

## **Consultation on STFC's Programmatic Review 2007-8**

This document presents the outputs of STFC's programmatic review of projects and facilities, invites consultation, and describes the next steps.

### *Background*

The Programmatic Review is a biennial review of the projects and facilities in STFC's research programme. It is intended to inform how the programme should evolve and the Council's investment decisions moving forward. It consists of an assessment of the strategic importance, impact, competitiveness, level of UK involvement, scientific user base, science output, outreach, training and industrial impact. The review was carried out by the Science Committees for Particle Physics, Astronomy and Nuclear Physics (PPAN) and for the Physical and Life Sciences (PALS), using material provided by project and facility managers and by the STFC office. In the case of PPAN it also built on the work previously undertaken by the PPARC Science Committee and its advisory panels. PALS also undertook additional bibliometric research of the facilities' productivity. The process was overseen by the Science Board. The review was a significant, challenging task and we thank the committees and everyone involved for their dedication and diligence. The committee memberships and terms of reference can be found at:

<http://www.scitech.ac.uk/About/Strat/Council/AdCom/SciBrd/contents.aspx>

The current review was initiated in late summer 2007 as a planned step in forming STFC's science and technology strategy. Material was collected during the autumn, and PPAN and PALS made initial assessments in December. These were presented and discussed by Science Board. PPAN and PALS then made final assessments in January 2008, which were approved at Science Board and presented to Council. Council agreed the contents of the present consultation at its meeting on February 28<sup>th</sup> 2008.

It is important to emphasise that PPAN and PALS did not identify any poor quality projects in their rankings. All of the projects and facilities reviewed were doing, or would do, good science, and all were of sufficient quality to be funded. Inevitably there are more good ideas than we have resources to meet. This exercise is therefore essentially about re-prioritisation and it is the case that we will have to cease to support some projects to ensure that we are investing in the best, including new opportunities.

Projects have been grouped into priority categories based on the assessments made by PPAN and PALS against the criteria listed. Obviously those in the lower categories are those most at risk. However, final funding decisions await the results of the consultation. In constructing a programme, strategic considerations will also be taken into account. Some cases where Council has identified that this is likely are noted later.

Projects that have not yet been considered for approval were not reviewed. Some of the reviewed projects are relevant only insofar as they set priorities for rolling grant

funding – no project funds are at stake. Projects in each group are listed alphabetically.

### *Prioritisation of PPAN Projects*

#### High Priority

- Advanced LIGO
- ATLAS
- CMS
- GEO 600
- JCMT and SCUBA-2
- Jefferson Lab
- KMOS
- Neutron EDM
- RISING/GSI
- SPIRAL
- SWIFT
- Venus Express

#### Medium-high Priority

- CLOVER
- DES
- ELT R&D
- ExoMars
- GAIA
- GridPP
- Herschel
- Inverse Square Law tests
- JWST MIRI
- LHC upgrades - ATLAS
- LISA and LISA Pathfinder
- Liverpool Telescope
- Planck
- Roadmap to XEUS
- SKA R&D
- Solar Orbiter
- SuperNEMO
- T2K
- Zeplin III

#### Medium-lower priority

- ALMA Regional Centre
- Auger
- Cassini
- CDF
- Cluster

- D-Zero
- Electron EDM
- ING
- LHCb
- ISOLDE
- MICE exploitation
- SOHO
- STEREO
- UKSSDC
- XMM Newton

#### Lower priority

- ALICE and STAR
- Astrogrid
- BaBar
- Bepi-Colombo
- BiSON
- CALICE
- CASU/WFAU (excluding the ESO commitment)
- FP420
- Gemini
- Ground-based Solar Terrestrial Physics facilities
- HERMES
- HESS
- Hinode
- High Performance Computing Operations
- INTEGRAL
- LCABD
- LCFI
- Legnaro
- Louvain-La-Neuve
- MAMI
- Maxlab
- MERLIN/e-MERLIN and JIVE
- MINOS
- UKIRT
- VERITAS

As an approximate guideline, the funding that we anticipate being available for programmes in the PPAN area could cover the High, Medium-High, and a significant part of the Medium-Lower categories.

