

Initial Environmental Examination

Project Number: 51308-008
September 2023

India: Uttarakhand Climate Resilient Power System Development Project

Appendices Part 1

Prepared by Power Transmission Corporation of Uttarakhand Limited and Uttarakhand Power Corporation Limited for the Asian Development Bank.

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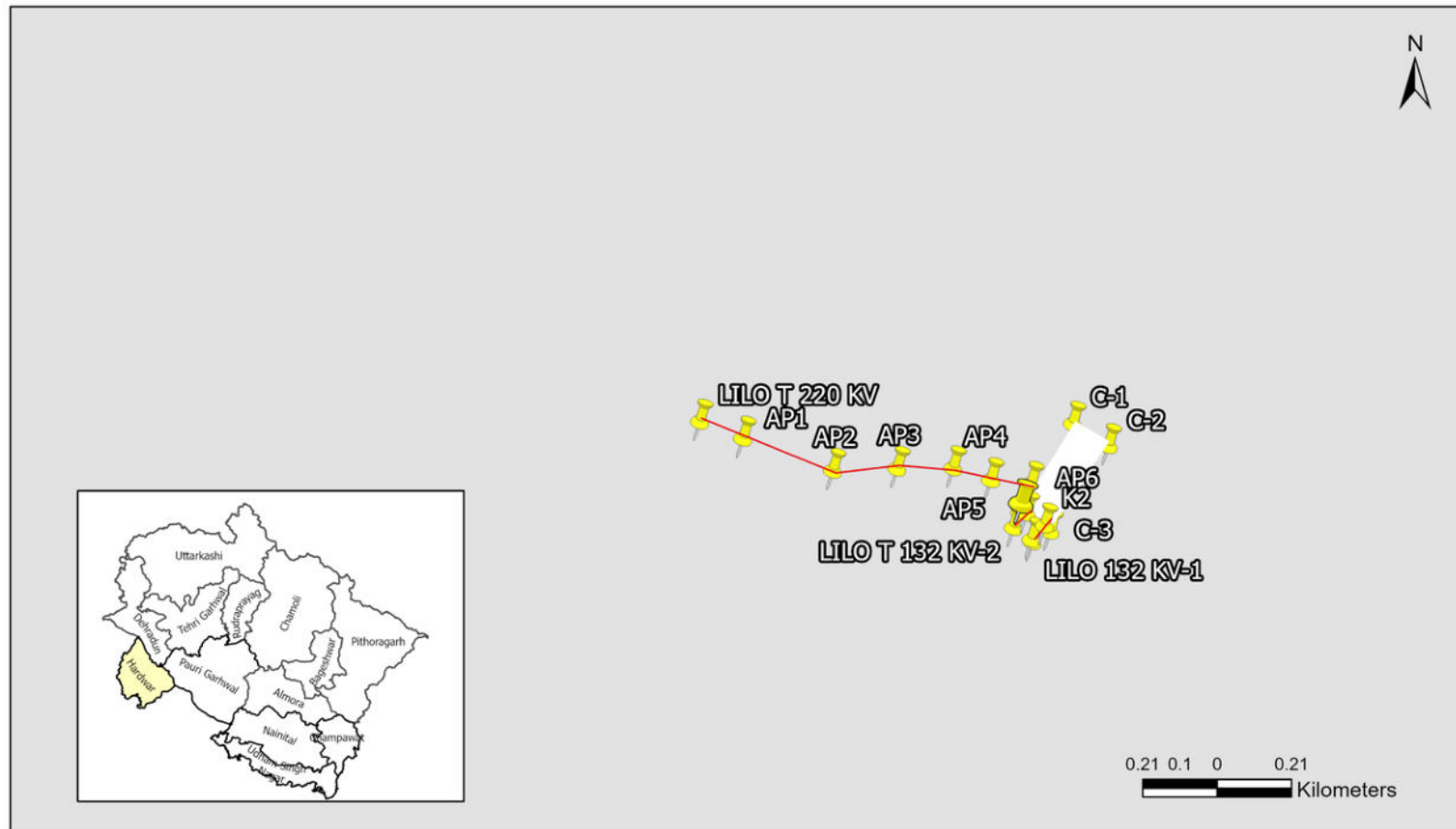
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Appendix A – PTCUL Biodiversity Mapping (HV Power Lines and HV Substations)

220 kV Roorkee - Nara / 132 kV Manglore-Asahi



Legend

- Reserve Forests
- Proposed Lines

- Critical Habitat Layer
- Unclassified
 - Likely
 - Potential

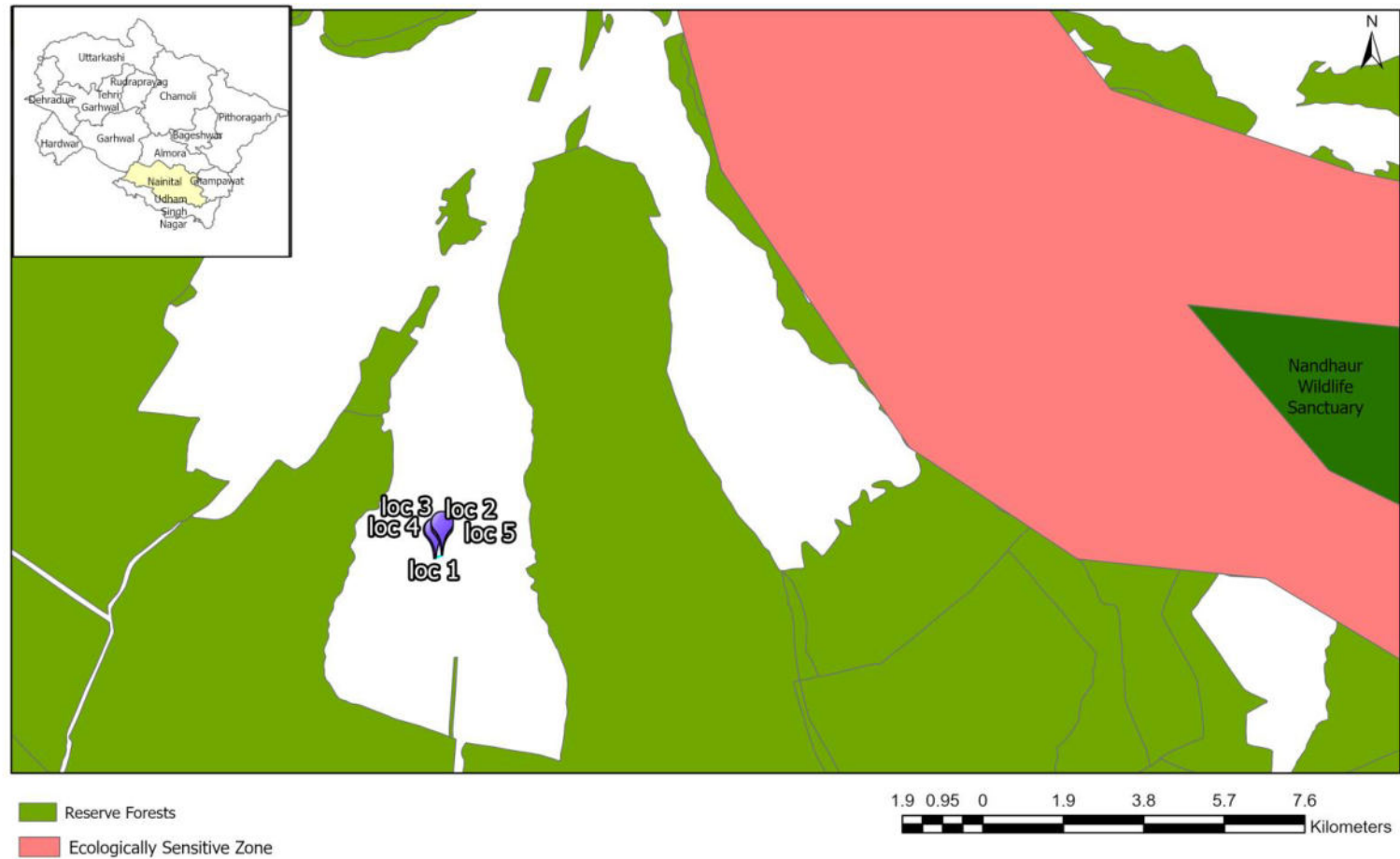
220 kV Roorkee - Nara / 132 kV Manglore-Asahi

Data Credits: Power Transmission Corporation of Uttarakhand Limited (PTCUL) and Survey Of India - 2021 (SOI)

The map displays the Saharanpur region in India, centered on the city of Saharanpur. The city is shown as a large, light gray area. Surrounding the city are several districts, including Yamunanagar to the north, Haridwar to the east, and Muzaffarnagar to the south. The Yamuna River is visible on the left side of the map, flowing through the region. The Ghaghara River is also shown, flowing through the city of Saharanpur. Key locations marked on the map include Saharanpur, Roorkee, Deoband, Purquazi, Muzaffarnagar, Yamunanagar, Haridwar, and Muzaffarnagar. The map also highlights the Saharanpur Wildlife Sanctuary and the Ghaghara Wildlife Sanctuary. The map is sourced from Mapbox and OpenStreetMap.

