By email: science@pc.gov.au

21 December 2006

Public Support for Science and Innovation
Productivity Commission
PO Box 80, Belconnen, ACT 2616

Dear Commissioners,

Re: Draft Report by the Productivity Commission on Public Support for Science and Innovation

Introductory Comments

GlaxoSmithKline Australia Pty Ltd (GSKA) welcomes the opportunity to respond to the Draft Report ('the Report') released by the Productivity Commission outlining their findings in relation to the economic, social and environmental returns on public support for science and innovation in Australia. GSKA is highly appreciative of the opportunity to provide both written and oral input as part of this inquiry and applauds the Commission for the breadth of issues covered in the recently released Report.

The company would like to make a few introductory comments before providing more comprehensive comments on a selection of the draft findings of particular interest to GSKA.

Firstly, GSKA is particularly pleased with the key findings of the report namely that "Australia is well served by its public funding support… [and] that there are no grounds for a radical overhaul in total public funding or in the allocation of that funding". For research intensive firms such as GSKA, well-targeted public investment in high quality discovery R&D is crucial. The company supports the contention that the current level of public support should not be eroded and does not see a need for radical change to the current system that would carry the potential to undermine the ability of institutions and organisations to make meaningful strategic choices in this area.

Secondly, GSKA notes that the Commission's Report focuses largely on R&D rather than reviewing the full gamut of activity that can be classed as innovation. As the Commission is probably aware, the Australian Bureau of Statistics has found that R&D makes up only thirty per cent of business expenditure on innovation. Hence, activity other than R&D is possibly more important when assessing our innovation capabilities. This omission may in part be due to the high proportion of submissions to the Commission from the public research sector in comparison to the relatively few received from the private sector. The company views it as disappointing that industry was not engaged to a greater extent with the present inquiry and believes industry has missed an important opportunity to put forward their ideas regarding the direction reform of the innovation system.

Thirdly, the company is of the opinion that overall the Report gives insufficient weight to the net economic benefits offered to the community at large through the effective commercialisation of domestic innovations. Whilst environmental and other social impacts clearly carry economic value, it appears the Report has put excessive weight on the importance of these impacts for the formation of public policy at the expense of factors such

as harnessing the commercial potential of research and enhancing collaboration between industry and academia.

Fourthly, the case has been well made for providing support to firms when there are identified market failures. The draft report at times questions the value of such support. For example, the case for providing support to small and medium sized companies to access finance in order to grow has been well made. This is particularly important for the biopharmaceutical value chain in Australia where many small biotechnology firms, including those spun out of universities, would not have access to start up finance without some public support. It would have been good to see some assessment of the gaps in both skills and sources of finance in Australia in relation to the pre seed or early stage venture capital market as these are significant barriers to innovation in this sector within Australia.

Lastly, the Report has failed to consider the threat that globalisation of research networks presents to Australia's innovative capacity. As is widely acknowledged, the economic expansion in countries such as India and China is rapidly changing the way research and development (R&D) activities are being carried out globally, with an emphasis now being placed on maximising the research opportunities present in various low-cost destinations around the world. This raises wider issues such as the need for industry-specific public policy to encourage continued investment within Australia and the need for new policies to develop a high-technology science sector that can compete in terms of quality with the rest of the world.

With these overall comments in mind, GSKA would like to respond more specifically the following Draft Findings contained in the Report:

- Draft Finding 6.1 – Commercialisation and utilisation
- Draft Finding 8.1 – Mix of public support for science and innovation in Australia
- Draft Finding 9.1 – R&D Tax Concession
- Draft Finding 9.2 – Commercial Ready
- Draft Findings 9.4 & 9.5 – CRC Program

Drafting Finding 6.1 – Commercialisation and utilisation

Decision making within universities in relation to the transfer, diffusion and utilisation of research outputs should not focus unduly on an objective of commercialisation to the detriment of maximising the social return from the public's investment.

GSKA supports this finding in so far as public sector scientists should have the freedom to undertake research and not be overburdened by thinking about its commercial application. Scientists should be unencumbered to do what they do best: high quality discovery research. However, the company asserts that public research institutions do have an obligation to government, and ultimately taxpayers, to seek a return on investments when this is appropriate. Commercialisation pathways therefore warrant consideration and government attention.

