

# Northern Australia Section Report 2024

## PART A - SECTION SUMMARY

### A.1 Executive Summary – (Please follow the format given below)

- Section Executive Committee Member List

Position	Exec Committee Member
NA Section Chair	Joel Cox
NA Section Vice Chair	Tao Huang
Treasurer	Kenny Leong
Secretary	Yang Du
Web Master	Ethan Waters
Membership Dev Officer	Graham Woods
Educational Activities Coordinator	Maryam Ebrahimpour
Industry Relations Coordinator	Danny Miles
Student Branch Mentor	Bronson Philippa
Student Representative	Jakson Gardnir
<b>Power &amp; Energy Society Chapter</b>	
PES Chair	Mohan Jacob
PES Vice Chair	Jiajia Yang & Kianoush Emami
<b>Communication Society Chapter</b>	
MTT-S/Com Sec Chair	Tao Huang
MTT-S/Com Sec Vice Chair	Graham Woods
<b>Oceanic Engineering Society Australia Chapter</b>	
OES Rep	Mohan Jacob
<b>Women in Engineering Affinity Group</b>	
WIE Chair	Maryam Ebrahimpour
<b>Young Professional Affinity Group</b>	
YP Chair	Tao Huang

- Section Highlights
  - **23 events** were held by the Section and its 2 chapters, 2 affinity groups, and 1 student branch including Exec Meetings, and in-person technical and social events.
  - The main and most recognized Section event, i.e. the Peter Arlett (PE) lecture, was organized and planned by the PES chapter, in collaboration with the Section chair. This was held on Thursday 31<sup>st</sup> October 2024. The guest speaker was Paul Gleeson the Managing Director – Energy at Aurecon who presented on Renewable Energy’s role in delivering net zero for Australia.
  - The section celebrated its 30 year milestone with a technical presentation by Associate Professor Keith Kikkert followed by a networking social event.
- Major Events (International, National)
  - Power and Energy Society Chapter

- The PES Chapter was a Technical Co-Sponsor for the 3rd International Conference on Frontiers of Energy and Environment Engineering in Cairns
  - The main and most recognized Section event, i.e. the Peter Arlett (PE) lecture, was organized and planned by the PES Chapter, in collaboration with the Section Chair. This was held on Thursday 31<sup>st</sup> October 2024.
- Major Chapter Activities
  - MTT-S/COMSoc Joint Chapter:
    - The Joint Chapter was a Technical Co-Sponsor for the 9th International Conference on Communication, Image and Signal Processing (CCISP).
    - Organized multiple events and technical talks throughout the year.
  - Power and Energy Society Chapter
    - The PES Chapter hosted the 3rd International Conference on Frontiers of Energy and Environment Engineering in Cairns
    - The main and most recognized Section event, i.e. the Peter Arlett (PE) lecture, was organized and planned by the PES chapter, in collaboration with the Section chair. This was held on Thursday 31<sup>st</sup> October 2024.
    - Hosted a Distinguished Lecture on Distribution Reliability and Resiliency Assessment and Improvement on Thursday 10<sup>th</sup> October 2024.
- Major Student and Affinity Group Activities
  - Student Branch:
    - Supported a student from Northern Australia to attend ANZSCON 2024 in Auckland, New Zealand.
    - Hosted a BBQ and Roboclub event in conjunction with the JCU Engineering Undergraduate Society at JCU Townsville including a membership drive.
  - Women in Engineering:
    - Hosted an IEEE Women in Engineering Breakfast on 7<sup>th</sup> July 2024.
    - Participated in the STEM Changemakers initiative to encourage girls/women into engineering in North Queensland on 22<sup>nd</sup> June 2024.
- Awards
  - Section achieved Membership Recruitment Goal



Peter Arlett Lecture by Paul Gleeson. Photo by Joel Cox

## A.2 Financial Report – (Please follow the format given below)

- Summary (as per submitted on NetSuite)

