



NCMAS

NCMAS 2023 Call for Applications Information for Applicants

Last Modified 17 August 2022

Key Dates

15 August 2022	Applications open
19 September 2022	Applications close (7:00pm AEST/5:00pm AWST)
30 Nov-2 December 2022	Allocation Committee meeting
12 December 2022	Allocations announced



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Introduction

The National Computational Merit Allocation Scheme is Australia's premier grant scheme for access to high-performance computing (HPC) resources. The two Tier-1 HPC facilities in Australia, the National Computational Infrastructure (NCI) and the Pawsey Supercomputing Research Centre, together offer hundreds of millions of hours of computing time to meritorious researchers.

The NCMAS 2023 Call for Applications will be open from Monday 15 August to Monday 19 September 2022. **Applications close at 19:00 (7pm) AEST/17:00 (5pm) AWST on Monday 19 September.**

All applicants (Lead CIs) and members of their research groups should read the following application guidelines and reference information in full before preparing an application.

This NCMAS information for applicants may be updated during the 2023 Call for Applications to clarify rules and processes as determined by the Committee Chair, participating HPC facilities and the Secretariat.

Please see the [FAQ page](#) if you have queries regarding the application process. If you have further questions about the NCMAS 2023 Call for Applications, they can be submitted by email to ncmas@nci.org.au.

New for the 2023 Call for Applications

- Strict page limits – non-compliant applications will be removed from consideration
 - The Proposal must be a maximum of 5 pages (excluding references)
 - The Computational Details must be a maximum of 10 pages (excluding references)
- Weekly information sessions from the 9th of August to the 13th of September – [Register here](#).
- Requests for the Pawsey Supercomputing Research Centre [Setonix](#) supercomputer will be split into separate CPU and GPU requests.
- The minimum request size on Gadi and Setonix is 1 MSU/1000 KSU.
- The MASSIVE supercomputer from Monash University is not available for NCMAS2023.

Facility: System	Total Allocation (KSU)	Minimum Allocation	
		(KSU/year)	Equivalent Core Hours
NCI: Gadi	250,000	1000	500,000
Pawsey: Setonix CPU	295,000	1000 (combined)	1,000,000 (combined)
Pawsey: Setonix GPU	160,000		

Important Dates – NCMAS 2023 Call for Applications

Key dates	NCMAS Milestone
15 Aug 2022	Applications open
19 Sept 2022	Applications close (7:00pm AEST/5:00pm AWST)
30 Nov-2 Dec 2022	Allocation Committee meeting
12 Dec 2022	Outcomes announced

HPC Facilities

Total computing resources available to researchers through the NCMAS 2023 call are as follows:

System	Total Allocation (kSU)	Equivalent Core Hours
NCI: Gadi	250,000	125,000,000
Pawsey: Setonix CPU	295,000	295,000,000
Pawsey: Setonix GPU	160,000	275,000,000*

All references to computational resources in NCMAS supporting documentation will be in units of kilo-service-units; 1 kSU = 1,000 service units (SU).

* AMD GPU Compute Unit (CU) hours, with 220 Compute Units per single AMD MI250X GPU

National Computational Infrastructure (NCI)	
Facility overview	<p>NCI is Australia's national research computing service. Home to Gadi, the nation's most highly integrated and highest performance supercomputer, NCI provides innovative, world-class services to Australian researchers. NCI's foundation collaborators are The Australian National University (ANU); CSIRO - Australia's national science agency; the Australian Bureau of Meteorology - the national meteorological agency; and Geoscience Australia - the national geosciences agency. Since 2007, NCI's collaboration has expanded to include many other Australian universities and research institutes. NCI's infrastructure was established through Commonwealth Government funding.</p> <p>NCMAS allocations for 2023 will be on NCI's petaflop-scale supercomputer – Gadi. This system comprises 3024 Intel Xeon Cascade Lake compute nodes, with 24 x 2 cores/node, configured with 192 GB RAM per node. Gadi also provides 50 Cascade Lake nodes with 1.5TB of memory, utilising Intel Optane DC Persistent memory, and 640 NVIDIA V100 GPUs in 160 nodes. Gadi's data interconnect is Mellanox HDR InfiniBand, capable of data transfers at 200 Gb/sec. NCI also offers persistent data storage in excess of 80 petabytes. Data holdings include significant national and international data collections. NCI also operates the Nirin compute cloud for ancillary computing and data services.</p>
NCMAS computing resources	250 MSU on Gadi.
NCMAS storage resources	1 PB Lustre disk (/g/data) is available to NCMAS scheme. The Allocation Committee will allocate this capacity according to project requirements. Allocations are limited to the duration of compute allocation – the 2023 calendar year.
Software	NCI maintains many software packages for use on its systems. The NCI application software catalogue is available online at https://opus.nci.org.au/display/Help/5.+Software+Applications
User support	NCI operates an expert Service Desk for users during normal business hours, Mon-Fri between 9:00 am and 5:00 pm AEST/AEDT. NCI Academic Consultants can provide assistance with user and project registration and operational issues, and can provide advice on code development and performance, and the use of scientific software in HPC environments.

Pawsey Supercomputing Research Centre

Facility overview

The Pawsey Supercomputing Research Centre is a tier-1 national supercomputing facility accelerating scientific discoveries for Australia's researchers. Located in Perth, Western Australia, Pawsey is currently serving scientists across the nation in domains such as radio astronomy, energy and resources, engineering, bioinformatics and health sciences. Pawsey supports Australia's commitment to the Square Kilometre Array (SKA) through the Australian pathfinder projects, the Australian Square Kilometre Array Pathfinder (ASKAP) and the Murchison Widefield Array (MWA) telescopes. Pawsey provides services available to all Australian computational researchers through meritorious allocation schemes including NCMAS.

The Pawsey Supercomputing Research Centre is installing its new supercomputer Setonix as part of the upgrade to the Pawsey computing infrastructure. The new supercomputer will deliver up to 50 petaFLOPs to help power high-impact Australian research projects. This means that researchers will experience a substantial increase of computational resources available from Pawsey in NCMAS. The new supercomputer will feature a hybrid CPU-GPU system and will be at least 10 times more energy efficient than its predecessors Magnus and Galaxy. <https://pawsey.org.au/about-us/capital-refresh/>

Setonix is built using exascale technology available in the HPE Cray EX supercomputer, with expanded data storage capabilities through the Cray ClusterStor E1000 system, significantly increased compute power and more emphasis on accelerators with 3rd generation AMD EPYC™ CPUs and 2nd generation AMD Instinct™ GPUs. Setonix will be particularly suited for compute problems (i.e. application codes and datasets) that have high network bandwidth requirements, and/or scalable problems that would benefit from the HPE Cray Slingshot interconnect.

Applications for time on Setonix must demonstrate the ability to run highly scalable applications and workflows and make effective use of the architecture.

Setonix CPU resources are arranged in nodes of 128 AMD Milan cores, with 256 gigabytes of memory per node.

Setonix GPU resources will be arranged in nodes of 4 AMD MI250X GPUs, with a 64-core AMD EPYC CPU and 256 gigabytes of memory per node. A subset of the Setonix GPU partition will have an increased 512 GB of memory per node.