A large part of the rationale behind this finding is an assumption that commercialisation limits the degree of "shared-knowledge" that can be utilised for the benefit of the sector at large. For example, joint technological advances in the wine industry have been useful in strengthening the sector as a whole rather than one particular manufacturer. However, it

needs to be appreciated that investment in pharmaceutical innovation operates in a vastly different paradigm, in that the incentive to invest is directly linked with exclusivity of rights and the strength of the intellectual property associated with the particular innovation. A failure on the part of universities to adequately take into account the potential of commercialisation into the future will continue to bring about the leakage of Australian discoveries overseas and fail to capture the associated spillover benefits domestically.

Indeed, GSKA would challenge the Commission's contention that Australia is more successful at commercialisation than is generally portrayed. Although such things are difficult to assess accurately, the company believes that the Commission has tended to paint all sectors with the same brush and, in so doing, has allowed the successes in sectors such as ICT, mining and agriculture to overshadow relative shortcomings in the commercialisation of medical research. Despite being acknowledged internationally as a knowledge-intensive country with a strong research-base, few developments in pharmaceutical innovation have been associated with work undertaken domestically. The work carried out by Prof Ian Frazer on a vaccine for cervical cancer is a notable exception, however, the notoriety of this medical advance only serves to confirm that these success such stories remain the exception rather than the norm.

The transfer, diffusion and utilisation of knowledge and technology by universities are indeed areas in need of good public policy. However, GSKA contends that such policy should be aimed at encouraging collaborative links between these research institutions and industry, removing the gaps within the pharmaceutical value chain within Australia that impede the full utilisation of local research, and increasing and size and scale of research projects currently undertaken within this country in such a way that is more likely to bring about positive returns on investment.

Lastly, GSKA has particular concerns regarding the content contained in Chapter 6.6 of the Report. In this chapter the Commission does not support further public support of business commercialisation. However, the Commission makes a somewhat artificial distinction between business commercialisation and business R&D. This section needs significant clarification for in the pharmaceutical industry, for example, those processes cannot be separated. What is referred to as the "commercialisation" of a particular innovation manifests itself as increasingly complex and expensive R&D operations. Therefore, the Commission needs to more clearly state what types of activity do and do not warrant further public support. Whilst GSKA does not advocate simply shifting risk from the company to the tax payer, it believes there should be an acknowledgement that well targeted and designed public policy can assist business to build their collaborative network and expand operations in such a way that will increase the chance of success and maximise the social returns and spillover benefits available from such an investment of public funds.

Drafting Finding 8.1 – Mix of Public Support for Science and Innovation

There is no evidence that the overall quantum or mix of public support for science and innovation in Australia is currently inappropriate for Australia's needs and aspirations. However, there are concerns if the trend towards publicly funding applied science and innovation, at the expense of basic and strategic science and innovation, goes too far.

GSKA highly values the role basic and strategic science has within the research community. Indeed, the company is involved in a number of early-stage research projects for which it feels it can add knowledge, technology or financial support to further the work being done in those particular fields. For example, in a Perth laboratory of the Australian Neuromuscular

Research Institute at the QE2 Hospital, GSKA is working with local researchers to compare genetic samples of health and disease-state individuals in an attempt to find genes that are associated with the cause of or susceptibility to major diseases.

As a result, GSKA is highly supportive of public funds being made available for strong basic research, however, the company would submit that no clear evidence exists supporting the claim of an emerging trend towards greater funding being invested in applied scientific research. Significant public funding is currently made available each year to basic research through block grants to universities and the CSIRO, various organisations such as the NHMRC and the ARC, and private research organisations. In addition, other initiatives such as the additional $905 million invested in health and medical research in the 2006-07 Federal Budget also serve to boost funding in this area. Whilst GSKA is highly supportive of this additional funding, it would like to highlight that the Science and Innovation Budget Tables for 2006-07 still demonstrate a significant weighting towards basic research support by government. This has been extremely effective at building up a strong basic research network within Australia, but it requires sufficient mechanisms to be in place to ensure the resultant research outputs are able to be developed in such a way that maximises the returns from this investment through the capture of any potential spillover benefits.

The tight venture capital market and often low investment in Australia by international head offices further emphasise the need for expanding public support through targeted programs designed to capitalise on the current strong research base within Australia. Indeed, programs with such a focus (eg. Pharmaceuticals Partnerships Program (P3) and its predecessor the Pharmaceutical Industry Investment Program [PIIP] and the CRC program) have been shown to offer significant net benefits to the taxpayer. Consequently, GSKA strongly advocates that public policy should continue to seek to enhance industry engagement with the research sector through the utilisation of programs designed to encourage large-scale collaborative efforts.