### **CB account inhouse bank details:**

Opening Balance: ( 01/01/2024 ) : US\$14628.20

Closing Balance: ( 12/31/2024 ) : US\$15281.35

Bank Type	Inhouse Bank		
Account Type	CB		
Bank Account	100260 (75119 - CB Section NORTHERN AUSTRALIA)		
Currency	USD		
Transaction ID	Date MM/DD/YYYY	Amount	Category Number   Category Name
1002638	1/01/2024	45.91	3.40.0   IEEE CB Account Interest
1005886	1/02/2024	49.40	3.40.0   IEEE CB Account Interest
1006510	9/02/2024	-3,294.42	6.95.0   Bank Account Transfers (outgoing)
1007754	23/02/2024	3,294.42	3.95.0   Bank Account Transfers (incoming)
1008868	1/03/2024	33.81	3.40.0   IEEE CB Account Interest
1014637	1/04/2024	38.85	3.40.0   IEEE CB Account Interest
1014580	9/04/2024	174.86	5.50.0   Support to Sections/Chapters
1016355	23/04/2024	-11.40	2.70.0   Professional Activities
1020118	1/05/2024	37.99	3.40.0   IEEE CB Account Interest
1019734	8/05/2024	1,400.00	5.50.0   Support to Sections/Chapters
1021370	20/05/2024	-674.29	2.60.1   STEM
1024227	1/06/2024	42.97	3.40.0   IEEE CB Account Interest
1025292	20/06/2024	4,101.95	3.10.0   Rebate from IEEE
1025440	20/06/2024	-162.00	4.80.0   Student Activities
1027448	1/07/2024	44.13	3.40.0   IEEE CB Account Interest
1028465	17/07/2024	-280.75	4.10.0   Meetings
1028466	17/07/2024	-1,522.51	5.20.0   Travel Expense
1030838	1/08/2024	53.90	3.40.0   IEEE CB Account Interest
1031505	15/08/2024	-127.33	2.80.0   Student Activities
1031895	22/08/2024	500.00	5.50.0   Support to Sections/Chapters
1035956	1/09/2024	50.32	3.40.0   IEEE CB Account Interest
1035889	13/09/2024	-120.33	4.10.0   Meetings
1035890	13/09/2024	-265.12	3.32.5   Technical Activities
1034179	17/09/2024	-459.00	2.80.0   Student Activities
1038913	1/10/2024	45.63	3.40.0   IEEE CB Account Interest
1053007	15/10/2024	-530.90	5.54.4   Technical Activities
1047386	1/11/2024	43.29	3.40.0   IEEE CB Account Interest
1053292	1/12/2024	51.08	3.40.0   IEEE CB Account Interest
1058030	23/12/2024	-442.89	5.54.4   Technical Activities
1058031	23/12/2024	-1,464.42	5.54.4   Technical Activities

- Any other financial activities

**Local Bank (Checking) Bank Australia Everyday Access account :**

**Opening Balance: ( 01/01/2024 ) : AU\$5732.13**

**Closing Balance: ( 12/31/2024 ) : AU\$5803.80**

<b>For:</b> Selected date range <b>Dates:</b> 01/01/2024 to 12/31/2024			
<b>Transaction Order:</b> Oldest Transactions First			
Date: 01/07/2025			
Entered Date	Transaction Description	Amount	Balance
01/31/2024	Monthly Account Fee		
		-\$5.00	\$5,727.13
02/29/2024	Monthly Account Fee		
		-\$5.00	\$5,722.13
03/31/2024	Monthly Account Fee		
		-\$5.00	\$5,717.13
03/31/2024	Interest Credit		
		\$0.71	\$5,717.84
04/30/2024	Monthly Account Fee		
		-\$5.00	\$5,712.84
05/31/2024	Monthly Account Fee		
		-\$5.00	\$5,707.84
06/18/2024	Osko Payment From JCU Robotics and Electronics Club (IEEE Stude		
		\$100.00	\$5,807.84
06/30/2024	Monthly Account Fee		
		-\$5.00	\$5,802.84
06/30/2024	Interest Credit		
		\$0.72	\$5,803.56
09/30/2024	Interest Credit		
		\$0.24	\$5,803.80

**Local Bank (CD-Inv) Bank Australia Term Deposit 6 Month account :**  
**Opening Balance: ( 01/01/2024 ) : AU\$22448.25**  
**Closing Balance: ( 12/31/2024 ) : AU\$23582.07**