More information:

<https://support.pawsey.org.au/documentation/display/US/Changes+in+Super+computing+Services+for+2023>.

NCMAS computing resources	<ul style="list-style-type: none"> • 295 MSU on Setonix CPU • 160 MSU on Setonix GPU 														
	<table border="1"> <thead> <tr> <th>Resources used</th> <th>Service Units</th> </tr> </thead> <tbody> <tr> <td></td> <td> CPU: 128 AMD Milan cores per node GPU: 4 AMD MI250X GPUs per node </td> </tr> <tr> <td>1 CPU core / hour</td> <td>1</td> </tr> <tr> <td>1 CPU / hour</td> <td>64</td> </tr> <tr> <td>1 CPU node / hour</td> <td>128</td> </tr> <tr> <td>1 GPU / hour</td> <td>128</td> </tr> <tr> <td>1 GPU node / hour</td> <td>512</td> </tr> </tbody> </table>	Resources used	Service Units		CPU: 128 AMD Milan cores per node GPU: 4 AMD MI250X GPUs per node	1 CPU core / hour	1	1 CPU / hour	64	1 CPU node / hour	128	1 GPU / hour	128	1 GPU node / hour	512
	Resources used	Service Units													
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	1 CPU / hour	64													
	1 CPU node / hour	128													
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NCMAS storage resources	<p>High performance /scratch filesystem is available for short term use by jobs actively running on the system. There is a purge policy implemented on /scratch, files are deleted automatically after 30 days from their last modification.</p> <p>Each project will be allocated project storage of 1 terabyte by default, and up to 10 terabytes can normally be accommodated on Pawsey's object storage system Acacia. Project storage allocations are limited to the duration of compute allocation – the 2023 calendar year. In addition, researchers can apply for managed storage allocations, separately from NCMAS. Managed storage access is intended for storing larger data collections with demonstrable research value according to a curated lifecycle plan.</p> <p>More information.</p>														
NCMAS visualisation resources	<p>There will be 32 nodes available for remote visualisation with each node containing dual A40 GPUs. Researchers can visualise their data via web through Pawsey's remote visualisation service without the need to transfer their data. More information.</p>														
Software	<p>Most supercomputing-class software that runs on Linux may be installed, with popular packages centrally installed and supported.</p> <p>Licensed software (e.g. Fluent) may be used, with your own licences. Pawsey does not purchase licences for user applications. It is up to you to ensure your licence permits your use of the software at Pawsey.</p> <p>More information: https://support.pawsey.org.au/documentation/display/US/Software+Stack+Policies</p> <p>If applying for multiple resources (such as Pawsey and NCI), it should be clearly stated what software will be run at each centre.</p>														
User Support	<p>The Pawsey Help Desk is the primary access point for all requests or issues relating to Pawsey systems or services, it is accessed via email (help@pawsey.org.au) or the Service Desk Portal. The Help Desk is staffed between 9am and 5pm AWST on weekdays except for Western Australian public holidays and the extended Christmas closure period. In addition to the general Level 1 support, Level 2 in-depth technical support and Level 3 expert supercomputing applications support is available as escalation points. Pawsey also provides training courses and extensive documentation relating to the use of Pawsey's systems and services.</p>														

Deadline and Support

Application Deadline

The application deadline for the NCMAS 2022 call is **19:00 (7pm) AEST/17:00 (5pm) AWST Monday 19 September 2022**.

Getting Help

- Read [supporting documentation](#) including FAQs if you have questions.
- Review the [Online Information Course](#).
- Attend an [information session](#) on Tuesdays at 2pm AEST/12pm AWST.
- Contact ncmas@nci.org.au if you require support with your application.

Application Categories

NCMAS applications are accepted in three categories: Open, Early Career Researcher, and Special Consideration. [Eligibility criteria](#) for each of these categories are listed below.

Open

Resource requests are not restricted. Applicants are expected to demonstrate successful utilisation of national HPC facilities at scale and have a track record of research outcomes and independent funding.

Early Career Researcher (ECR), Special Consideration and Emeritus

The **ECR category** provides an opportunity for researchers who have been awarded a PhD within the last five (5) years (relative to opportunity). Early Career Researcher applications are highly competitive. Applicants are expected to demonstrate a record of independent research funding, such as an ARC DECRA, NHMRC CDA, or similar award.

The **Special Consideration category** provides a limited number of special allocations to applicants who may otherwise not be competitive in NCMAS. For example, an individual who has returned to a research role following a significant career interruption.

The **Emeritus** category provides a way for Emeritus researchers with reduced research workloads to access computing resources on HPC facilities.

For ECR/Special Consideration/Emeritus requests, if their proposal is considered meritorious, they will be awarded the minimum allocation for their chosen facility. Requests must only be made on one HPC facility.

e.g. ECR applicants **cannot** request resources on **both** Gadi and Setonix.

Facility-System	Minimum Allocation (kSU/year)	Equivalent Core Hours
NCI: Gadi	1000	500,000
Pawsey: Setonix CPU	1000 (combined)	1,000,000 (combined)
Pawsey: Setonix GPU		

Assessment Criteria and Scoring

NCMAS applications will be scored on the following criteria:

Project quality and innovation (40%)

- Significance of the research
- Originality and innovative nature of the computational framework
- Advancement of knowledge through the goals of the proposed research
- Potential for the research to contribute to Australian science, research and innovation priorities

Investigator records (30%)

- Research record and performance relative to opportunity (publications, research funding, recognition and esteem metrics)

Computational feasibility (20%)

- Adequacy of the time commitment of investigators to undertake the research and utilise the resources successfully
- Suitability of the nominated system(s) to support the research, and the appropriate and efficient use of the system(s)
- Capacity to realise the goals of the project within the resources request
- Appropriate track record in the use of high-performance computing systems, relative to the scale of the resources requested

Benefit and impact (10%)

- Ability of the project to generate impactful outcomes and produce innovative economic, environmental and social benefits to Australia and the international community

Application System

The NCMAS online application system is managed by the NCMAS Secretariat and is hosted on NCI web infrastructure. All applicants need to register for an NCI user account before starting an application.

