

Presented by James Hart - Convener

Hobart – 15/11/2018

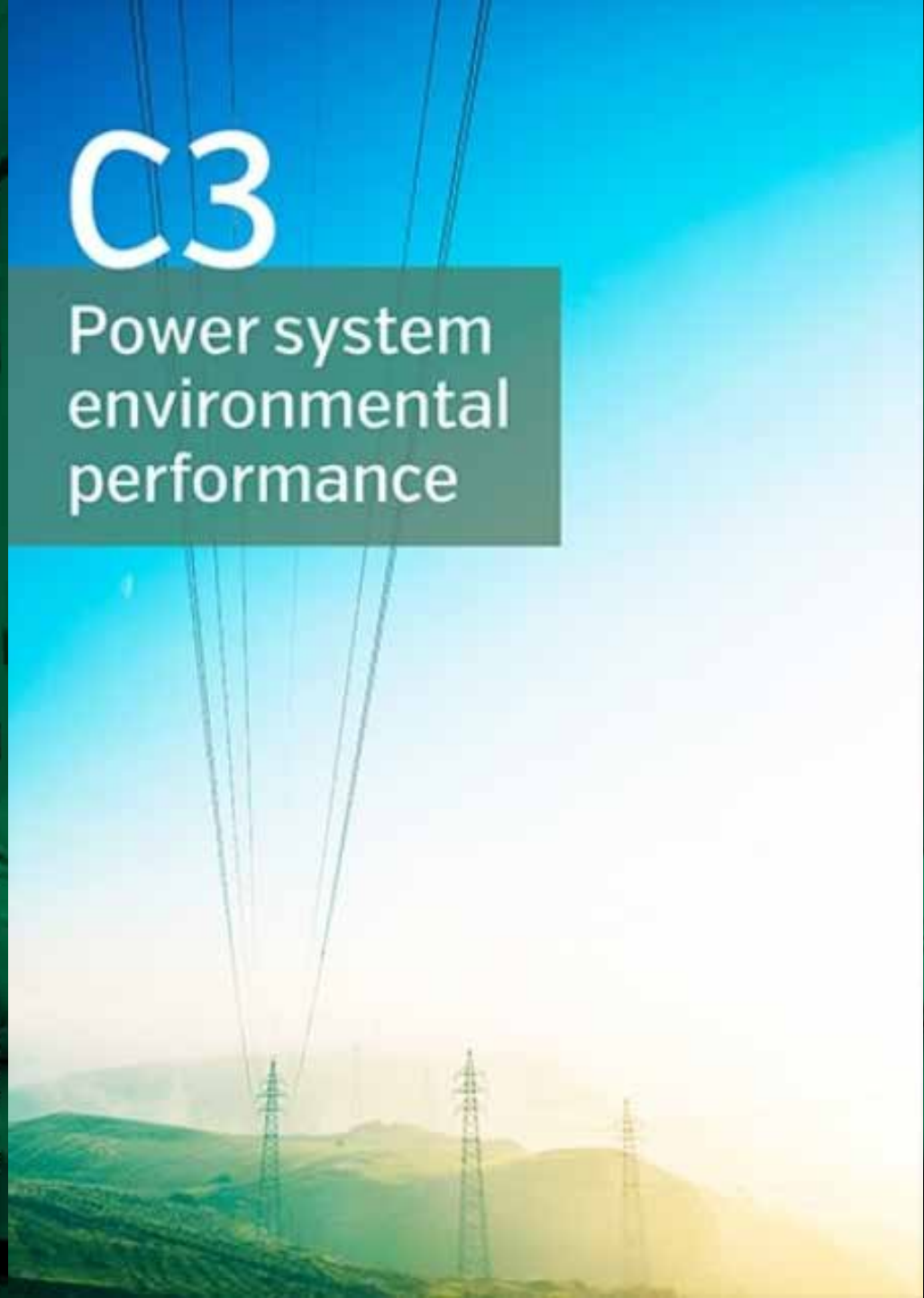


**cigre**

For power system expertise

# C3

Power system  
environmental  
performance



# 2018 Paris Session

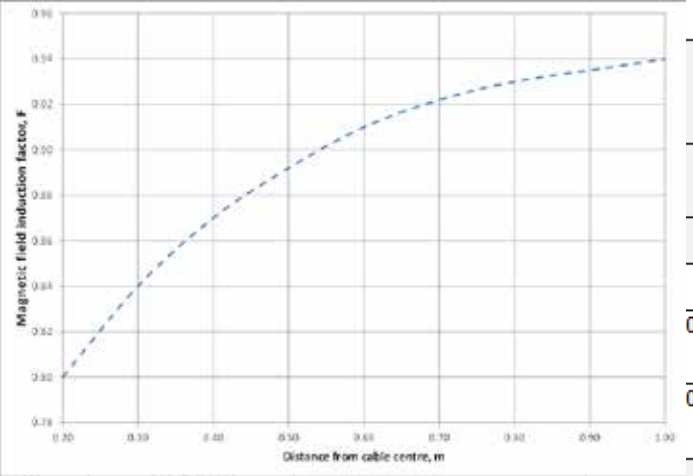
## Working Group C3.19 – EMF Management

- Significant loss of knowledge
- Remains the key issue when opposing powerlines
- Guidelines
- Assessing exposure
- Medical implants
- Dealing with uncertainty
- Risk communication
- Reducing magnetic fields
- Common FAQs



Table 4.3 Reference levels and limits for IEEE and ICNIRP

	50Hz fields reference levels			60Hz fields reference levels			Static fields limits	
	Public	Occupational	Controlled environment	Public	Occupational	Controlled environment	Public	Occupational
<b>ICNIRP 2010</b>							<b>ICNIRP 2009</b>	
Magnetic (general)	Yes Measurements / calculations demonstrate compliance with Public RLs?	No Measurements / calculations demonstrate compliance with Occupational RLs?	See XX for definition of public exposure	200 uT	1,000 uT	See Note 3	400,000 uT	
Magnetic (head/trunk)	Yes Measurements / calculations demonstrate compliance with Occupational RLs?	No Measurements / calculations demonstrate compliance with Occupational RLs?	See XX for definition of occupational exposure					2,000,000 uT
Magnetic (limbs)	Yes Measurements / calculations demonstrate compliance with Controlled environment RLs?	No Measurements / calculations demonstrate compliance with Controlled environment RLs?	See XX for definition of controlled environment					8,000,000 uT