132 kV Kathgodam - Rudrapur

132 kV Kathgodam – Rudrapur



Data Credits: PTCUL, MoEF (India), and ENVIS

132 kV Kathgodam - Rudrapur



Legend

- Reserve Forests
- Proposed Lines

Critical Habitat Layer

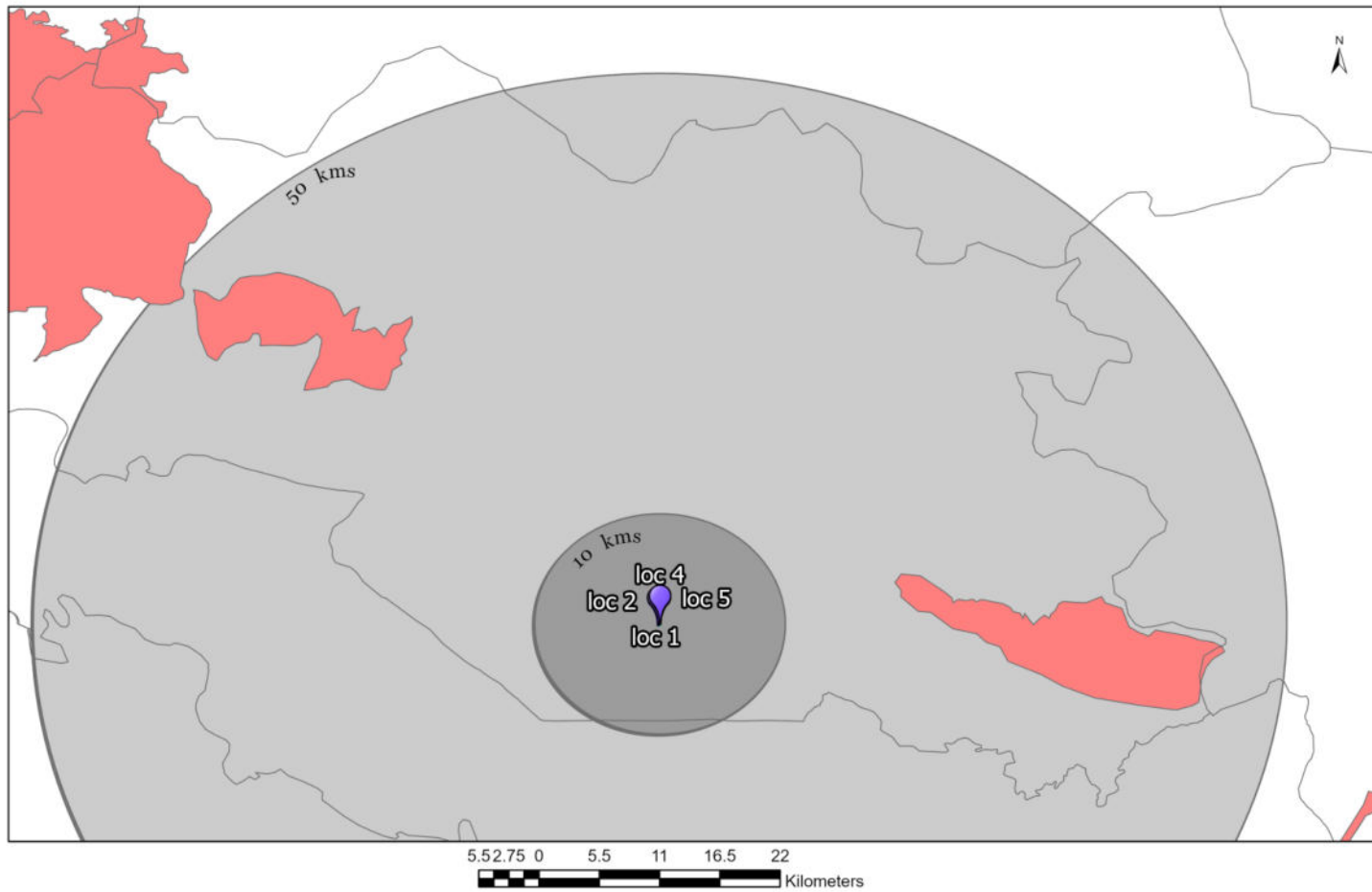
- Unclassified
- Likely
- Potential

132 kV Kathgodam – Rudrapur

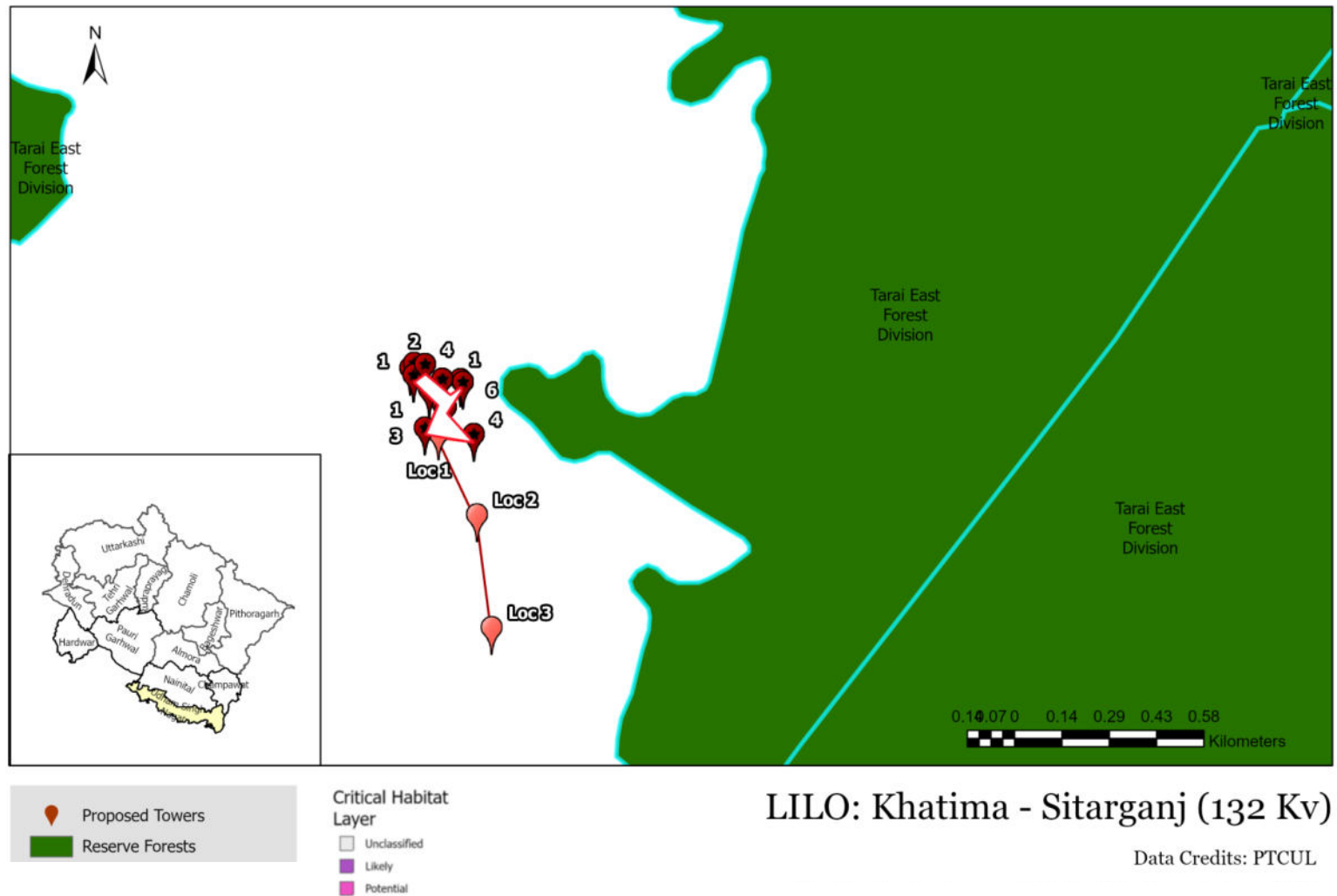
Data Credits: Power Transmission Corporation of Uttarakhand Limited (PTCUL) and Survey Of India - 2021 (SOI)