<b>Account:</b> 307027139 - Term Deposit 6 months			
<b>For:</b> Selected date range <b>Dates:</b> 01/01/2024 to 12/31/2024			
<b>Transaction Order:</b> Oldest Transactions First			
			Date: 01/07/2025
Entered Date	Transaction Description	Amount	Balance
06/13/2024	Interest Credit	\$557.11	\$23,005.36
12/13/2024	Interest Credit	\$576.71	\$23,582.07

## **PART B - ORGANIZATIONAL ACTIVITIES**

### **B.1 Membership Development Activities**

- Total number of active members in the Section for past 3 years.
  - As at 28 Jan 2022, 141 members on. This was slowly grown over the few years before that.
  - As at 25 Feb 2023, 156 members, which shows >10% growth in 2022-23.
  - As at 25 Feb 2024, 157 members which shows the section has been able to maintain strong membership for the year.
  - As at 12 Jan 2025, there are 173 members which shows growth in the 2024 year.
- Summary and evidence of work done to improve the value of membership, which leads to retention and growth of members.
  - Held two student sign on events throughout the year. One was based in Townsville at James Cook University. The second was in Darwin at Charles Darwin University in collaboration with the Northern Territory Subsection.
  - Held a wide range of technical & networking events in different locations within the section, including in Darwin, Cairns and Townsville.
  - Held 23 events within the Section including multiple in-person events in Townsville and Cairns.
  - We have also focused on high profile events such the Peter Arlett lecture to attract new members.

### **B.2 Chapter Activities**

- Total number of Chapters in the Section
  - Two (2) (MTT/Comm and PES). We are also part of an Australia wide OES Chapter.
- Number of Chapters formed in the current year
  - None.
- Number of active Chapters (Chapters who have reported required number of meetings during the year)

- All Two (2) (MTT/Comm and PES) full chapters were active this year and we also reported activity locally as part of the Australia wide OES Chapter.
- Summary of Chapter activities (Chapter wise with attachment table/information)

#### PES Chapter Activities:

- Participated in joint executive meetings throughout the year.
- 26/08/2024 – Workshop on decarbonisation in the building industry - 55 attendees in person.
- 30/08/2024 - Developing and optimising models for instrumentation calibration and reducing amplifier distortion – 20 attendees in person.
- 10/10/2024 - Distribution Reliability and Resiliency Assessment and Improvement – 20 attendees in person.
- 31/10/2024 - 12th IEEE Peter Arlett Lecture - Renewable Energy's role in delivering Net Zero for Australia – 60 attendees in person.
- 4/12/2024 - 2024 3rd International Conference on Frontiers of Energy and Environment Engineering -120 attendees in person.

#### MTT/Comm Chapter Activities:

- Participated in joint executive meetings throughout the year.
- 02/02/2024 - IEEE AP/MTT Chapters committee meeting - Australia
- 18/04/2024 - Ericsson and Telstra world-first high speed capacity link to King Island – 29 attendees online.
- 14/06/2024 - Chipless RFID Systems Modeling, Protocols and Detection – 9 Attendees online.
- 05/08/2024 - DML Seminar - RF Design for Ultra-Low-Power Wireless Communication Systems – 18 attendees online.
- 09/08/2024 - RF Design for Ultra-Low-Power Wireless Communication Systems – 39 attendees in person.
- 20/08/2024 - DML Seminar: Applications of Phase Change Material Technology in Tunable Filters and in Other Reconfigurable Microwave and Millimeter-Wave Devices – 45 attendees online.