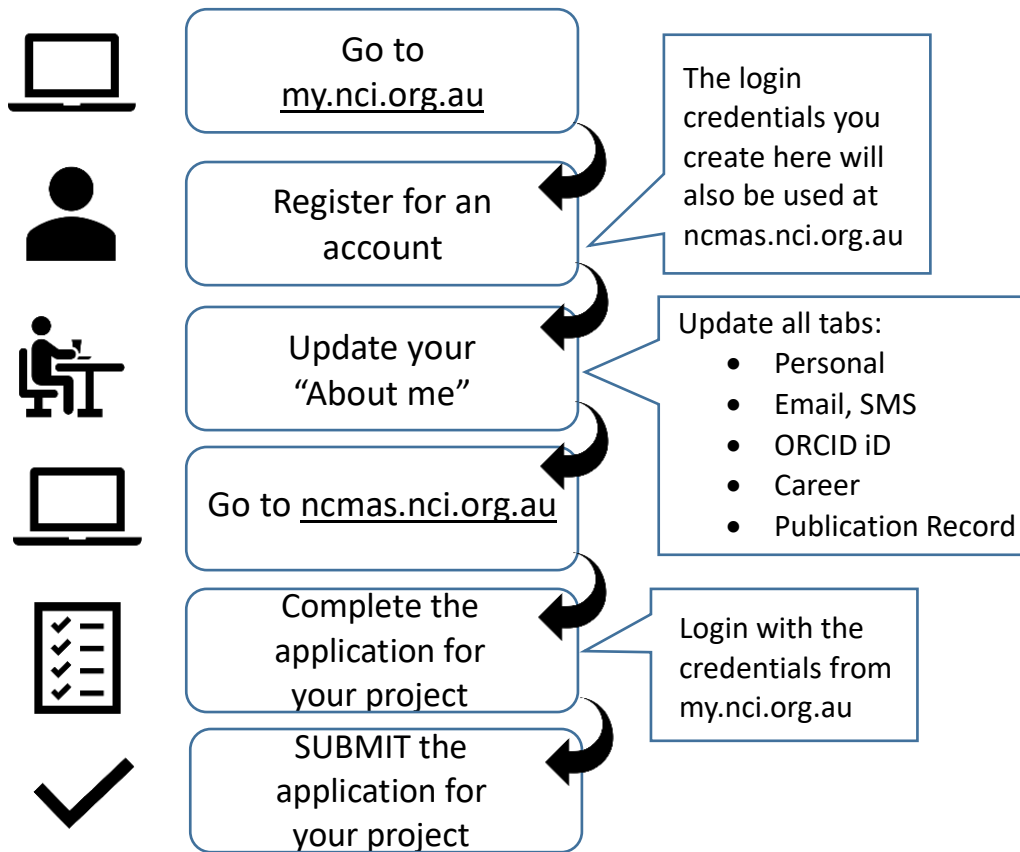
Applicant Workflow

The NCMAS application process is slightly different for new projects (and applicants) versus established projects. Please read the following sections carefully.

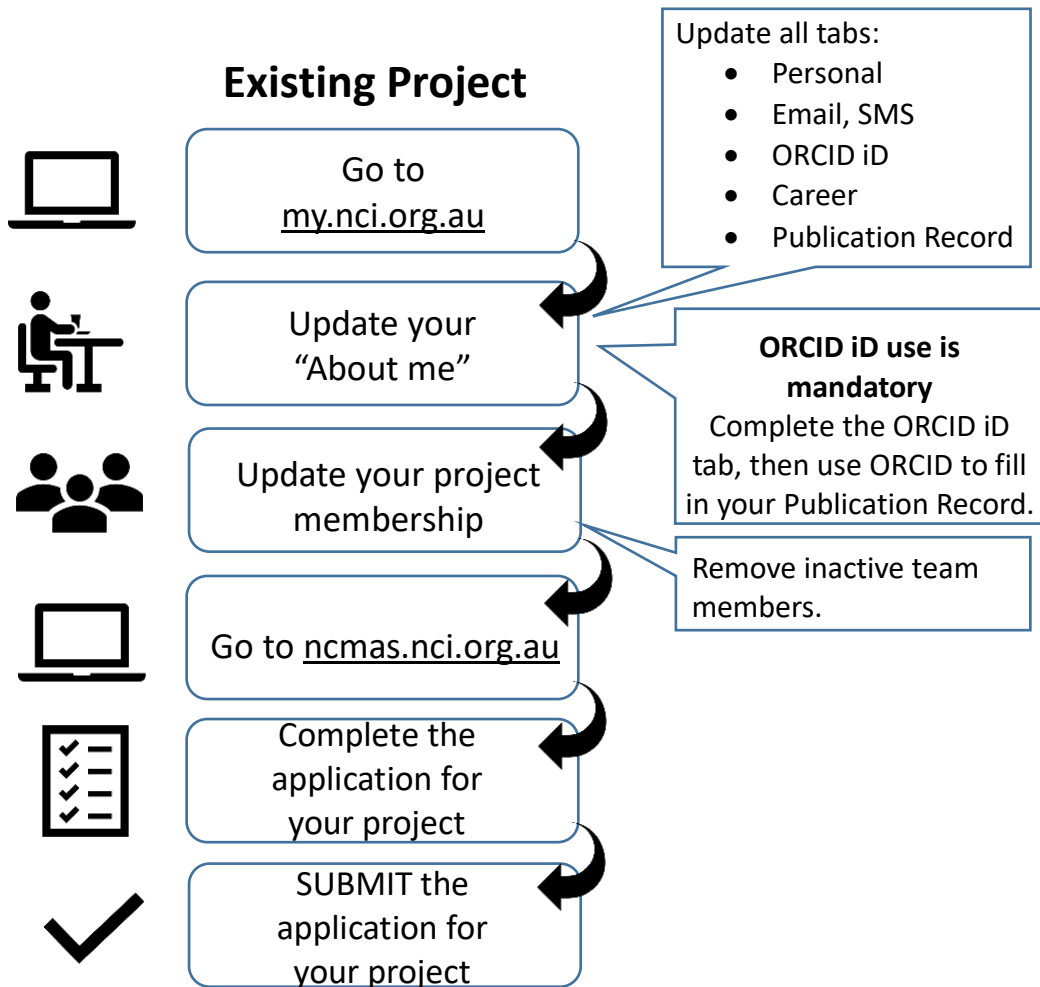
1. Open my.nci.org.au
2. Enter your MyNCI account details
 - a. Register for an account if you do not have one
3. Update your “**About me**”
 - a. Personal
 - b. Email, SMS
 - c. Career
 - d. ORCID iD
 - e. Publication Record
4. Open ncmas.nci.org.au
5. Open the My Application page
 - a. If required, log in with your MyNCI account
6. If you
 - a. **Have** an existing NCI project (from previous NCMAS grant or any other NCI scheme)
 - i. Find it in the list and click “Start application”
 - b. **Do not have** an existing NCI project (including if you have an active NCMAS allocation at Pawsey – but no allocation at NCI)
 - i. Click “Create a new project” and complete the form
 - ii. Return to the My Application page
 - iii. Find the new project in the list and click “Start application”
7. Complete and submit the application

When to use https://my.nci.org.au	When to use https://ncmas.nci.org.au
To register for a new user account	To complete your NCMAS merit proposal
To reset your account password	To submit your NCMAS application
To update ‘ About me ’ <ul style="list-style-type: none"> • Personal • Email, SMS • Career • ORCID iD • Publication Record 	To submit addenda – if required
To approve requests to join a project (Lead CI or Delegate Lead CI only)	To view your NCMAS outcome (Lead CI only)
To remove a member of the project team (Lead CI or Delegate Lead CI only)	

New applicant/project



Existing Project



Project Roles and Responsibilities

Lead Chief Investigator (Lead CI)