Electric (general)	Yes Measurements / calculations demonstrate compliance with Basic Restriction (General limit)?	No Measurements / calculations demonstrate compliance with Basic Restriction (General limit)?	See XX for definition of Basic Restriction (General)	4.167 kV/m			0 uT	353,000 uT
Electric (arms)	Yes Measurements / calculations demonstrate compliance with Basic Restriction (Task specific limit)?	No Measurements / calculations demonstrate compliance with Basic Restriction (Task specific limit)?	See XX for definition of Basic Restriction (Specific)	904 V/m	63,200 V/m		0 uT	353,000 uT
Electric (general)	Yes Measurements / calculations demonstrate compliance with Basic Restriction (Task specific limit)?	No Measurements / calculations demonstrate compliance with Basic Restriction (Task specific limit)?	See XX for definition of Basic Restriction (Specific)	5 kV/m	20 kV/m			
<b>ICNIRP 2010</b>								
Magnetic (general)	Compliance demonstrated.	Non compliant situation. Avoid exposure, change activity or consider mitigation measures		83.33 uT	416.67 uT			
Electric (general)				4.17 kV/m	8.33 kV/m			

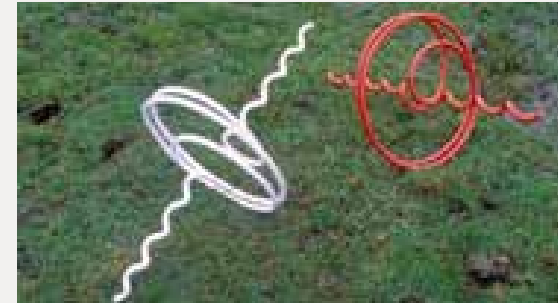


Note 1: ... in ICNIRP 2010, however, sufficient information is provided to derive these for PNS effects only.  
 Note 2: Reference levels for controlled environments defined as High Action levels are included in the DIRECTIVE 2013/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 June 2013  
 Note 3: ICNIRP 2010 does not provide sufficient information to be able to calculate these