### **B.3 Professional and Continuing Education Activities**

Summary of continuing educational activities including conferences, technical activities, training courses, and distinguished lecture programs with attachment table / information

- The Section and PES Chapter were the Technical Co-Sponsor for the 3rd International Conference on Frontiers of Energy and Environment Engineering. The conference was held in Cairns on 2-4<sup>th</sup> December 2024 and featured international invited speakers, and oral and poster presentations, covering subject areas across the spectrum of energy and environment engineering in plenary and parallel session formats.
- The Section and MTT/Comms Chapter were the Technical Co-Sponsor for the 9th International Conference on Communication, Image and Signal Processing (CCISP 2024). The conference was held in Crowne Plaza Surfers Paradise Gold Coast, Australia between 13<sup>th</sup> to 15<sup>th</sup> November 2024.
- Another annual continuing education activity was the annual Peter Arlett Lecture, which is our Section flagship event gathering the greatest number of members in one even throughout the year. We usually bring high-profile people from industry and academia to our Section to provide a technical and/or a general seminar on a key problem in the Power and Energy Domain. The PA Lecture is also always preceded by a networking event, where the Section provides food and drink to incentivise more interaction from the community, academia and industry in the Townsville and surrounding region.



- The Section put a focus on looking to promote IEEE and its long-term members to apply for Senior Membership. Five members were supported throughout the year and were awarded with membership elevation to IEEE Senior Member.  
Hao Chen, Ronald Goodwin, Iain Morrison, John Nielsen and Graham Woods.
- We also hosted multiple technical seminars throughout the year from varying speakers.
- A celebration event for our 30 year milestone as a section combined with a technical seminar was held on 30<sup>th</sup> August 2024.



Technical Presentation as part of the 30 Year Celebration event. Photo by Joel Cox

#### B.4 Students Activities

- Total number of Student Branches in the Section
  - Two (2)
- Number of Student Branches formed in the current year
  - One (1), the Townsville Industry Applications Society Student Branch Chapter
- Section level student activities (student congress, paper and other contests, awards etc)
  - A student was supported to attend ANZSCON 2024 in New Zealand on 6<sup>th</sup> to 7<sup>th</sup> July 2024.
- Number of active Student Branches (Student Branches who have reported required number of meetings during the year)
  - Two branches are active however need assistance with reporting.
- Summary of Student Branch activities (Student Branch wise with attachment table/information)
  - The Townsville Student Branch hosted a BBQ and Roboclub sign on day in conjunction with the James Cook University EUS at the Douglas Campus.
  - Held a student drive at Charles Darwin University including a BBQ.
  - Attended and participated in the ExCom Executive meetings throughout the year.





IEEE Student Drive at James Cook University in Townsville. Photo by Joel Cox

## B.5 Affinity Group Activities

- Young Professional (YP)
  - Participated in joint executive meetings throughout the year.
  - 30/08/2024 - Developing and optimising models for instrumentation calibration and reducing amplifier distortion – 20 attendees in person.
  - 10/10/2024 - Distribution Reliability and Resiliency Assessment and Improvement – 20 attendees in person.
  - 31/10/2024 - 12th IEEE Peter Arlett Lecture - Renewable Energy's role in delivering Net Zero for Australia – 60 attendees in person.
- Women In Engineering (WIE)
  - Participated in joint executive meetings throughout the year.
  - 22/06/2024 - STEM Changemakers - Encouraging Girls into Engineering in North Queensland – 224 attendees in person.
  - 7/07/2024 - Townsville IEEE Women in Engineering Breakfast – 21 attendees in person.
  - 30/08/2024 - Developing and optimising models for instrumentation calibration and reducing amplifier distortion – 20 attendees in person.
  - 10/10/2024 - Distribution Reliability and Resiliency Assessment and Improvement – 20 attendees in person.
  - 31/10/2024 - 12th IEEE Peter Arlett Lecture - Renewable Energy's role in delivering Net Zero for Australia – 60 attendees in person.
- Life Member (LM)
  - The Section currently has no LF AG.

## B.6 Awards & Recognition Activities

- Award constituted by the Section.
  - IEEE Northern Australia Section awards for undergraduate students it has been awarding for the past 7 years at University awards ceremonies:
    - Townsville: 1st year Engineering Student with highest GPA, who is joining Electrical/Computer Engineering UG program.