This is likely to require public policy to move away from the trend towards encouraging lower levels of investment in a larger variety of programs, to instead focussing on better coordination between the existing programs and investing more significant funds in targeted schemes that will serve to more effectively widen the engagement between industry and the wider research community so as to ensure any associated spillover benefits are captured within Australia. In this respect, GSKA is highly supportive of the Commission's belief that the diversity of programs currently available is likely to be resulting in costs due to coordination problems. The company strongly believes that better coordination can be achieved between sources of public support for innovative research both at and between the various levels of government and that initiatives that achieve that end would greatly enhance the public returns brought about from such investment.

Drafting Finding 9.1 – R&D Tax Concession

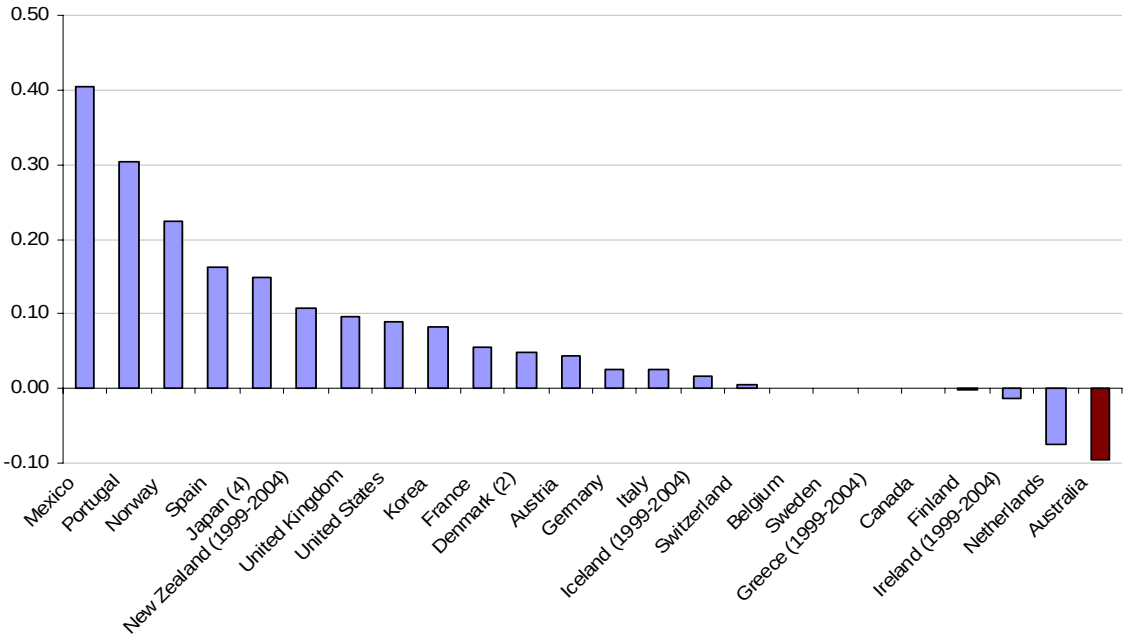
The R&D tax concession could be improved by:

- *shifting the orientation of the concession towards its 175 per cent incremental component;*
- *relaxing the beneficial ownership requirement and the expenditure and turnover thresholds for the tax offset for the incremental scheme alone;*
- *changing the base on which the incremental subsidy is paid to a firm's ratio of R&D to sales at a given, fixed date; and*
- *allowing access to the incremental scheme to start-up firms.*

In principle, GSKA supports the Commission's quest to make the Concession reward additional R&D investment over and above what a firm would normally undertake as part of its commercial operations. However, as GSKA contended in its initial submission, the company believes it is important to ensure Australia remains internationally competitive in terms of its tax concessions, and our competitiveness has been slipping over recent years.

GSKA's initial submission drew attention to the fact that Australia is one of only three OECD nations that has been decreasing tax subsidies for large firms over the past decade, whilst 16 OECD nations have been increasing tax incentives and five have remained stable (see Figure below). This trend suggests that the tax environment within Australia may not be the most favourable for stimulating science and innovation.

Change in rate of tax subsidies for large firms for US$1 of R&D, 1995-2004



Source: OECD Science, Technology and Industry Scoreboard 2005.

This trend could in part be addressed by re-assessing the beneficial ownership requirement restricting access to the concession for Australian-subsidiaries of multi-national corporations. GSKA recommends that the PC take up the recommendation of the House of Representatives report released on 19 June 2006 by the Standing Committee on *Science and Innovation* which also recommended that the Government "assess the revenue implications and potential economic returns of extending R&D tax concessions eligibility to include Australian-based subsidiaries of multinational companies".