132 kV Kathgodam – Rudrapur – Proximity to IBA / KBA

132 kV Kathgodam – Rudrapur

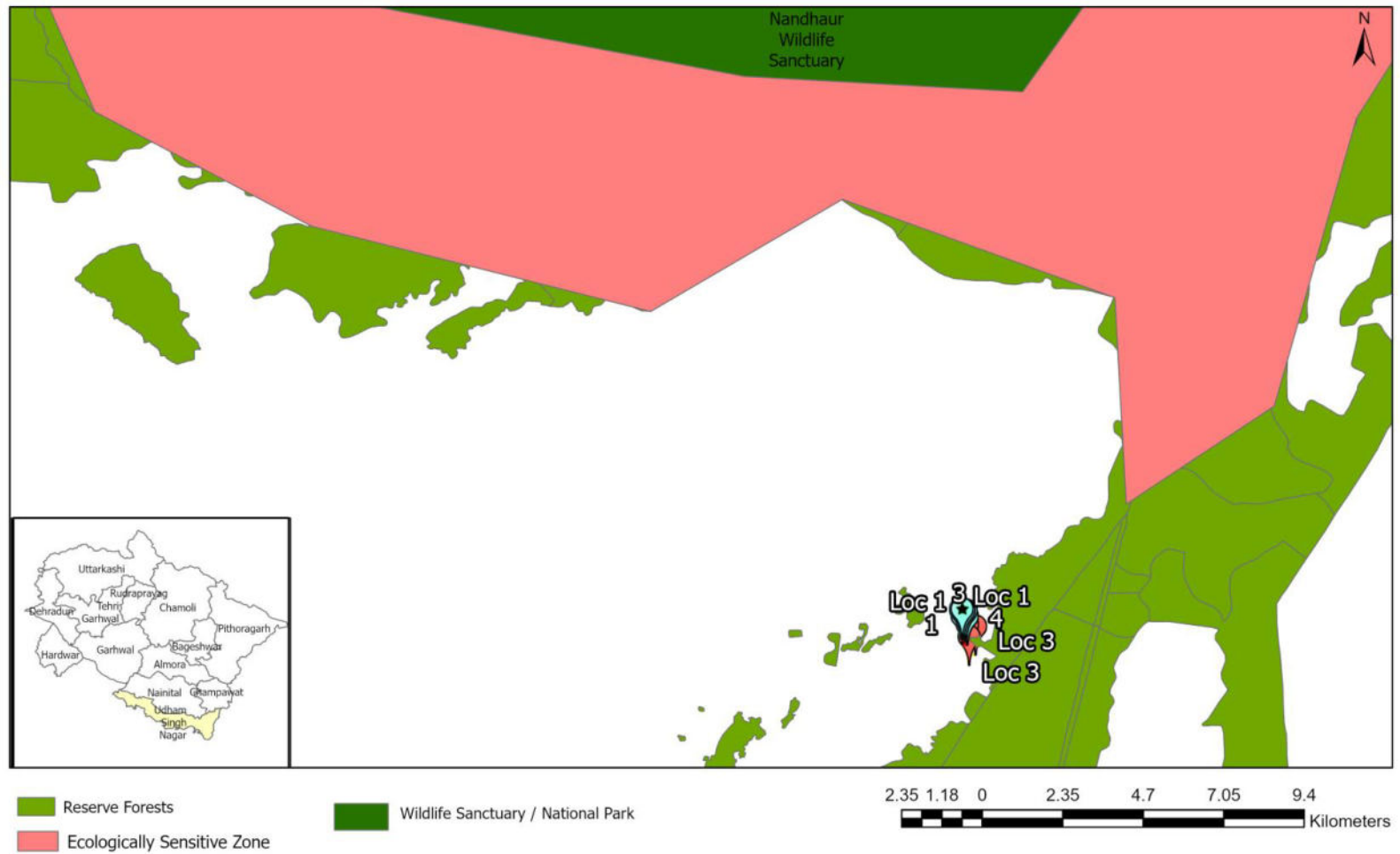


132 kV Khatima - Sitarganj



132 kV Khatima - Sitarganj

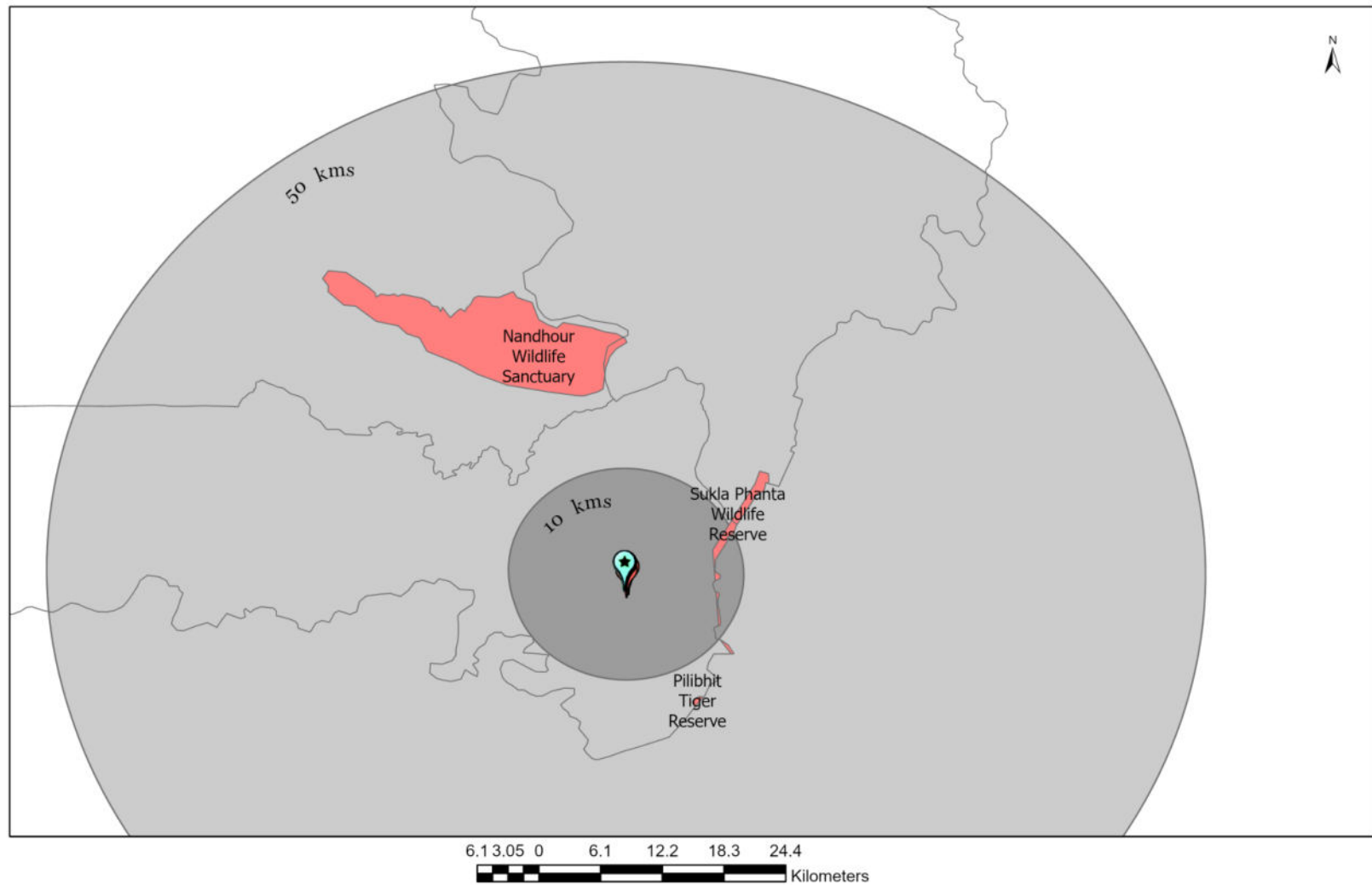
132 kV Khatima – Sitarganj



Data Credits: PTCUL, MoEF (India), and ENVIS

132 kV Khatima – Sitarganj – Proximity to IBA / KBA

132 kV Khatima – Sitarganj



400 kV Kashipur-Puhana



Legend

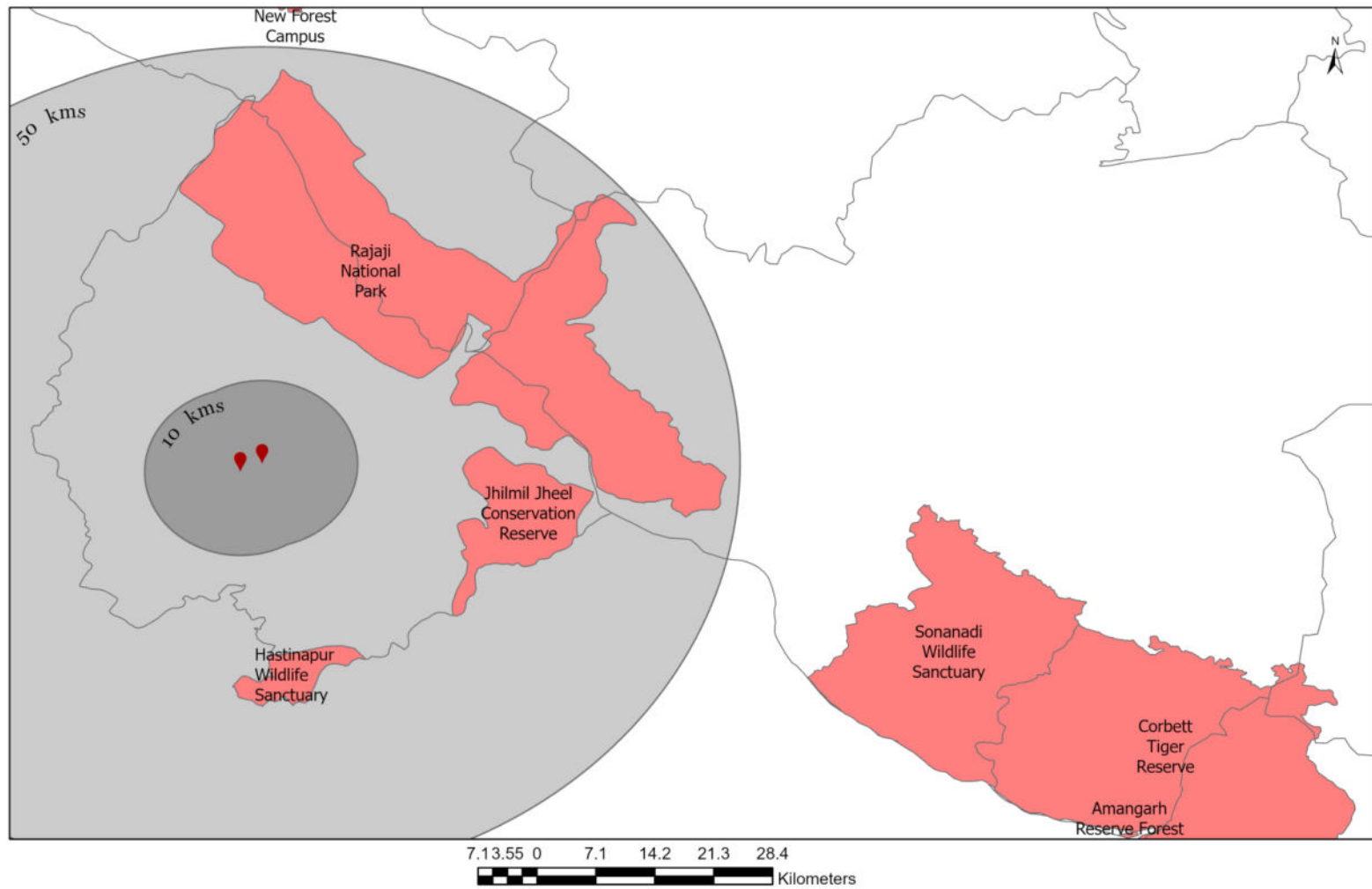
- Reserve Forests