- Townsville: 4th year Electrical/ Computer Engineering Student for the best project work.
- Please list all Awards and Recognitions received by the Section, and members in the Section, from Region 10 and IEEE HQ during the year
  - Section achieved Membership Recruitment Goal

## **B.7 Communication Activities (Newsletter, Home Page, E-mail etc.)**

- Newsletter (name and number of issues in the year)
  - The Section does not publish a Newsletter
- Home Page of the Section (give the URL and how often it is updated)
  - Website was continued to be updated on an ad-hoc basis  
<https://r10.ieee.org/naus/>
- Other means of contacts with Section members including social media
  - The Section LinkedIn group for was maintained through 2024 for posting about the events etc.  
<https://www.linkedin.com/company/82341453/admin/>
  - The Section Facebook page was maintained through 2024 for posting about the events etc.  
<https://www.facebook.com/ieeenorthernaustralia/>
  - No content was added to the Section Youtube Channel in 2024  
[https://www.youtube.com/channel/UCmifeUSFgpY6kBXtvDzJ8\\_Q](https://www.youtube.com/channel/UCmifeUSFgpY6kBXtvDzJ8_Q)
  - An invitation to all the Section events is emailed by the Section Chair to all the Section members twice, first at two weeks and second at one week before any event.

## **B.8 Industry Relations**

- Membership growth and retention
  - Have had good retention of industry membership over recent years and increased member numbers in 2024, which is a great for our small Section. This has been achieved through arranging of membership drives, our wide range of activities including many face-to-face events, which has attracted industry people to our events and incentivizes their membership.
- Activities for/with industrial members
  - Our main activity for industry in our region has been our Peter Arlett Lecture, which is the flagship annual event of the IEEE Northern Australia Section. The Peter Arlett lecture is IEEE North Australia Section and PES Chapter's most prestigious event each year in Townsville where the chapter reaches out to the local Power Engineering community with a technical presentation of interest to the sections' members. In 2024 the lecture was given by the Paul Gleeson the Managing Director – Energy at Aurecon who presented on Renewable Energy's role in delivering net zero for Australia. The lecture was preceded by a social networking event with finger food and drinks.
  - The event was attended by approximately 60 IEEE and non-IEEE members from across the Townsville region, representing the local industry, university researchers, and postgraduate and undergraduate students.
  - A presentation from the IEEE Standards Associated in conjunction with the Department of Industry, Science and Resources was held on 18<sup>th</sup> July 2024. The focus of the presentation was how IEEE members can contribute to Australia's Critical Technology Standards.

## **B.9 Humanitarian Technology Activities**

- Humanitarian Technology related activities supported by the Section including collaboration with other OUs.
  - None
- SIGHT Activities
  - None

## **B.10 Community Activities**

- IEEE Social activities (Family day, IEEE day, Engineers Week)”
  - Key in person technical presentations were accompanied by industry networking drinks and nibbles. This includes the Peter Arlett Lecture and the 30 year celebration event.
  - The Section and WIE Affinity Group also supported the STEM Changemakers Initiative through financial support and presentations.

## **PART C - OTHERS**

### **C.1 Special Events**

- Please briefly describe the importance of special events and the outcomes achieved
  - The Peter Arlett event is held in honour of Peter Arlett from the NA Region, and it is always a highlight from our Section in our region.
- Funding secured from the IEEE and external sources including sponsorships
  - The IEEE PES Member Driven Initiative Committee provided the Section with \$500USD for Opportunities and Challenges in Local Energy Industry Driven by Decarbonization The distinguished lecture event was held on 10<sup>th</sup> October 2024.

### **C.2 Relationship with National and International Societies and Non-Government Organizations (NGO)**

- Nature of relationship and details of any formal agreement signed
  - None for 2024
- Details of joint activities
  - Virtual events were advertised across Australia in collaboration with other sections.
- Benefit to IEEE members (for example discounts, access to technical information etc.)
  - Subsidised membership to attract student members.
- Benefit to Section (for example help in membership development, venue facilities, cost saving etc.)
  - Increase in exposure of IEEE within our region and exposure of our members to new technology areas outside of those typically promoted within IEEE Northern Australia (e.g. Renewable Energies, Artificial Intelligence and Marine Engineering).

### **C3. Collaboration with other IEEE Sections**

- Support extended to neighbouring Sections.
  - Continue to support events for the IEEE Northern Territory Subsection.