- Leads and manages the project research team.
- Approves or rejects project team membership requests.
 - At each NCMAS call, the Lead Chief Investigator **must remove any project members who will no longer be associated with the project.**
- Provides a track record of research output and funding support in the NCMAS application.
- Approves and submits the final NCMAS application for the project.
- Acts as the official point of contact between the project, the NCMAS Secretariat and the NCMAC.
- Provides confirmation and consent for participating in the WISA Trial of Anonymising Research Funding Proposals
 - This only relates to use of anonymised data in the trial – data about Lead CI and your project's grant outcome
 - Anonymisation of application content in Proposal and Computational Details is required for compliance

Chief Investigator (CI)

- Supports the Lead Chief Investigator in preparing the NCMAS application and managing the project.
- Provides a track record of research output and funding support for the NCMAS application.
- Can be promoted to a Delegate Lead CI role in cases where the Lead CI wishes to delegate project management responsibilities (see below).
- Cannot see the application in the system until after submission

Delegate Lead Chief Investigator

- Appointed by Lead CI to **actively manage a project and NCMAS application.**
 - Expectation that the Lead CI will appoint a CI as Delegate.
- Responsibilities are those of the Lead CI, including:
 - Provides confirmation and consent for participating in the WISA Trial of Anonymising Research Funding Proposals
 - This only relates to use of anonymised data in the trial – data about Lead CI and your project's grant outcome
 - Anonymisation of application content in Proposal and Computational Details is required for compliance

Researcher

- Member of the project research team.
- A researcher's track record is not included for consideration in the NCMAS application.

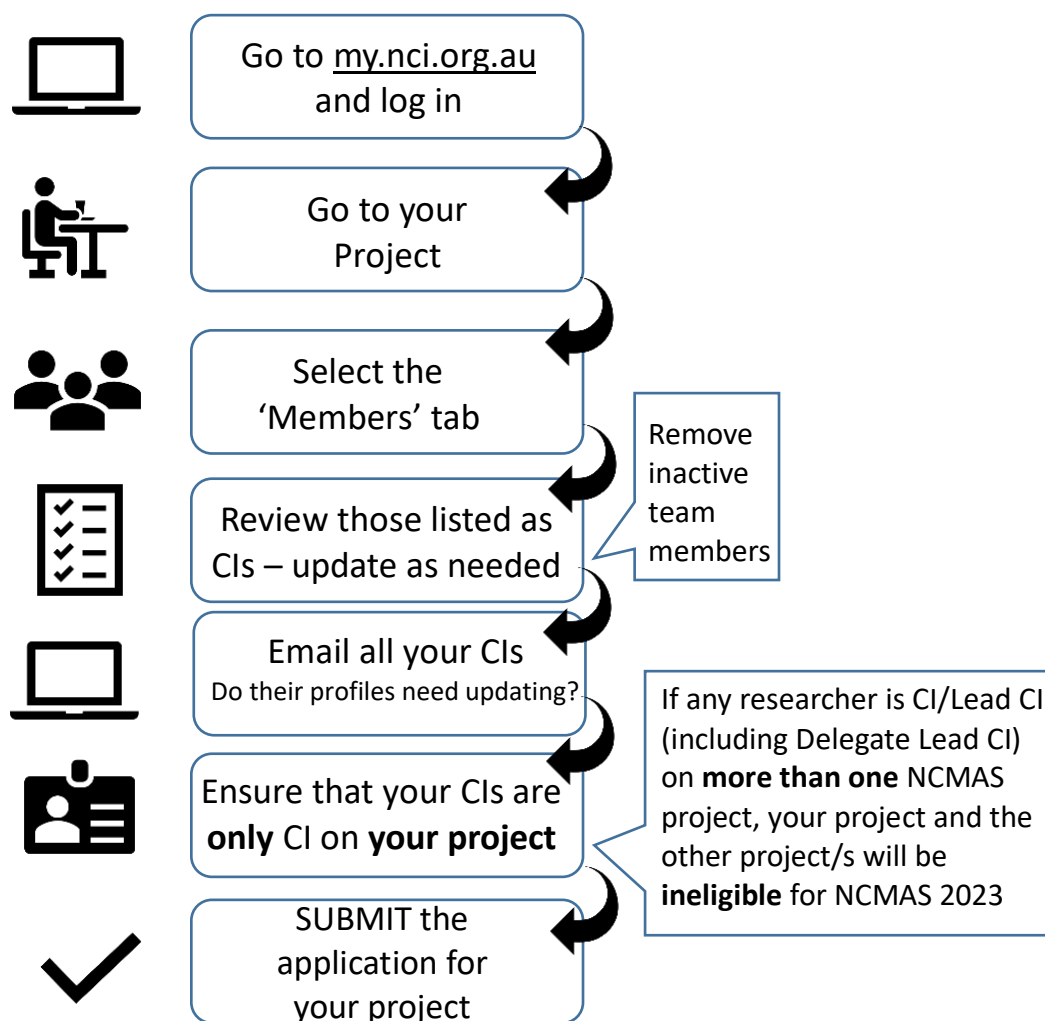
Lead Chief Investigator Responsibilities

The NCMAS Allocation Committee will assess **complete** applications only.

The applicant (Lead CI) is responsible for:

1. Staff profile updates for all nominated **Chief Investigators**
 - a. Lead CI's should contact project members and direct them to <https://my.nci.org.au> to review their profiles
2. Completing and submitting the full NCMAS application web form
 - a. <https://ncmas.nci.org.au>

Lead CI (Applicant) Responsibilities



Application Documents

Proposal

The Proposal is the part of your application that describes your proposed research. It should focus on the assessment criteria of *Project quality and innovation* and *Benefit and Impact*.

- Provide sufficient background to clearly define the goals of the project.
- Emphasise the significance, impact and innovation of the research.
- Describe the significance and impact in the **scientific domain**.
- Describe the significance and impact on **society and industry partners** (if applicable).
- Be specific and concise.
 - Avoid general statements, such as "This research is significant to Australia".

Proposal Length

The Proposal should be no longer than five (5) pages (excluding references). Providing historical context and ten-year scope of the research should take no more than one (1) page.

Computational Details

In the Computational Details part of your application, you should focus on the assessment criteria of *Computational Feasibility* and provide details on:

- Scalability of your code(s) on each nominated facility:
 - Use scalability tables and/or plots
 - For software with **multi-node** capability, applicants should present data relative to **single node** performance, not **single core** performance.
 - Poor scaling may impact negatively on the merit of the application.
- Compute job resources at each nominated facility:
 - Provide details on typical job configurations for your workflows, including
 - expected wall times
 - number of nodes/cores
 - data dependencies
 - expected throughput, and so on.
 - Provide a summary of the resource requirements in the form of an "SU budget" for each request. This budget should list:
 - major steps in the project workflow(s)
 - the key methods/algorithms required
 - and the SU requirements for each step
 - Also describe other dependencies such as software and storage.
- Storage at each nominated facility:
 - Describe data storage requirements and data life cycle for your project.
- Algorithms and Workflows:
 - Describe parallelism in your application(s) and how this relates to mathematical algorithms used. Describe data movement and lifecycle.
- Provide a clear justification for use of supercomputer resources:
 - This justification might elaborate on, for example, a requirement for large scale parallel jobs, high throughput workflows, or data-intensive workflows using large data sets.
- If previous resource usage at a facility has had low efficiencies, explain why, and describe your strategies to improve efficiency:
 - One example of inefficiency is an application with a large memory per core requirement. This can lead to underuse of reserved cpus.