- Proposed Lines

400 kV Kashipur-Puhana

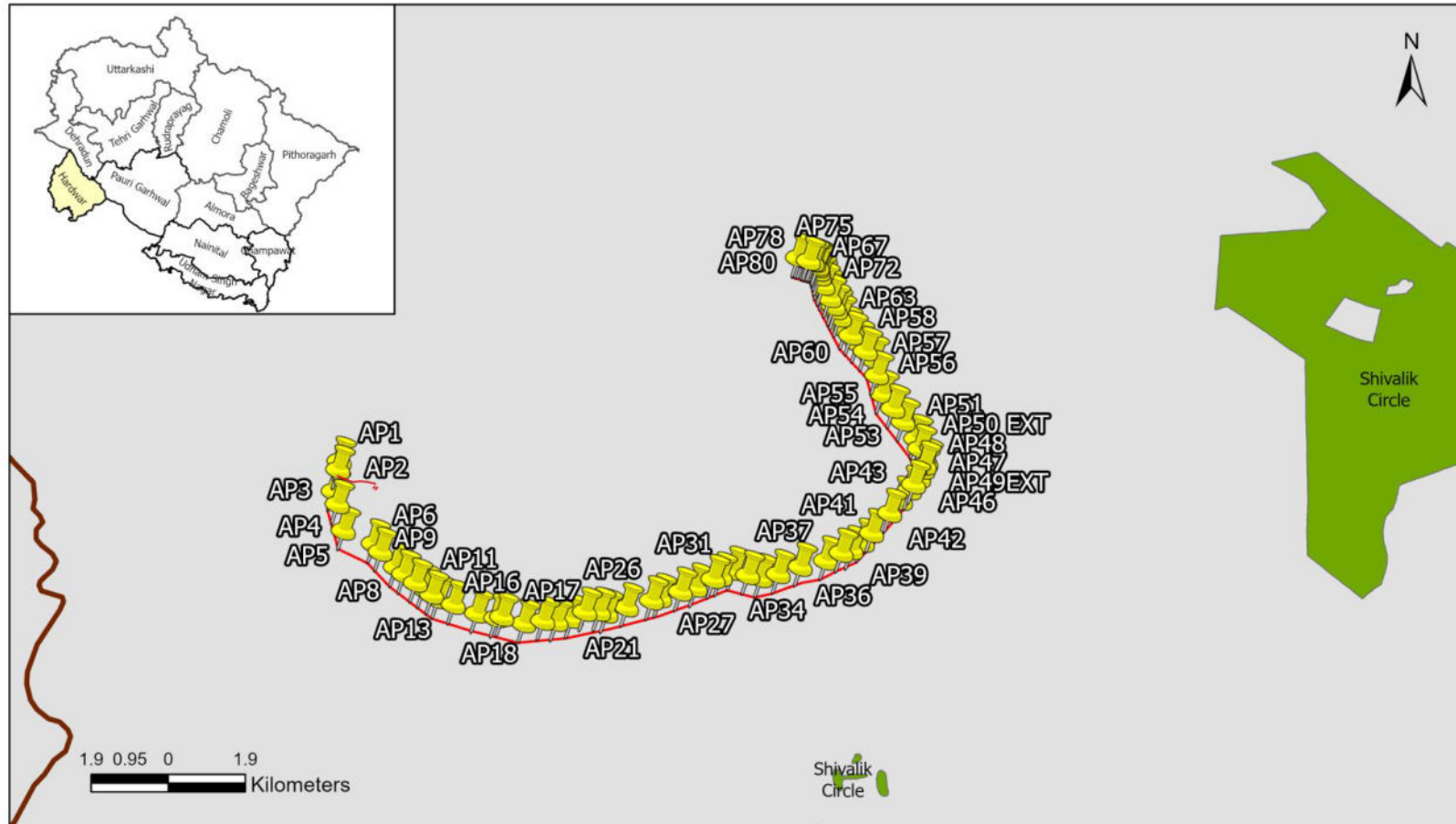
Data Credits: Power Transmission Corporation of Uttarakhand Limited (PTCUL) and Survey Of India - 2021 (SOI)

400 kV Kashipur-Puhana

400 kV Kashipur-Puhana



220 KV Manglaur - Nara



Legend

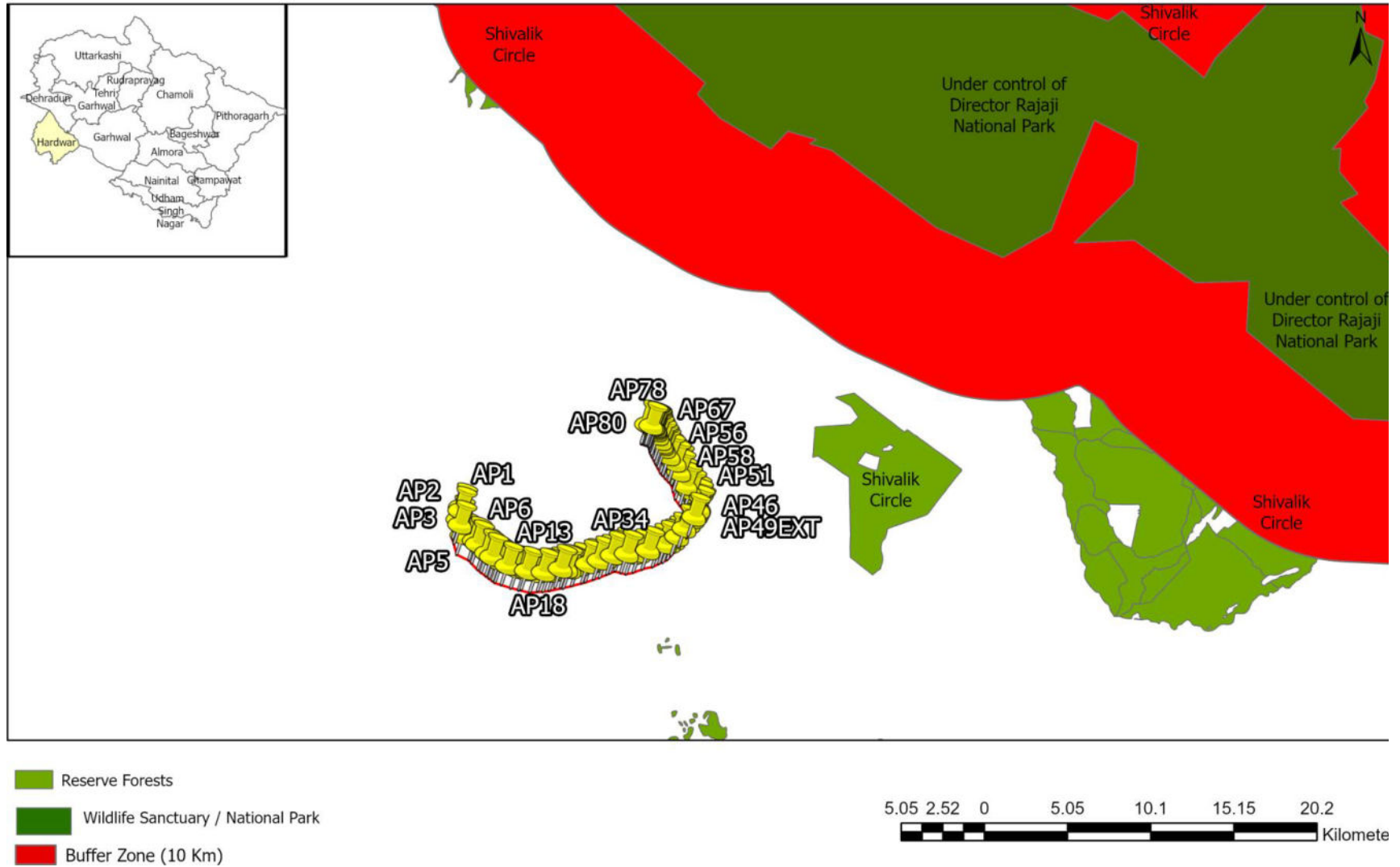
- Reserve Forests
- Proposed Lines

220 KV Manglaur – Nara

Data Credits: Power Transmission Corporation of Uttarakhand Limited (PTCUL) and Survey Of India - 2021 (SOI)