# 2018 Paris Session

## WG C3.16 - Interactions between electric infrastructure and wildlife

- Design, construction, operation, maintenance and dismantling
- Birdlife key focus
- Type, colour, species, season and environmental characteristics



# 2018 International Activities

## Active Working Groups

- WG C3.01 EMF and Health
- WG C3.09 Corridor management.
- WG C3.12 Methodologies for GHG inventory and reporting for T&D utilities
- WG C3.14 Impact of environmental liability on transmission and distribution activities
- WG C3.15 Best environmental and socio-economic practices for improving public acceptance of high voltage substations
- WG C3.16 Interactions between electric infrastructure and wildlife
- WG C3.17 Interaction between wildlife and emerging RES and submarine cables
- WG C3.18 Eco-friendly approaches in Transmission and Distribution
- WG C3.19 Responsible management of the EMF Issue
- WG C3.20 Sustainable development goals in the electric power sector

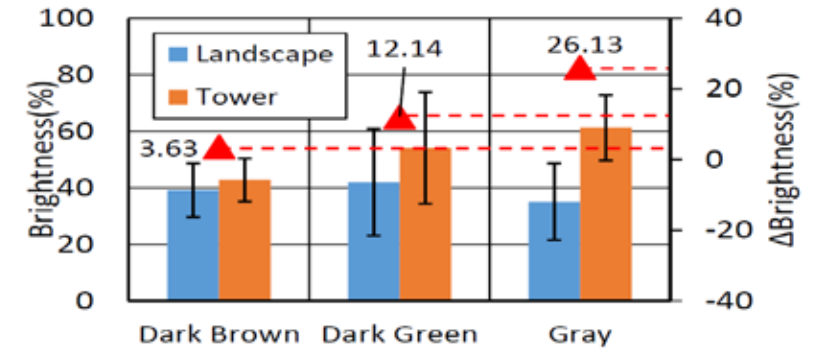


Fig. 7 Analysis of the brightness in March  
Bar : SD,  $\Delta$  : difference in saturation between the landscape and tower.

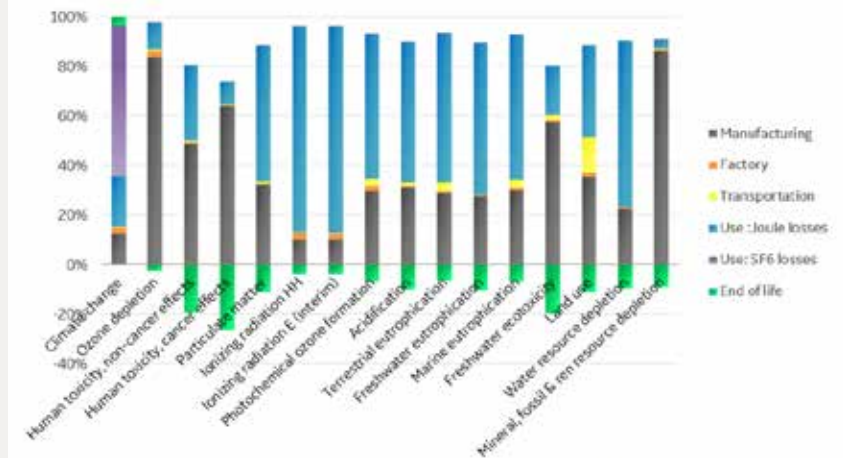


Figure 3: Life Cycle Assessment results for the F35-145kV (SF<sub>6</sub>)

# 2018 AU/NZ Activities

## Involvement in C3 International

- AP members active in 4 working groups

## Involvement in Paris 2018

- 2 AP members present
- Special Reporter
- Convenor of Working Group

## Activity in Australia

- Meeting in Sydney
- Disbanding of ENA Reference Groups
- Symposium in Cairns in 2023



# Belgium



# Netherlands





# Norway



# Norway



# Argentina



# Spain



# Switzerland



# Sweden



# Russia



# Australia