Computational Details Length

Computational Details should be no longer than ten (10) pages (excluding references).

Proposal and Computational Details Format

The anonymous third-person writing style for applications is **not optional** and is applied to **ALL** applications.

- More detail can be found in the [Anonymous third-person writing style](#) section.

Proposal and Computational Details PDF

Proposal and Computational Details must be provided as a **single PDF file**.

The Proposal and Computational Details should be combined into a single PDF file to be uploaded. This combined document should be no more than 15 pages (excluding references). **Any proposal exceeding the page limit by more than 10% will be removed from consideration.**

Proposal formatting follows general ARC conventions.

- Use plain English and comply with the proposal format and submission requirements.
- Use Australian English spelling.

All pages (uploaded in PDF form) must be as follows:

- Black type, or occasional coloured type for highlighting purposes
- White A4 size paper with at least 0.5 cm margin on each side, top and bottom
- Text must be size 12 point Times New Roman or an equivalent size before converting to PDF format and must be legible to assessors.
 - Otherwise, a highly legible font type must be used: Arial, Courier, Palatine and Helvetica subject to them being an equivalent size to 12 point Times New Roman.
 - Variants such as mathematical typesetting languages may also be used.
- References can be in 10 point Times New Roman or equivalent
- Applicants should note that colour graphs, colour photographs, detailed graphics, and grey scale objects may be reproduced in black and white.
- The NCMAS Secretariat reserves the right to seek an original electronic copy of the Proposal to determine that the text meets these requirements.

Recommendations for Applicants

The **NCMAS 2023 Call for Applications** is expected to be highly competitive.

Last year,

- Around 580 million SU in total were awarded to applicants at the three HPC facilities: NCI, the Pawsey Supercomputing Centre and MASSIVE.
- Allocated resources were only 50% of the total requested resources.
- 158 of 221 applications (~71%) received allocations on one or more of the HPC facilities.

The recommendations below are provided as general advice to help you improve your NCMAS application. These recommendations address questions received and the experiences of applicants, the Secretariat and the Allocation Committee in previous NCMAS calls. The NCMAS 2023 [FAQ page](#) may also provide information to help you complete your application.

All Applicants

- Read all NCMAS announcements and supporting documentation in full. Watch for updates from the NCMAS Secretariat throughout the Call for Applications period.
- Ensure that personal profiles and research track records of the Lead CI and all CIs on your application are fully up to date.
- Respect the length guidelines (for word count and degree of detail) for each question in the application form.
- Ensure your [Proposal](#) and [Computational Details](#) are written in [Anonymous Third-Person style](#)
 - These will be uploaded together – as a single PDF file
- Provide a comprehensive justification of your request for HPC resources.
- Provide compelling evidence for code performance and scaling in your application.
- Successful applications will demonstrate an ability to use the HPC facilities at scale, and leverage efficient multi-CPU jobs, data interconnects and high-performance storage.
- Cite only those research grants that are directly attributed to the Lead CI or CIs on the application.
 - *Citing a grant on which the Lead CI or a (regular) CI from the project is not directly named is a breach of the rules. **This will disqualify your application.***
- Submit your application before the final submission deadline.
 - **Submission is final** – no changes or corrections can be made to the application once submitted, except by supplying addenda for:
 - Newly announced funding, or
 - Additional information as requested by Administrative or Technical Reviewers
- Late submissions will not be accepted.

New Applicants - New Projects

- Describe your previous experiences with HPC in as much detail as possible. Assessors expect to see:
 - a summary of your previous HPC experience
 - systems and facilities used
 - experience with other resourcing/allocation schemes, e.g. facility Start-up or Partner schemes – demonstrate expertise and capability
 - details of application codes, algorithms and workflows
- Ensure your Proposal and Computational Details sections are written in [Anonymous Third-Person style](#)
 - These will be uploaded together – (as single pdf file)
- Align your resource request with the scope of work and your HPC Experience.
 - An application with very large requests (greater than 10,000 kSU/year), should clearly demonstrate sustained, expert utilisation of HPC at scale.
- All applicants – including Early Career Researcher - must cite evidence of independent research funding
- The minimum compute allocation available from the NCMAS is based on the facility/ies requested

Facility-System	Minimum Allocation (kSU/year)	Equivalent Core Hours
NCI: Gadi	1000	500,000
Pawsey: Setonix CPU	1000 (combined)	1,000,000 (combined)
Pawsey: Setonix GPU		

- If you require less than these minimums for your project, consider making an application to facility start-up or partner schemes.
- See the section - [HPC Resourcing Alternatives](#) – for more information.
 - Partner schemes generally have more flexibility to provide smaller allocations and have less onerous proposal requirements than NCMAS.
 - A partner scheme allocation is an ideal vehicle for gaining experience and growing a project to a level where it can be competitive in the NCMAS.

Returning Applicants - Existing Projects

- Assessors will expect to see a detailed justification of your resource request.
 - Requests for **increased** allocations in 2023 should provide as much detail as possible justifying the additional resources.
 - You should try to justify the resource request anonymously in your Computational Details.
 - If you need to reference previous allocations in your justification, you can do this in the Resources/Justification for Requested Amount
 - This will only be revealed to a NCMAC reviewer if they choose to view the secondary/identifiable review stage
- If your project has used less than 90% of your 2022 allocation at 2022 Q3 (pro rata), you should provide an explanation for **underutilisation** of your current allocation.
 - Unjustified underutilisation may impact negatively on the merit of the application.
- Ensure your Proposal and Computational Details sections are written in [Anonymous Third-Person style](#).
 - These need to be uploaded together as a single file (PDF)
- Update all scientific and technical components of the Proposal to reflect the current scope of work and methods.
- Provide compelling evidence for code performance and scaling in your application.

- If your NCMAS 2022 application (submitted in 2021) was **not successful**, you are welcome to apply again.
 - A demonstration of lessons learned and advancement of your experience and capability will work in your favour.

HPC Experience

This part of the application is where you describe previous experience at HPC facilities.

If you received an NCMAS grant for 2022, describe your successful use of the systems you received an allocation on and any challenges you overcame.

If you **did not** receive an NCMAS grant for 2022, describe your previous experience with HPC, including:

1. a general overview of your experience,
2. Australian or international systems used, and
3. application codes, algorithms and workflows.

Resource Requests

Minimum requests

Each facility has set a minimum resource request size. Applications assessed as not requiring at least the minimum allocation at a selected facility will not be awarded NCMAS resources at that facility.

Applicants requiring less than the NCMAS minimum allocation are encouraged to approach their home institution, regional or state-based HPC consortia (i.e. Intersect, QCIF, TPAC), or other merit or partner schemes on the national facilities with their resource request.