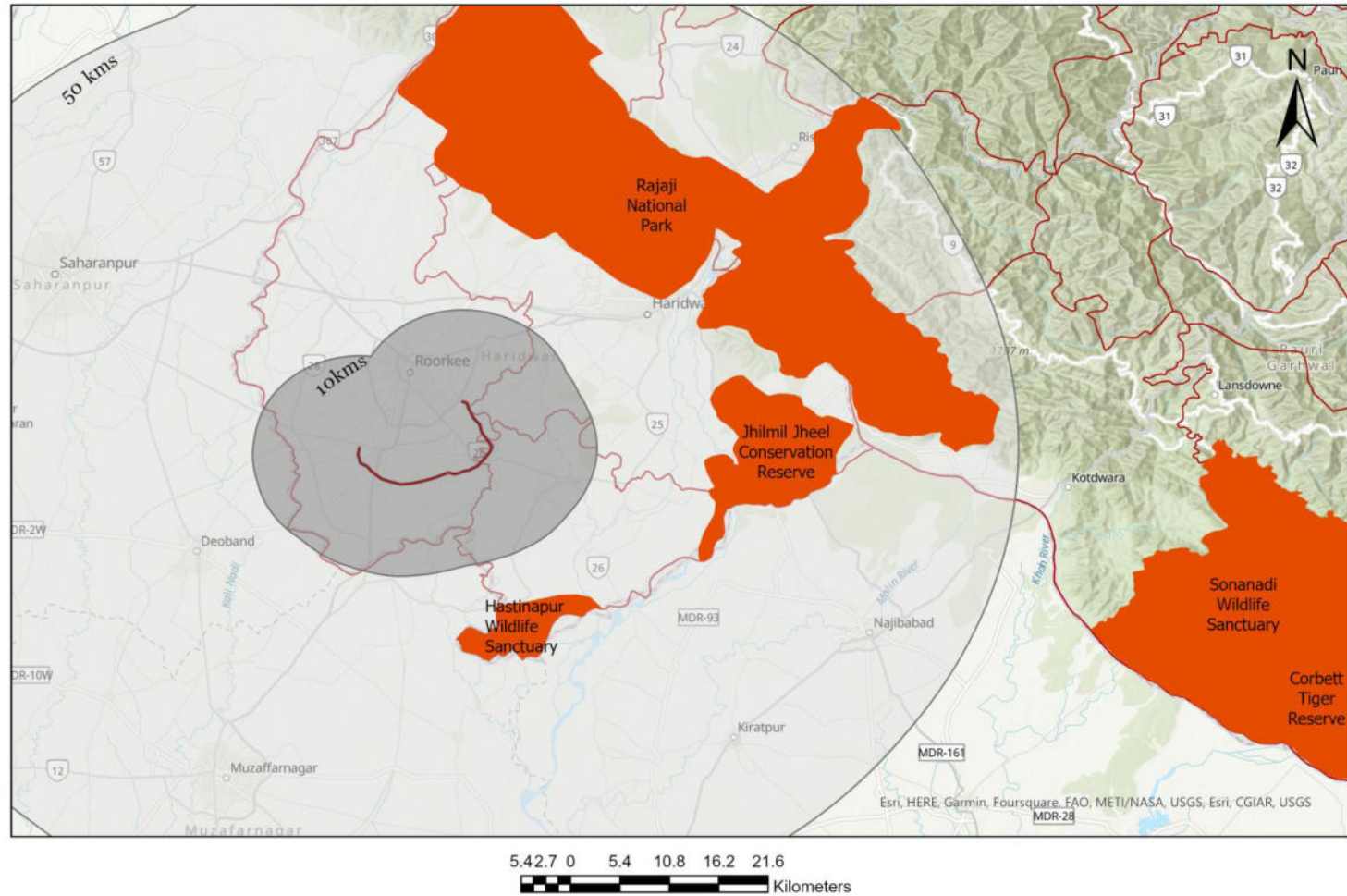
220 KV Manglaur - Nara

220kv Mangalore-Nara



400 kV Kashipur-Puhana / Manglaur - Nara – Proximity to IBA / KBA (approximate locations – none within 10km)