- Shared hosted events with other sections and chapters nationally through virtual presentation formats.
- As part of the Australia Council our section contributes to Australia wide initiatives such as the student branch competitions and also consultation on important matters relevant to Australia.
- Joint activities with any other Section
  - The 9<sup>th</sup> International Conference on Communication, Image and Signal Processing (CCISP 2024) was co-organized by Sichuan University and Asia Pacific Institute of Science and Engineering (APISE), technically sponsored by IEEE Northern Australia Section, supported by IEEE Chengdu Section, South China University of Technology.
  - The Northern Australia section covers a huge geographical area. The nearest Section is approximately 1500 km from our Sections geographic centre. Joint activities typically involve coordinating visiting Distinguished Lecturers throughout the year and co-hosting virtual events. The vast majority of our virtual technical seminars were also co-hosted with other Australian Sections.

#### **C.4 Support extended to Sub-sections & Society Chapters within the Section**

- Support extended for organising technical, educational and professional activities.
  - Supported student awards through payment of the award.
  - Supported the STEM Changemakers initiative.
- Joint activities for membership development.
  - Key membership development activities were focused on joint technical talks and networking events such as the Peter Arlett Lecture with the PES Society Chapter and Section.
- Support extended for the formation of a Sub-section or transition of a Sub-section into a full Section.
  - None

#### **C.5 Best Practices of your Section (which you would like to share with other Sections for the benefits of members)**

- One of the key strengths of our Section has been many interactions with the local community through various events. These include the following:
  - The Peter Arlett Lecture
  - Distinguished Lecture presentations
- Executive committee members were encouraged to assist with the planning and execution of key events throughout the year. This was very successful not only leading to outstanding events but also empowering members within the Section. This has led to increased interest from members, particularly young members to take on new executive roles within the Section.
- An activities calendar was developed at the start of the year to set dates and start planning for key events in the year. This planning was useful to ensure funding was available to support upcoming events and new initiatives.
- Continued involvement and activities in the Student Branch and YP affinity groups.

#### **C.6 Problems anticipated and suggestions for solutions, if any**

The executive aims to continue to invite and encourage the student branch, YP, WIE executive committee members to attend Section executive committee meetings. The aim is to increase involvement from the Affinity groups to plan events to continue activities in 2025 to the same high standards as previous years.

## **PART D - GOALS AND PLANS**

### **D.1 Continuation of project/activity in progress and their implementation plans**

The Northern Australia Section website and social media presence is planned to be increased in 2025. The key intent is to promote the Section and its events to achieve higher attendance and growth. The website is also planned to continue as an archive for important documentation such as the Sections' history, photographic records, strategic plan, etc.

### **D.2 Goals and Future Plans**

While the Section was founded in Townsville, it covers a wide geographic area including North Queensland, Northern Territory and Papua New Guinea. One of the Section goals is to arrange and promote events throughout the entire Section area. The aim is to work with the Northern Territory Subsection to arrange events in Darwin as well as with other members throughout Queensland to hold events in multiple locations such as Cairns & Mackay to promote the IEEE.

### **D.3 Any innovative ideas to make IEEE more creative and value added for sustaining the membership retention and recruitment goals.**

Continue to investigate opportunities for hands-on workshops catering to the interests and needs of local members, such as the Wind Power Systems and Artificial Intelligence in Higher Degree Research held in 2023. These could be non-technical in nature and may include a networking/social focus as well.

Engage in regional events involving problem solving, engineering & innovation initiatives to broaden our member-base. This includes joint events with other engineering groups (especially affinity groups) and wider community initiatives such as science week.

Incorporate social media and more frequent website promotion into our advertising regime, to increase the audience at our activities and our presence in the community.

### **D.4 Business Plan for Sustainable Growth and Financial Stability.**

The Section is fortunate to have a stable organizational committee with a good mix of members from academic and industry backgrounds that understand the area and member needs. The executive committee includes representation from many of the major regional cities within the section including Cairns, Townsville and Darwin to encourage activities in the various regions.

The executive members are also generally highly motivated and willing to assist and support the Section as required.

By focusing on a small number of high-profile events and including networking opportunities, the Section aims to remain relevant to the needs of local members and promote growth within the wider professional community.