#### *Prioritisation of PALS projects and facilities*

#### High priority

- Diamond operations and commissioning
- ESRF upgrades (PALS notes that these must map on to UK priorities)
- Facility Development grants

- ISIS Target Station 2 commissioning
- LCLS: a contribution to the Stanford linac light source
- NLS - developing the Science case for the New Light Source
- VULCAN upgrade

#### Medium priority

- CLF high power laser programme
- Diamond Phase II and III
- ISIS operations (PALS recommends reducing by one period per year if necessary)
- ISIS TS2 Phase II
- NLS - developing the accelerator design for the New Light Source

#### Lower priority

- ISIS facility enhancements to Target station 1
- ILL upgrades
- ERLP/ALICE operations (PALS recommended not to pursue a photon science programme on ERLP/ALICE, but is open to using it as an accelerator R&D facility if funds permit)
- CLF lasers for science programme (prioritised on the basis of its strategic fit to STFC, not on the basis of its science quality)

In the PALS areas, the priorities assigned will largely impact the level of funding that is available for the facilities listed.

#### *Consultation*

Starting now and ending on 21 March 2008 comments are invited from the research communities, both on the programmatic review outcomes listed above and on how they should be implemented to maximise science. (STFC staff and non-UK researchers are also welcome to comment).

We will accept all comments, but the most useful would be those that

- Draw our attention to additional important factors that we may have overlooked
- Suggest imaginative ways in which we could maximise the science output in constructing a programme in each subject area, while remaining within a constrained budget.

The comments will be reviewed, distilled and synthesised by panels of active researchers in each subject area: particle physics, nuclear physics, astro-particle physics, ground-based astronomy, solar physics and solar terrestrial physics, space science and exploration, laser facilities, synchrotrons and free-electron light sources, neutron facilities, and theory, computation and data handling. These panels will feed back to SB, PPAN, PALS and the Executive on programme priorities, and give strategic advice to help the Executive optimize the implementation of the outcome of the review within the financial envelope available. The STFC will nominate a chair for each panel and they will organise the exercise within each area. Details of how each panel will organise itself will be announced during the consultation.

Please send us your comments using the online form available at <http://www.stfc.ac.uk/STFCConsultation/comment.aspx>.

### *Constructing a programme*

The investment programme will be put together after considering the results of the consultation. It will also involve considering the strategic importance of projects in the international context and as part of a pathway to future development. At its meeting on February 27<sup>th</sup>, Council agreed that it finds such considerations important in the following projects:

- *Bepi-Colombo*: The provision of an instrument for Bepi-Colombo is the subject of an MOU with ESA and there is no credible option for withdrawal.
- *Gemini*: The UK remains a partner in Gemini until at least 2012, but the intention is to sell 50% of our time on the two telescopes from 2009. Options remain to contribute to the Aspen instrumentation programme. There is a need for a strategic review of future provision for ground-based astronomy beyond 2012, balancing the access to ESO (which in the future will include GTC in the northern hemisphere), Gemini, Subaru, JCMT and other ground-based astronomy facilities within the context of a capped overall budget.
- *Merlin/e-Merlin*: The current planning assumption is that support be withdrawn from 1 April 2009. However, e-Merlin has been delayed substantially from the original start-date of 2006 that was assumed when PPARC made a commitment to support its operations, and early 2009 is now about the time when e-Merlin will be starting surveys. The cost of construction of e-Merlin is being borne by NWDA. STFC plans to discuss the situation with NWDA and the University of Manchester, mindful of the potential strategic link with SKA.
- *Solar Physics*: The UK has invested substantially in instrumentation for both Stereo and Hinode. Both are early in their lifetime and the programmatic review input occurred before there was any published science output, making it difficult to assess their true impact. Current post-launch support for both missions extends for a further year or more, and involves commitments to international partners that will be honoured. The case for further support will be reviewed at that time.
- *UKIRT*: We plan to move UKIRT to 100% survey mode as soon as possible starting 1 April 2008. Efforts are in hand to find international partners to share the cost of running the telescope in return for access to UKIDSS. Should these fail to materialise, immediate closure would have to be seriously considered

Strategic considerations also apply in the project to develop a proposal for the New Light Source and in the area of accelerator R&D. STFC is working with the Cockcroft and Adams institutes and the university groups to construct an accelerator programme that maintains core skills and meets strategic goals in this area. Operation of

ERLP/ALICE as an accelerator test facility forms part of this programme, but the funding available must be tensioned against other calls on the accelerator budget.

Thank you for your input and your help.

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