400 kV Manglaur - Nara



132 kV Kashipur – Mahuakheraganj



Legend

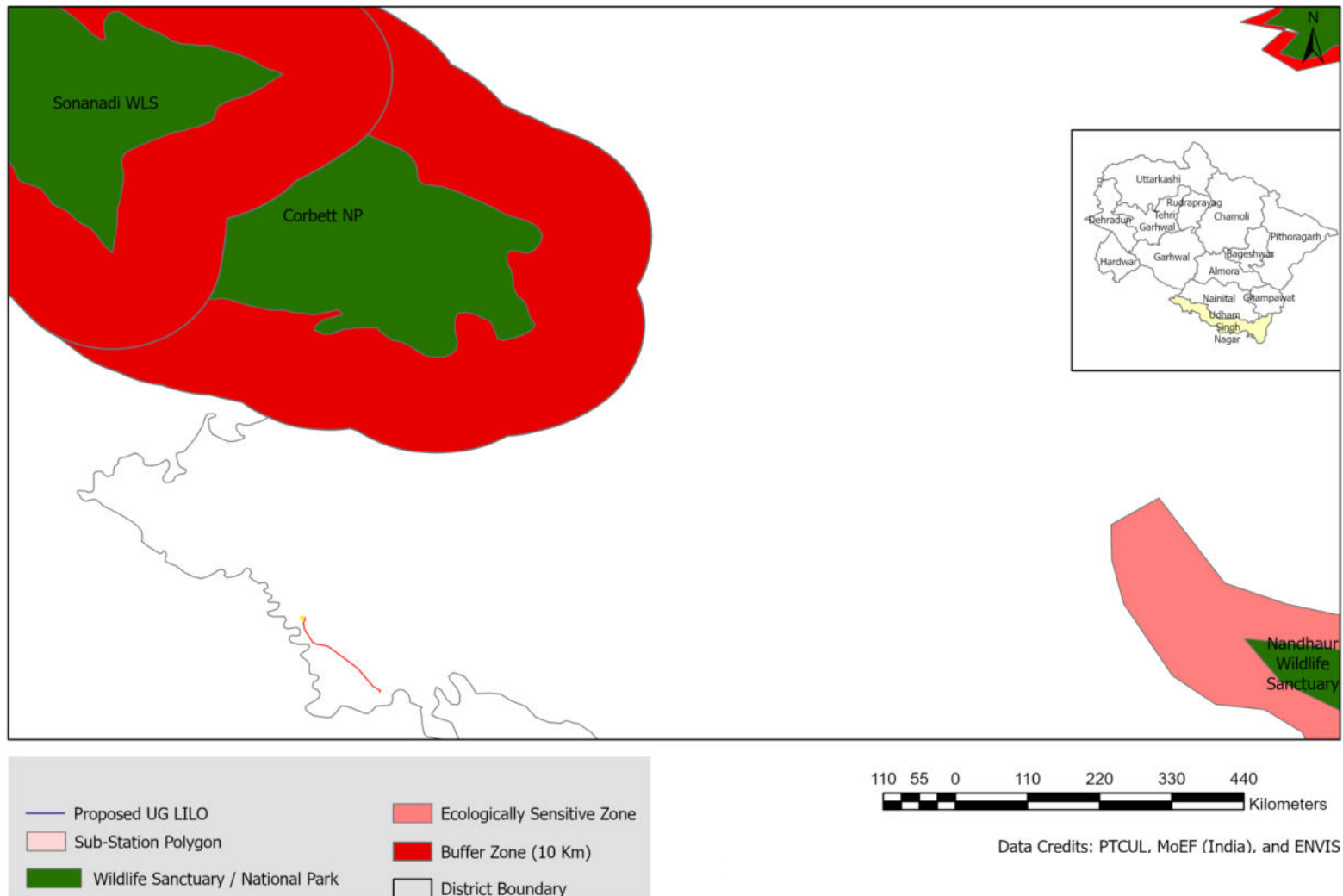
- Reserve Forests
- Proposed Lines

Kaniya SS

Data Credits: PUTCUL

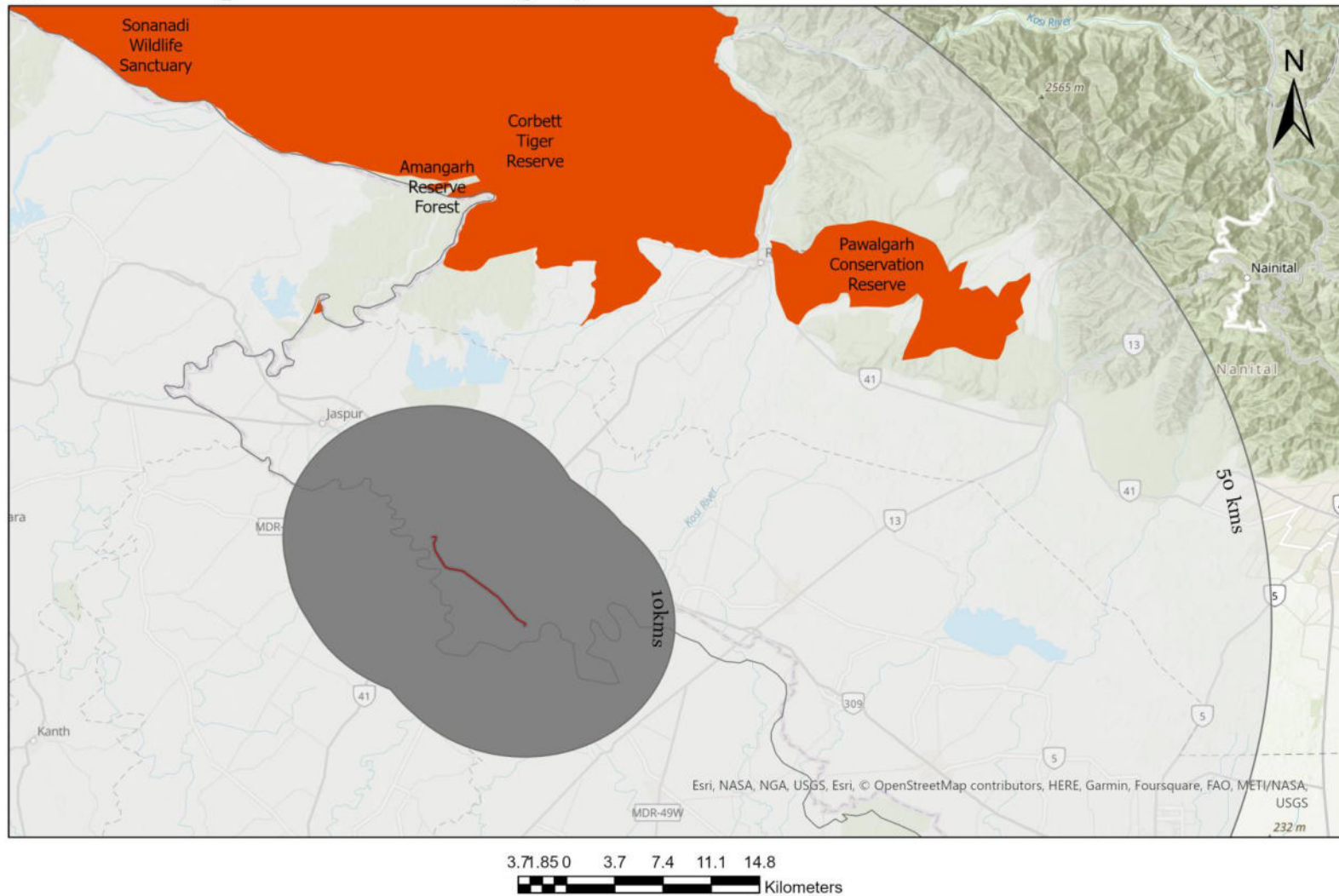
132 kV Kashipur – Mahuakheraganj

132 kV Kashipur – Mahuakheraganj

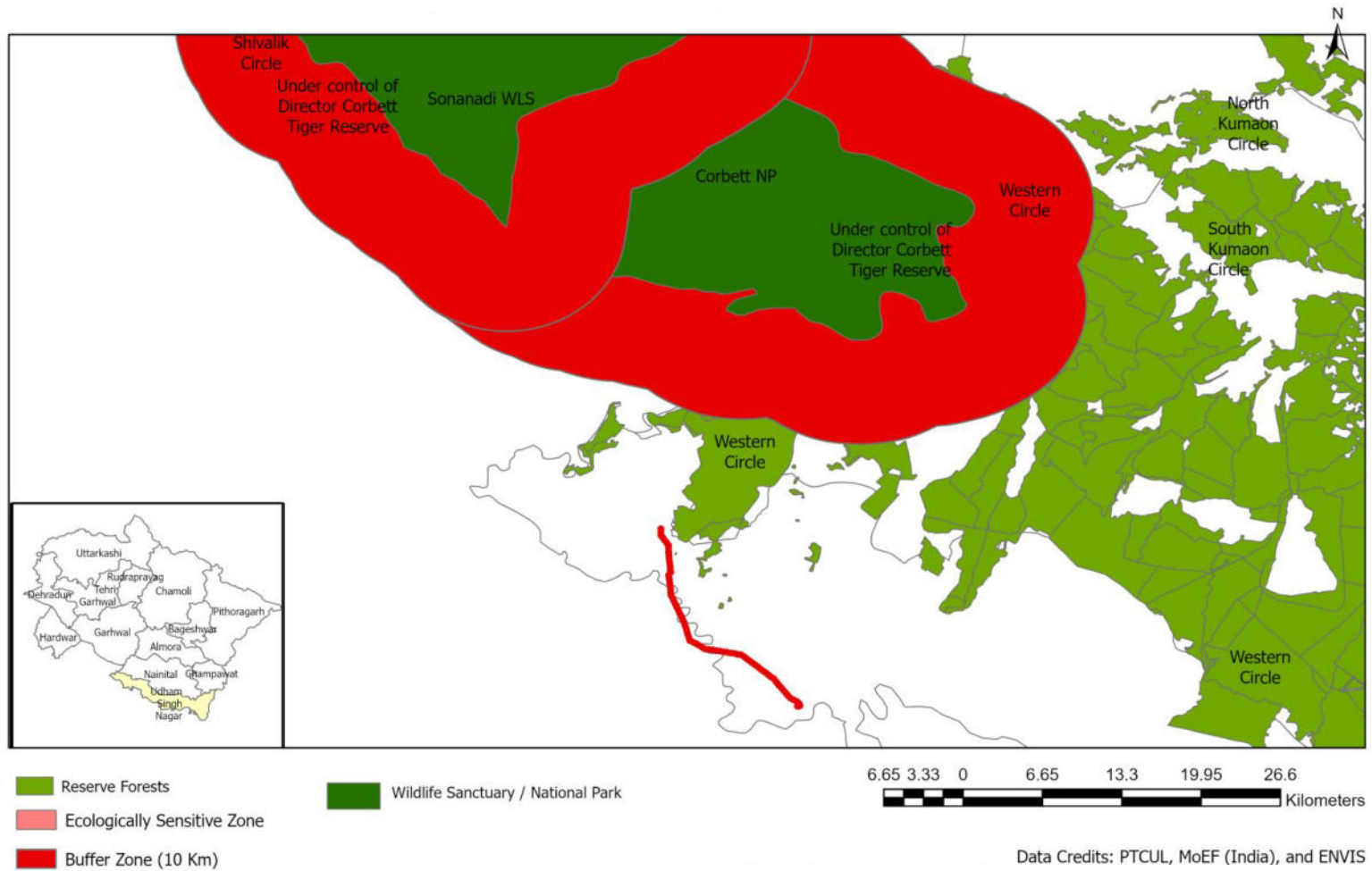


132 kV Kashipur - Mahuakheraganj – Proximity to IBA / KBA

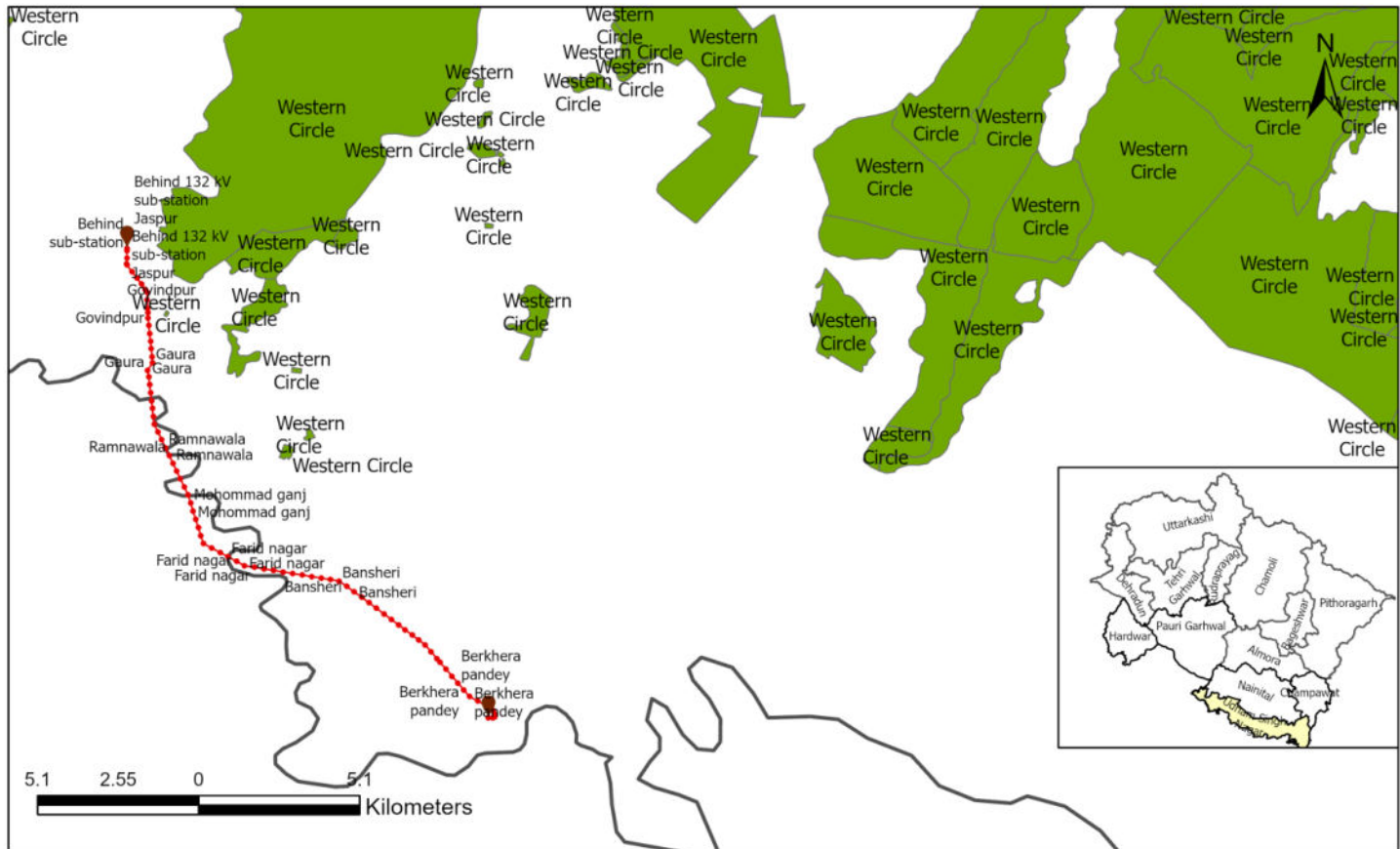
132 kV Kashipur - Mahuakheraganj



132 kV D/C HV power line from 220 kV S/s Mahuakheraganj to 132 kV S/s Jaspur