Facility-System	Minimum Allocation (kSU/year)	Equivalent Core Hours
NCI: Gadi	1000	500,000
Pawsey: Setonix CPU	1000 (combined)	1,000,000 (combined)
Pawsey: Setonix GPU		

Maximum requests

Resource requests for NCMAS are not subject to a maximum limit. Unbounded resource requests allow researchers to prepare a single proposal that can be considered by multiple allocation schemes, and which reflects their actual demand for HPC resources.

A request for more than 5000 kSU (5 MSU) per year on any one facility would normally be associated with a team of experienced researchers who clearly demonstrate a track record of efficient and productive use of HPC resources.

Note that any application deemed not to have fully justified the resources requested will be rejected by the National Computational Merit Allocation Committee (NCMAC).

Underutilisation in 2022

Applicants are responsible for explaining underutilisation in the previous year. Utilisation under 90% must be justified. Unjustified underutilisation may impact negatively on the merit of the application.

Please use the Utilisation of Current Allocation (optional) part of the application form to justify any underutilisation.

Team Expertise and Background

The expertise, background, and experience of your research team is collected through the MyNCI (<https://my.nci.org.au>) system in both the ORCID iD, Career and Publication Record tabs, as well as within the My Application form.

ORCID

ORCID is an independent non-profit organization that provides a persistent identifier – an ORCID iD – that distinguishes you from other researchers, and a mechanism for linking your research outputs and activities to your iD. ORCID is integrated into many systems used by publishers, funders, institutions, and other research-related services. Learn more at orcid.org.

It is required to use ORCID to populate your researcher publication record on MyNCI (<https://my.nci.org.au>) for your NCMAS application.

A separate document has been prepared with more details on how to use ORCID in your NCMAS 2023 application.

Eligibility Criteria

In accordance with guidelines for access to Commonwealth-funded research infrastructure and relevant Australian Government legislation, Chief Investigators (CI) and Lead Chief Investigators (Lead CI) of NCMAS projects must hold at least a 0.2 FTE research position at an Australian higher-education institution, research institute or publicly-funded research agency, and be based in Australia.

If an applicant (Lead CI) holds a fixed duration contract for at least 0.2 FTE for the calendar year 2023, they are eligible to apply to NCMAS.

An individual may be named as a Chief Investigator or Lead Chief investigator on only one NCMAS 2023 application.

Lead Chief Investigators and Chief investigators on a NCMAS application must provide evidence of independent research funding, for example, grants from the ARC or NHMRC. Any grants referenced by a Lead CI or CI must name that applicant as a primary recipient.

Applications citing grants on which the applicants are not primary (named) grant recipients will be disqualified for non-compliance.

A person holding a Postdoctoral appointment at an Australian institution or publicly-funded agency is eligible to apply as a Lead CI. A postdoctoral fellow applying in the Open category is expected to demonstrate competitiveness with more experienced, senior researchers in their field, as well as a track record of independent research funding. The Committee recommends that postdoctoral fellows first consider applying in the Early Career Researcher category.

A person undertaking a higher degree by research is **not eligible** to be a Chief Investigator or Lead Chief Investigator on a NCMAS proposal.

The responsibilities for Lead Chief Investigator and Chief Investigator roles are listed in the Glossary.

Early Career Researchers

The Early Career Researcher (ECR) category provides an opportunity for researchers who have been awarded a PhD within the last five (5) years (relative to opportunity). ECR applications are highly competitive. Applicants are expected to demonstrate a record of independent research funding, such as an ARC DECRA, NHMRC CDA, or similar award.

ECR conditions:

- The applicant (Lead CI) must have been awarded a PhD within the previous five (5) years (relative to opportunity)
- The applicant **should not be nominated** as a Researcher, CI or Lead CI on another NCMAS application.
- The body of an ECR proposal should be no longer than 1000 words, or approximately two pages in length.
- The ECR allocation is the minimum allocation of the requested facility.
- ECR requests must only be made on one HPC facility.

Special Consideration

A limited number of special allocations will be made available to other applicants who may otherwise not be competitive in the NCMAS, for example, an individual who has returned to a research role following a significant career interruption.

Special Consideration conditions:

- The applicant (Lead CI) must have been awarded a PhD within the previous nine (9) years (relative to opportunity)
- The applicant **should not be nominated** as a Researcher, CI or Lead CI on another NCMAS application
- The body of a Special Consideration proposal should be no longer than 1000 words, or approximately two pages in length
- The Special Consideration allocation is the minimum allocation of the requested facility.
- Special Consideration requests must only be made on one HPC facility.
- An individual may apply for Special Consideration allocation for a maximum of three (3) consecutive years

Anonymous Review

The NCMAS review has moved to an anonymised process, in which applicants' identities are concealed from committee members/reviewers in the primary/mandatory review stage.

The anonymous review does not mean applications will be accepted from anonymous sources. As with previous cycles, applicants must still enter the names and affiliations of all investigators into the submission portal. The NCMAS Secretariat will not include names or affiliations in the versions generated for the reviewers for the primary/mandatory review stage.

Anonymous Third-Person (A3P) Writing Style

A3P style is required for the [Proposal](#) and [Computational Details](#) parts of the application.

Applicants should read the separate [Anonymisation Guide](#) document to ensure their application complies with A3P requirements.

Primary and Secondary Review Stages

Review Stage 1 – Anonymised and Mandatory for Assessors

Team information will be captured (as previously) through the MyNCI system. Investigator metrics will be derived from the combined team record and presented to assessors in an anonymised summary form.

In the primary/mandatory stage, reviewers will be presented with an anonymised summary of track record along with the anonymous third-person [Proposal](#) and [Computational Details](#) components of the applications. They will be required to submit a score based on this information.

Only after submission of this first stage score will reviewers have the option to proceed to the second/identifiable stage. Reviewers will provide a justification to proceed to the second stage.

Anonymised Track Record

Reviewers will see a summary containing the following information:

- M-index for each CI:
 - M-index = H-index divided by the CI's years of service
 - Years of service = Years since first publication minus time for career interruptions
 - [Career interruptions](#), e.g. medical, carer responsibilities
 - Note – [NHMRC](#) has adjusted their [Relative to Opportunity policy](#) to include the pandemic – NCMAS will do the same
 - Order of the M-indices will be randomised
- Journals published in and frequency for each journal (for active years - not counting career interruptions as defined above):
 - In current year to date
 - In previous calendar year
 - and in previous five years
- Category 1 grants, as defined by the [Department of Education](#):
 - number of grants active at time of application and during award period (calendar year 2022)
 - number of grants awarded in previous five calendar years.
- Category 2 grants, as defined by the [Department of Education](#):
 - number of grants active at time of application and during award period (calendar year 2022)
 - number of grants awarded in previous five calendar years.
- Number of refereed journal publications in previous five years
- Number of refereed conference publications in previous five years
- Number of other significant publications, e.g. books
- The total number of **active** people in the research group.
 - This may help to determine the capacity of the group to use the requested resources.
 - Examples of **not currently active** group members that **should not be included** in the total:
 - Members no longer using resources, but have papers under review.
 - Members no longer working on the project but hold potential for further/future collaboration.
- Awards and Honours – number
 - University Research Awards
 - Professional Society Awards/Medals (e.g. AIP, RACI)
 - ARC Fellowships

[Review Stage 2 – Identifiable and Optional for Assessors](#)

This second stage gives reviewers the option to reveal the identifiable track record of a team. They will also be able to see previous use of NCMAS allocated resources if applicable, or previous [HPC Experience](#) at other facilities/through other schemes, which will contain identifiable details of previous HPC/D use.