GSKA is firmly of the belief that this reform would be a significant step forward in encouraging additional investment by multi-national corporations in the R&D activities of their Australian-based subsidiaries and would further help to widen the engagement of industry with the research community at large. However, whilst supporting this sort of reform and encouraging wider consultation on this issues, GSKA would argue that such a reform would still not remove the need for an industry program specifically targeted towards the pharmaceutical industry, as recommended by the Productivity Commission in their evaluation of PIIP and consequently acknowledged by the Industry Department through their introduction of the Pharmaceuticals Partnerships Program (P3).

Drafting Finding 9.2 – Commercial Ready

In principle, competitive grant programs such as Commercial Ready provide greater scope to target socially valuable R&D projects that would otherwise not proceed. However, this can be compromised by the current focus on commercialisation objectives.

This finding is interesting given the objectives of the Commercial Ready program. The Program was established to assist firms in early-stage commercialisation activities, including R&D with a commercial potential. It is one of the few programs that exists to support innovation activity in its broadest sense, such as providing support for proof-of-concept activities. As discussed above, most innovation activity undertaken by Australian firms is not R&D activity, and it is just as important that this activity continues.

Drafting Findings 9.4 & 9.5 – CRC Program

The CRC program could be improved in several ways:

- *the original objectives of the program — the translation of research outputs into economic, social and environmental benefits — should be reinstated. This is likely to produce better outcomes than focusing public support on the commercialisation of industrial research alone; and*
- *the share of public funding should be aligned to the level of social benefits provided by each CRC, thereby reducing some of the large rates of subsidy to business collaborators.*

A complement to the CRC program with broader collaboration goals could be developed which supports smaller, shorter and more flexible collaborative arrangements between groups of firms either independently or in conjunction with universities and public sector research agencies.

The Draft report provides much discussion about the CRC program and given it is a large R&D program this is not surprising. It was obviously the focus of many submissions from public research institutions that have strongly opposed recent changes.

Whilst GSKA sees some merit in this finding, we do not believe changing the objective is the answer. The very nature of the CRC program is that it is to be collaborative. With this in view, GSKA submits that firm participation in a collaborative venture (especially for firms in R&D intensive industries dependent upon intellectual property rights) is therefore contingent upon a commercial outcome, therefore a commercial objective is sensible.

However, there is no doubt that there are inherent tensions within the program. For example, the seven year timeline is often too long for SME participation, yet the government continues to seek greater SME involvement. On the other hand, seven years is often too short a timeline for particular forms of R&D, such as pharmaceutical R&D.

For this reason, GSKA supports Draft Finding 9.5 that a program be implemented to assist SMEs in collaborating with the research sector if such a program does not already exist. However, the ARC linkage program could very well fill this gap. Alternatively, existing collaborative programs could be reformed to fill this gap in government support.

On this point, GSKA would like to further reiterate comments made in GSKA's original submission about collaborative programs. Most of the collaborative programs currently in operation do not meet the criteria necessary to bring about maximum value for the Australian taxpayer such as:

- Being of a size and scale to attract critical mass of researchers and industry funding;
- Being of a size and scale to attract international attention - this will serve to generate additional investment and attraction of skills;
- Encouraging the creation of research centres with capabilities that are truly globally competitive;
- Conducting quality research that is world class and novel;
- Having funding that is long term i.e. ten years;
- Being commercially focussed and industry driven;
- Having few industry partners to ensure exclusive access to research results;
- Being sensitive to commercial partner needs regarding rights and ownership to the outcomes from the research (mainly IP); and
- Having application and reporting requirements which are not overly complex or disproportionate to the value of the program.

The Australian Stem Cell Centre is a good example which of a project which is satisfying some of the above criteria by creating some critical mass in a defined area of medical research. Therefore, GSKA urges the Commission to recommend a review of the suite of collaborative research programs to ensure they are meeting both the needs of the research base and industry.

Final Remarks

Overall, GSKA welcomes the interest in science and innovation generated through this inquiry of the Commission. The company appreciates the breadth and complexity inherent in this area of public policy and applauds the level of debate that has occurred this far into the process. Whilst expressing some concerns regarding some of the Draft Findings released in the Report to this point, it is nevertheless hoped that the final Report by the Commission will serve to stimulate well-informed debate on these issues and will move public policy in a positive direction that will return significant benefits back to the Australian people.

With regards

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GlaxoSmithKline Australia Pty Ltd