132 kV D/C HV power line from 220 kV S/s Mahuakheraganj to 132 kV S/s Jaspur

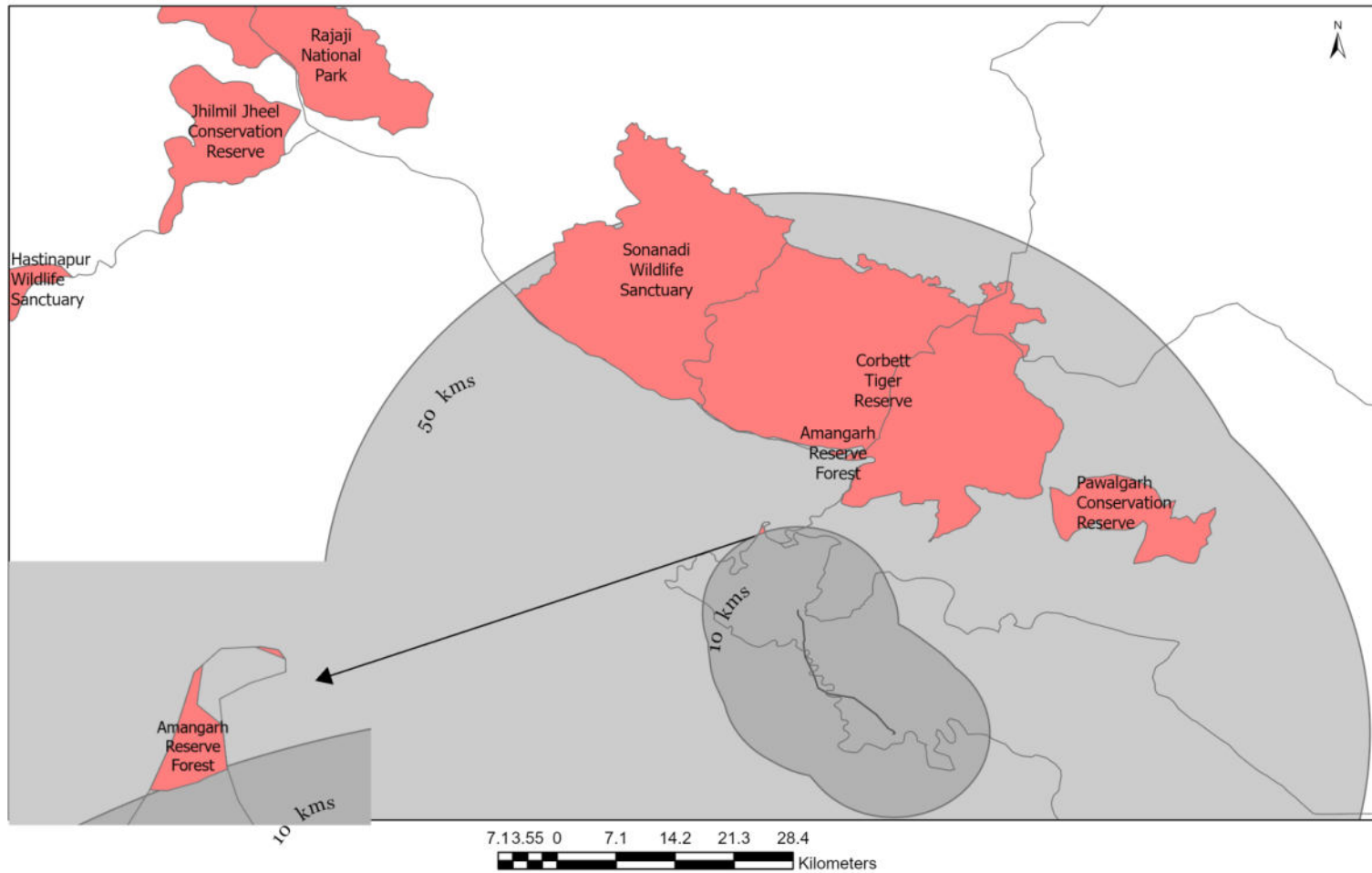


Legend

- Reserve Forests
- Proposed Lines

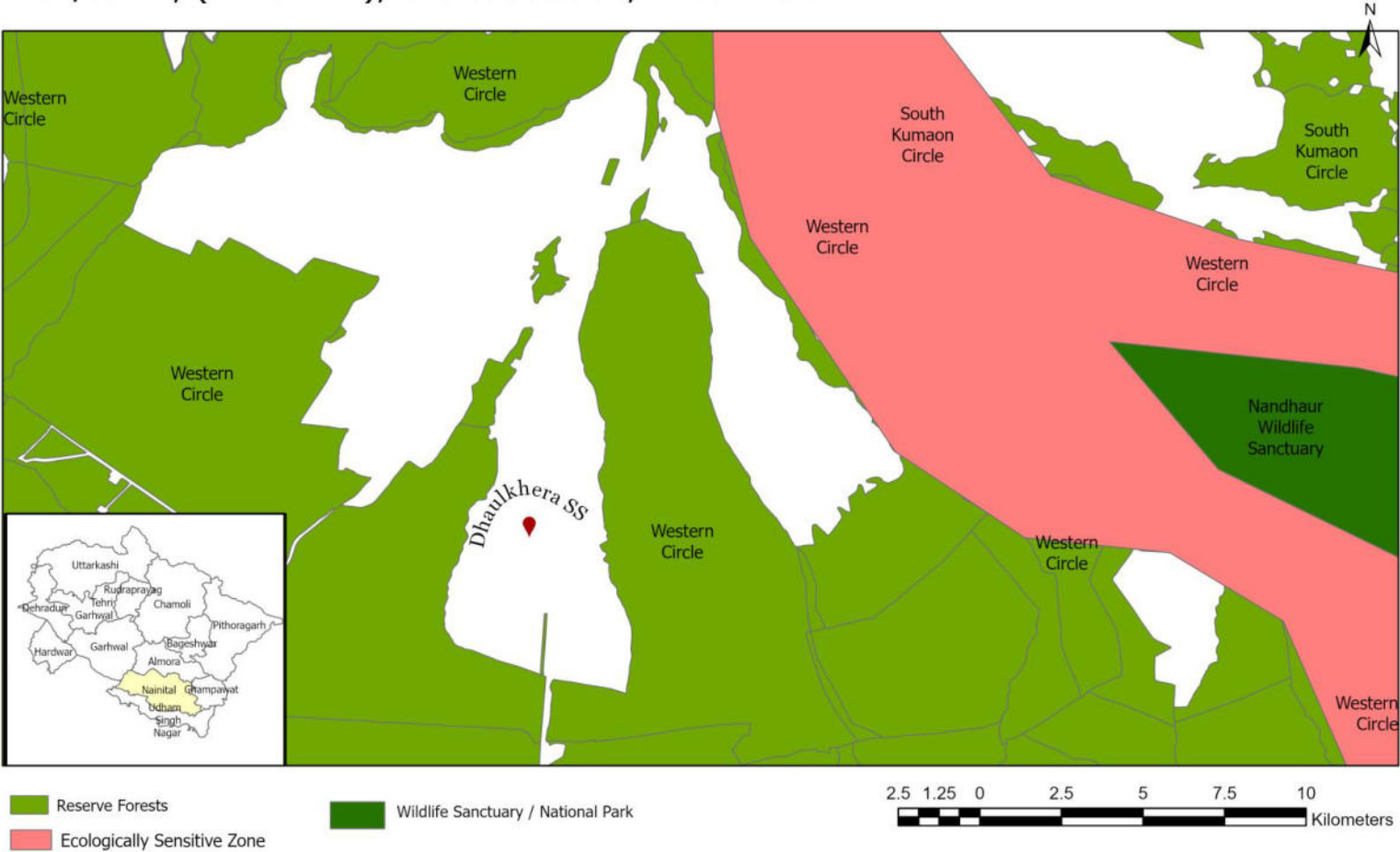
Data Credits: PUTCUL

132 kV D/C HV power line from 220 kV S/s Mahuakheraganj to 132 kV S/s Jaspur – Proximity to IBA / KBA



132/33 KV, (2X40 MVA), GIS Substation, Dhaulkhera

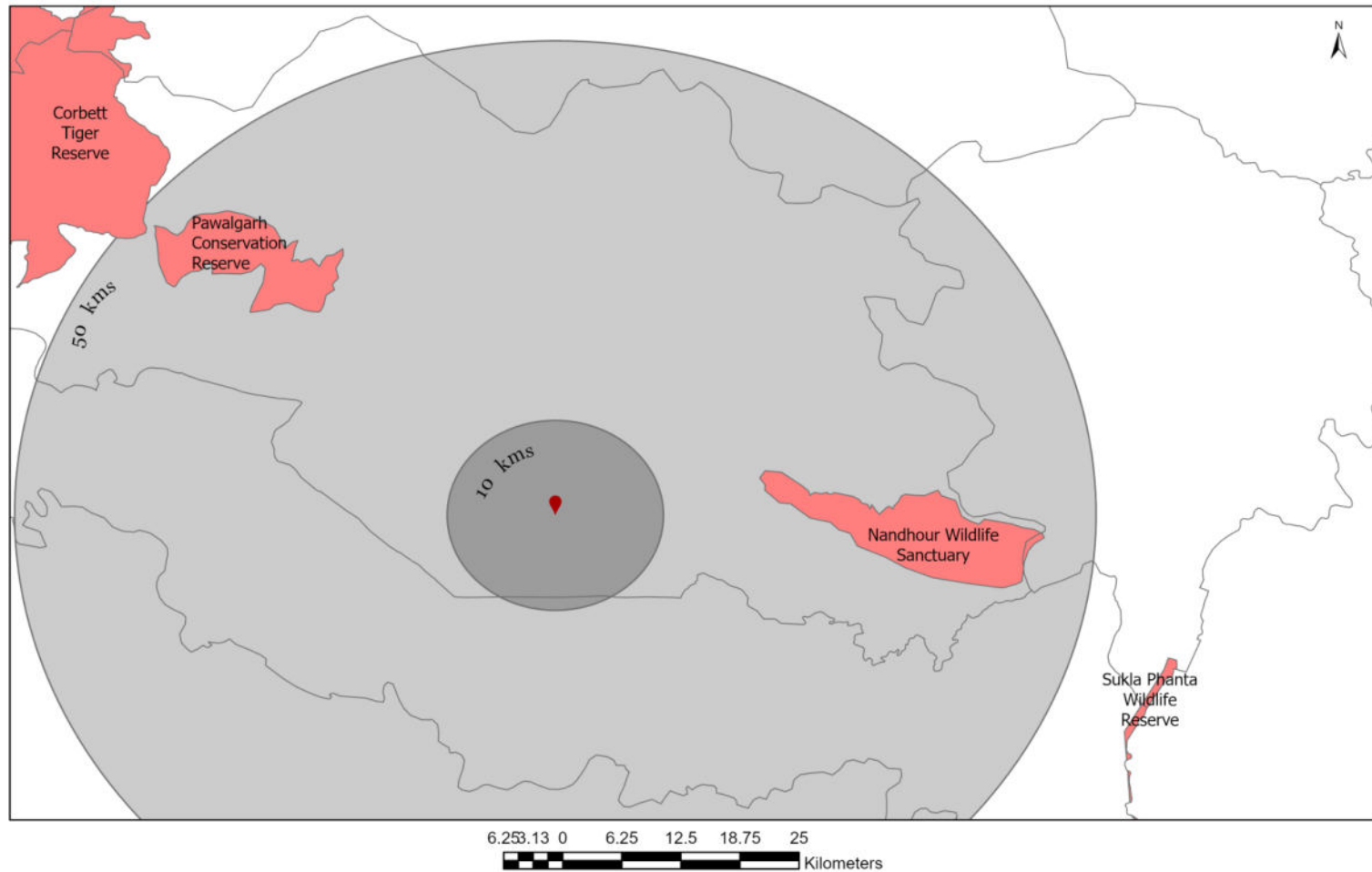
132/33 KV, (2X40 MVA), GIS Substation, Dhaulkhera



