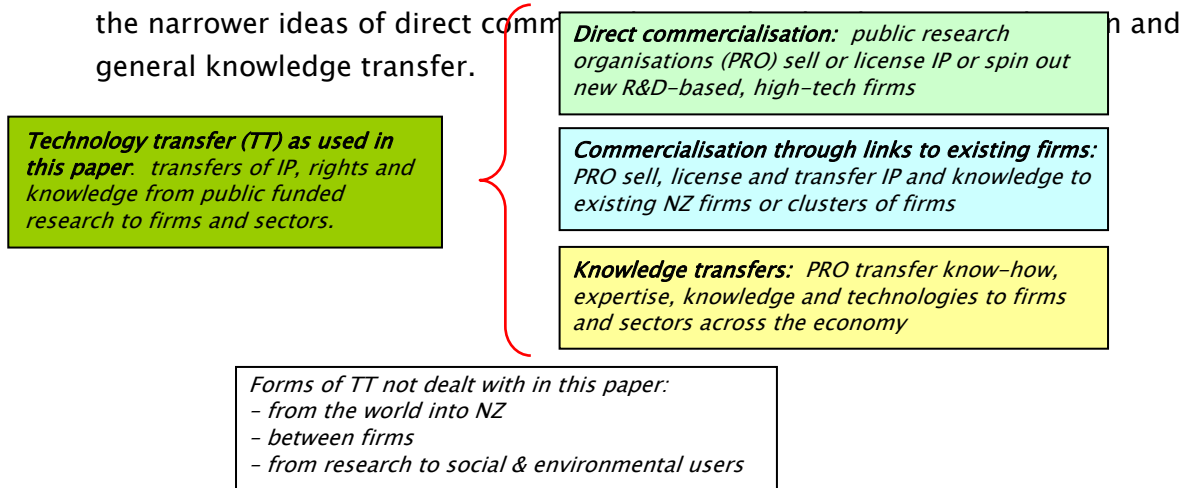


Figure 3. The components of technology transfer dealt with in this report.

72. New Zealand needs excellence in each of these forms of technology transfer on the right-hand side of Figure 3. Achieving this will require a range of initiatives aimed at strengthening of existing organisations and capabilities, creating new organisational arrangements and building new capabilities. There is no single approach that can meet all these needs.
73. Ministers should note that Technology Transfer Vouchers provide one mechanism for improving the knowledge transfer component of Figure 3. This is important to achieving excellence in technology transfer by developing an integrated approach to the transfer of knowledge between PROs and users. Local innovation networks are also important here.
74. Knowledge transfer activities are important in extracting the benefits from publicly funded R&D. They support the translation and communication of research findings in ways that enables its commercial application by firms, industries and other users. This is a substantial task, given cultural differences, diversity in the size and absorptive capacity of firms, and the need to utilise the innovation adoption processes in industries.
75. There is a range of mechanisms for enhancing knowledge transfer:
- 75.1 Interactions between researchers and users on problems and opportunities that warrant research
 - 75.2 Knowledge transfer to many users through conferences, seminars, field days

- 75.3 Through researchers moving between firms and PROs
 - 75.4 Public-private research partnerships
 - 75.5 The use of science parks
 - 75.6 Intermediary organisations that improve translation/coordination with industry.
76. Local area networks connect the R&D capabilities and knowledge bases that are distributed across a large number of institutions and geographic locations. They draw together the parties with the expertise needed to make large complex projects happen. Large numbers of formal and informal networks already exist between researchers working in related fields and, to a lesser extent, in commercial engagements between individual researchers and firms. A role for government is more likely in the initial stages of establishment, where government agencies may play a facilitating role by assisting the parties to come together. If they are creating value, their running costs should be largely met by those that benefit.
77. With all this in mind, we recommend that Ministers agree to the plan of action for 2010-11 summarised in Table 5.

TABLE 5. 2010-11 PLAN FOR WORK ON WAYS TO IMPROVE TECHNOLOGY TRANSFER

| | |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Addressing direct commercialisation | Start an initiative in the second half of 2010-11 designed to increase networking between existing commercialisation offices in public research organisations (described in section four). |
| 2. Addressing commercialisation through local links | Provide Ministers with comprehensive advice on the ways in which government can enable more effective technology transfer in September 2010. This advice will: <ul style="list-style-type: none"> • cover the work areas outlined in paragraphs 22-23 • take account of work on ways in which CRIs will become more active in knowledge transfer • balance the 'user pull' and 'science push' dimensions of technology transfer • provide advice on funding, including use of the 2010 Budget contingency fund for further business R&D and technology transfer initiatives. |
| 3. Addressing knowledge transfers | |

78. We recommend that Ministers approve the set of principles in Table 6 to guide this work programme.

TABLE 6. PRINCIPLES GOVERNING THE DEVELOPMENT OF TECHNOLOGY TRANSFER INITIATIVES

| |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Objective: to accelerate, facilitate and coordinate the development of national infrastructures and capabilities that will support high levels of technology transfer from research organisations to firms and other users. |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

2. *Provision of Government support:* The role of government should be, as far as possible, to facilitate the development of technology transfer processes, services, capabilities and organisational arrangements by others rather than to provide these elements as government services.

3. *Stakeholder engagement:* Effective and targeted stakeholder engagement will underpin both the design and delivery of the technology transfer work programme