Reviewers will have the option to adjust the score for the application based on the identifiable information. If a reviewer wants to change their score based on this additional information, they will provide a justification.

Successful Applicant Requirements

Acknowledging NCMAS

A condition of accepting an NCMAS allocation is that applicants acknowledge both NCMAS and the high-performance computing facilities that they have used in all publications and presentations of the associated work. The following is a standard acknowledgement template:

“This research was supported by the Australian Government's National Collaborative Research Infrastructure Strategy (NCRIS), with access to computational resources provided by the <facility name/s> through the National Computational Merit Allocation Scheme.”

Progress Report

If you are successful in your NCMAS 2023 application, you will be required to submit a [Progress Report](#) in Quarter 1 of 2024.

This document will describe research highlights and notable outcomes for your project in the calendar year 2023. This might include papers in high-impact journals, patents or other outcomes of impact and/or national benefit. Your Progress Report may be cited, with your consent, to promote the scheme and for NCRIS reporting.

Conditions of Use

Autonomous Sanctions and the Defence Trade Controls Act

All Lead CIs on NCMAS applications are required to certify (via a question in the application form) compliance of their project with Commonwealth legislation, in particular, the Autonomous Sanctions Act (2011, Cth) and the Defence Trade Controls Act (2012, Cth). These articles of legislation impose additional requirements for supporting documentation and certification of project researchers in some circumstances. Applicants should review the current conditions of use on the websites of each of the participating HPC facilities:

- [National Computational Infrastructure \(NCI\)](#)
- [Pawsey Supercomputing Research Centre](#)

Compliance with Commonwealth legislation is managed through your institution's research office. Consult your research office if you have specific questions about Autonomous Sanctions or DTCA compliance.

Email Addresses

To ensure compliance with relevant Australian Government legislation, all researchers named in NCMAS applications must register and use an official institutional email address for all correspondence. Chief Investigators and Researchers who currently use a non-institutional email address (for example, [@gmail.com](#) or [@yahoo.com](#)) must register an official institutional email address. It is the responsibility of the project Lead CI to ensure that all project staff register and use official email addresses.

NCMAC 2023 – About the NCMAS Committee

Resource allocations are made by an independent peer-review committee – the National Computational Merit Allocation Committee (NCMAC). The NCMAS Secretariat services are provided by NCI from its base at The Australian National University in Canberra.

Committee members are appointed for a **four-year term**, with approximately half of the NCMAC being renewed every two years. A Deputy Chair and Chair are appointed for a two-year term from the NCMAC's membership.

The NCMAC considers project applications according to the Assessment Criteria.

Administrative Assessment

Before the Technical and Merit Assessment phases, each application goes through Administrative Assessment. This specifically looks at the completeness, compliance and eligibility of an application as it is submitted.

The Administrative Assessment is intended to minimise cases of outright rejection due to completeness and/or compliance issues. The NCMAS Secretariat manages this phase of assessment, with oversight from the NCMAS Committee Chair. The Administrative Assessment does not provide feedback or advice on scientific or technical components of an application.

Appeal Process

All decisions of the NCMAC are final. Appeals will be considered only against administrative or procedural issues and not against decisions of the Committee or against assessor ratings and comments, in a manner consistent with the practices of the Australian Research Council.

The Administrative Assessment phase of the NCMAS process for the 2023 call gives applicants a brief opportunity to correct errors or address non-compliance issues in their applications, and submit their application for consideration, instead of being rejected outright. The Administrative Assessment process effectively eliminated administrative appeals in the NCMAS 2022 call.

Administrative appeals must be submitted by the project Lead CI, via email to ncmas-secretariat@anu.edu.au. The deadline for submission of an administrative appeal is 5:00 pm AEDT Friday 4 February 2023.

Administrative appeals will be considered by the NCMAC Chair and Deputy Chair, and processed within 28 working days. Appellants will be notified of their outcome by email as soon as possible following a decision by the Chair.

The administrative appeal process is intended to:

- Determine whether administrative or procedural errors have occurred in NCMAS processes;
- Determine whether any such errors affected decision making by the NCMAS Secretariat and/or NCMAC.

HPC Resourcing Alternatives

Facility partner schemes and start up schemes offer an opportunity to supplement your NCMAS allocation or provide alternatives to NCMAS for projects which are gaining experience and developing HPC capabilities. An application to a partner or start up scheme will usually be less onerous than an application to a merit scheme, such as NCMAS. Partner schemes, in many cases, can allocate resources on a more flexible schedule to accommodate developing workflows.

Partner and start up scheme allocations are determined by the Partner Scheme Manager for each partner. The Scheme Manager is the responsible allocation authority for the partner institution.

Start-up and Introductory Schemes

Projects that are developing experience, or that require less than the minimum NCMAS allocation available on the national HPC facilities should consider applying to a facility start up scheme.

Scheme	Facility	Resources Available / Information	Email
NCI Start-up	NCI/ Gadi	5 kSU/year (Gadi). Default /scratch allocation of 72 GB. Start-up projects are not automatically eligible for /g/data or massdata allocations. Apply at https://my.nci.org.au/	help@nci.org.au
NCI Adapter	NCI/Gadi	Up to 250 kSU/quarter, maximum of two Adapter allocations per year. Find out more at NCI Adapter Scheme .	Adapter-secretariat@anu.edu.au
Pawsey Preparatory Access Scheme	Pawsey/ Setonix	The Preparatory Access Scheme is intended for researchers who need to: <ul style="list-style-type: none">port and benchmark their codes and workflows before applying to one of the merit allocation schemes,generate scalability data to be included in the merit allocation schemes proposals. Preparatory Access projects are allocated a fixed allocation of KSU for 3 months. Find out more at Preparatory Access Scheme .	help@pawsey.org.au

NCI/Gadi - Partner Schemes

NCI partner schemes contacts are listed on the [Scheme Managers page](#). Scheme eligibility generally depends on your home institution.

NCI User Services (help@nci.org.au) can answer general questions about partner scheme eligibility and help you to contact scheme managers.

Pawsey/Setonix - Pawsey Partner Schemes

Information about the Pawsey Partner Schemes can be found [here](#).

The Pawsey user support service (help@pawsey.org.au) can answer general questions about your eligibility and can provide guidance in obtaining resources for your project.

NCMAS Process Outline

The NCMAS allocation process comprises the following stages:

1. Call for applications announced (Secretariat)
2. Applications accepted (Secretariat)
3. Administrative Assessment – Completeness, Eligibility and Compliance verification (Secretariat)
4. Technical Assessment (nominated Facilities and Secretariat)
5. Merit Assessment (NCMAC)
6. Allocation Committee meetings (NCMAC, supported by Secretariat and Facilities)
7. Notification of outcomes (Secretariat).

The Secretariat will review all applications for compliance as soon as possible following the application deadline.

- Potentially non-compliant applications will be referred to the NCMAC Chair for a final decision.
- The Secretariat will notify the Lead CIs of all applications confirmed as non-compliant within fourteen (14) days of the application deadline.

Nominated HPC facilities will assess each application for suitability/fit for its HPC systems in the Technical Assessment.

- A facility may contact an applicant for further information as part of the Technical Assessment.
- Technical assessments are provided by the facilities as advice to the NCMAC.
- The NCMAC may also recommend that an applicant consult a nominated facility for further technical advice during merit assessment or after an allocation is awarded.

Assessment and Allocation Protocol

Assessment of proposals will be based on a combination of technical and scientific merit (see [Assessment Criteria](#)) based on material provided in the application.

- All applicants are expected to provide a detailed justification of the resources requested and are expected to demonstrate the capacity to utilise the requested HPC resources effectively.
- All requests must be proportional to the scientific merit of the proposal. The NCMAC reserves the right to allocate all or part of the resources available, and all or part of any specific request.

Assessment and allocation decisions are made by the NCMAC only. The NCMAS Secretariat and HPC facilities provide advice or supporting information to the NCMAC but are not otherwise involved in determining allocations.

NCMAS 2023 Application Checklist

Task	Comments	Done
Download and read – <i>NCMAS 2023 Information for Applicants</i>	This document contains important rules and guidelines for the 2023 call.	
Complete the NCMAS 2023 online information course	https://learning.hpc-australia.org.au/courses/ncmas-2023	
All project members update contact information and career profiles at https://my.nci.org.au	Personal information for all team members should be up to date.	
Lead CI or Delegate Lead CI should update project personnel at https://my.nci.org.au	<ol style="list-style-type: none"> 1. Add new team members 2. Remove members who will no longer contribute to the project 	
Start NCMAS application at https://ncmas.nci.org.au	From 15 August 2022 This is your NCMAS application. Draft versions of your application can be saved as needed.	
Submit final NCMAS application at https://ncmas.nci.org.au before 7:00 pm AEST/5:00pm AWST, Monday 19 September 2022	Early submission avoids the crunch at the deadline.	
Check NCMAS outcome at https://ncmas.nci.org.au	Outcomes will be posted on the NCMAS web site mid-December 2022	

Glossary

<p>Chief Investigator (CI)</p>	<ul style="list-style-type: none"> • Supports the Lead Chief Investigator in preparing the NCMAS application and managing the project. • Provides a track record of research output and funding support for the NCMAS application. • Can be promoted to a Delegate Lead CI role in cases where the Lead CI wishes to delegate project management responsibilities.
<p>Computational Details</p>	<p>In the <u>Computational Details</u> part of your application you should focus on the assessment criteria of <i>Computational Feasibility</i> and provide details on:</p> <ul style="list-style-type: none"> • Scalability on each nominated facility: <ul style="list-style-type: none"> ○ Use scalability tables and/or plots ○ For software with multi-node capability, applicants should present data relative to single node performance, not single core performance. ○ Poor scaling may impact negatively on the merit of the application. • Compute job resources at each nominated facility: <ul style="list-style-type: none"> ○ Provide details on typical job configurations for your workflows, including <ul style="list-style-type: none"> ▪ expected wall times ▪ number of nodes/cores ▪ data dependencies ▪ expected throughput, and so on. • Storage at each nominated facility: <ul style="list-style-type: none"> ○ Describe data storage requirements and data life cycle for your project. • Algorithms and Workflows: <ul style="list-style-type: none"> ○ Describe parallelism in your application(s) and how this relates to mathematical algorithms used. Describe data movement and lifecycle. • Provide a clear justification for use of supercomputer resources: <ul style="list-style-type: none"> ○ This justification might elaborate on, for example, a requirement for large scale parallel jobs, high throughput workflows, or data-intensive workflows using large data sets. • If previous resource usage at a facility has had low efficiencies, explain why, and describe your strategies to improve efficiency: <ul style="list-style-type: none"> ○ One example of inefficiency is an application with a large memory per core requirement. This can lead to underuse of reserved cpus. <p>Computational Details Length <u>Computational Details</u> should be no longer than ten (10) pages (excluding references).</p> <p>Proposal and Computational Details – PDF submission <u>Proposal</u> and <u>Computational Details</u> should be combined into a single PDF file to be uploaded.</p>
<p>Delegate Lead Chief Investigator</p>	<ul style="list-style-type: none"> • Appointed by Lead CI to actively manage a project and NCMAS application. • Expectation that the Lead CI will appoint a Chief Investigator as Delegate. • Responsibilities are those of the Lead CI.

Lead Chief Investigator (Lead CI)	<ul style="list-style-type: none"> Leads and manages the project research team. Approves or rejects project team membership requests. <ul style="list-style-type: none"> At each NCMAS call, the Lead Chief Investigator must remove any project members who will no longer be associated with the project. Provides a track record of research output and funding support in the NCMAS application. Approves and submits the final NCMAS application for the project. Acts as the official point of contact between the project, the NCMAS Secretariat and the NCMAC. Provides confirmation and consent for participating in the WISA Trial of Anonymising Research Funding Proposals <ul style="list-style-type: none"> This only relates to use of anonymised data in the trial – data about Lead CI and your project's grant outcome Anonymisation of application content in <u>Proposal</u> and <u>Computational Details</u> is required for compliance
NCMAC	<p>National Computational Merit Allocation Committee Group of selected researchers who evaluate applications and determine allocations. Led by a Chair and Deputy who are selected from committee members.</p>
NCMAS	<p>National Computational Merit Allocation Scheme NCI Australia and Pawsey Supercomputing Research Centre are the custodians of NCMAS.</p>
Progress Report	<p>If you are successful in your NCMAS 2023 application, you will be required to submit a <u>Progress Report</u> in Quarter 1 of 2024. This document will describe research highlights and notable outcomes for your project in the calendar year 2023. This might include papers in high-impact journals, patents or other outcomes of impact and/or national benefit. Your Progress Report may be cited, with your consent, to promote the scheme and for NCRIS reporting.</p>
Proposal	<p>The <u>Proposal</u> is the part of your application that describes the research to be supported and should focus on the assessment criteria of <i>Project quality and innovation</i> and <i>Benefit and Impact</i>.</p> <ul style="list-style-type: none"> Provide sufficient background to clearly define the goals of the project. Emphasise the significance, impact and innovation of the research. Describe the significance and impact in the scientific domain. Describe the significance and impact on society and industry partners (if applicable). Be specific and concise. <ul style="list-style-type: none"> Avoid broad general statements, such as "This research is significant to Australia". <p>Proposal Length <u>Proposal</u> should be no longer than five (5) pages (excluding references). Providing historical context and ten-year scope of the research should take no more than one (1) page.</p> <p>Proposal and Computational Details – PDF submission <u>Proposal</u> and <u>Computational Details</u> should be combined into a single PDF file to be uploaded.</p>
Researcher	<ul style="list-style-type: none"> Member of the project research team. A researcher's track record is not included for consideration in the NCMAS application.