Data Credits: PTCUL, MoEF (India), and ENVIS

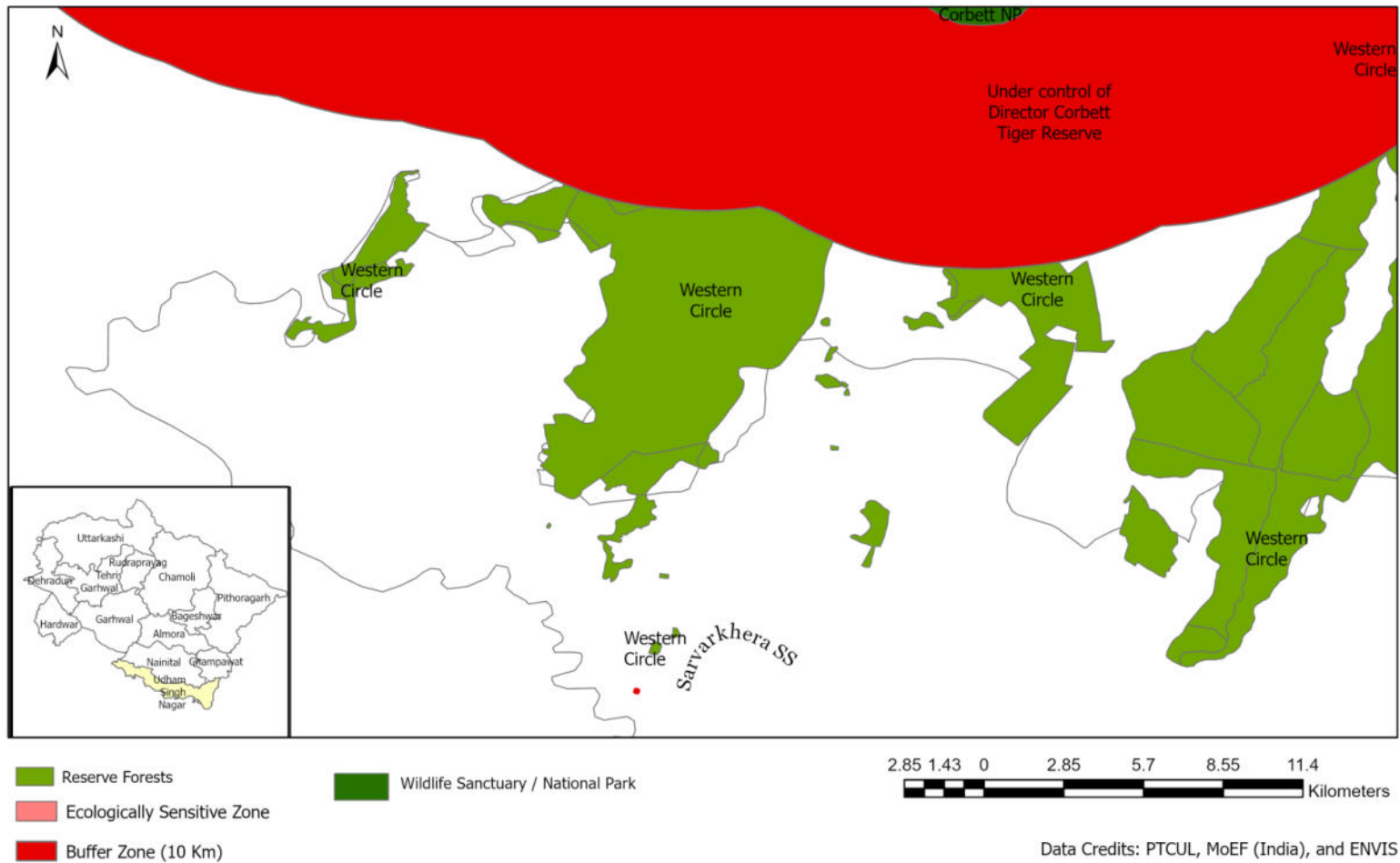
132/33 KV, (2X40 MVA), GIS Substation, Dhaulkhera – proximity to KBA / IBA

132/33 KV, (2X40 MVA), GIS Substation, Dhaulkhera



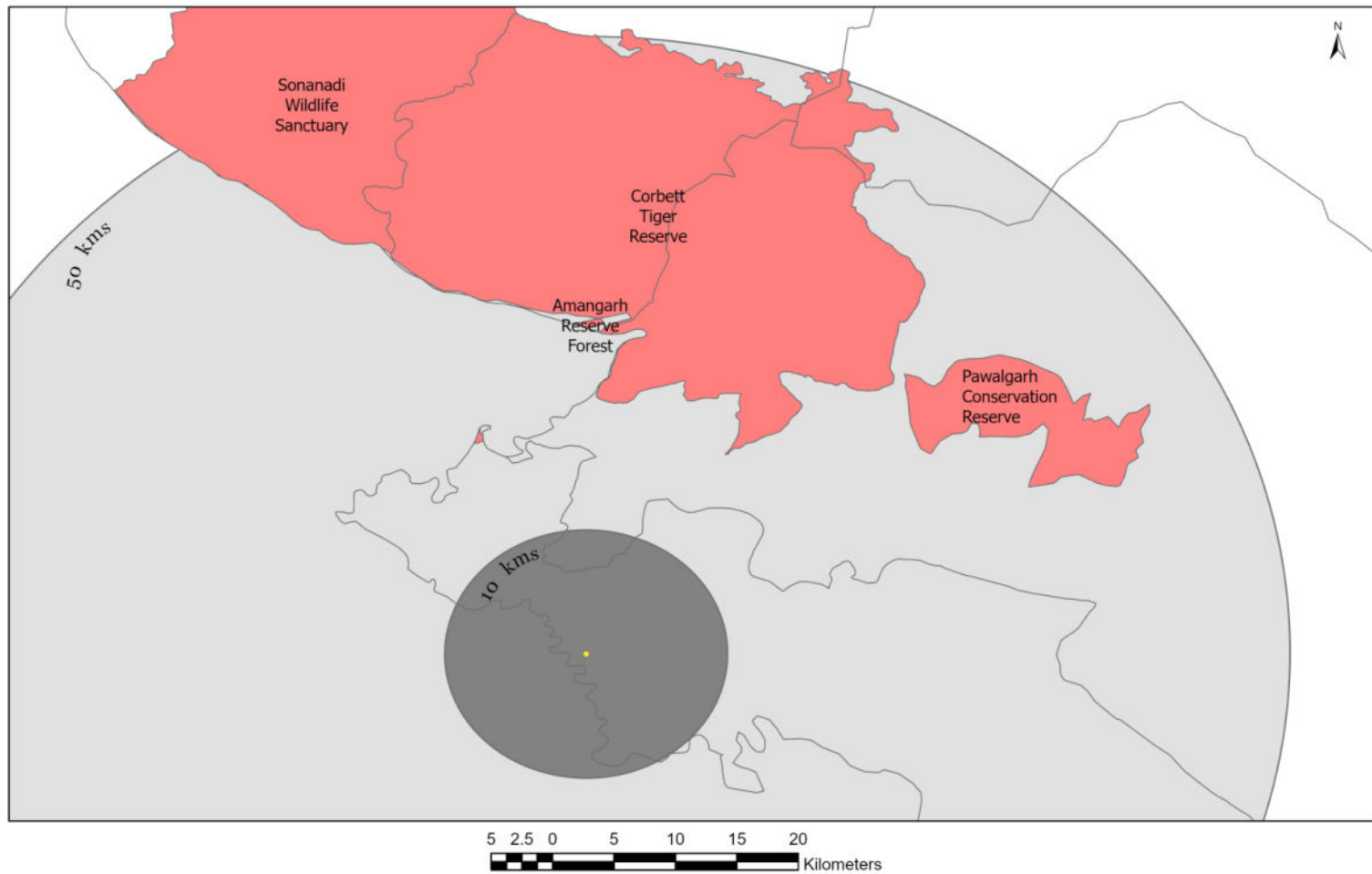
132 KV, (2X40 MVA), AIS Substation, Sarvarkhera

132 KV, (2X40 MVA), AIS Substation, Sarvarkhera



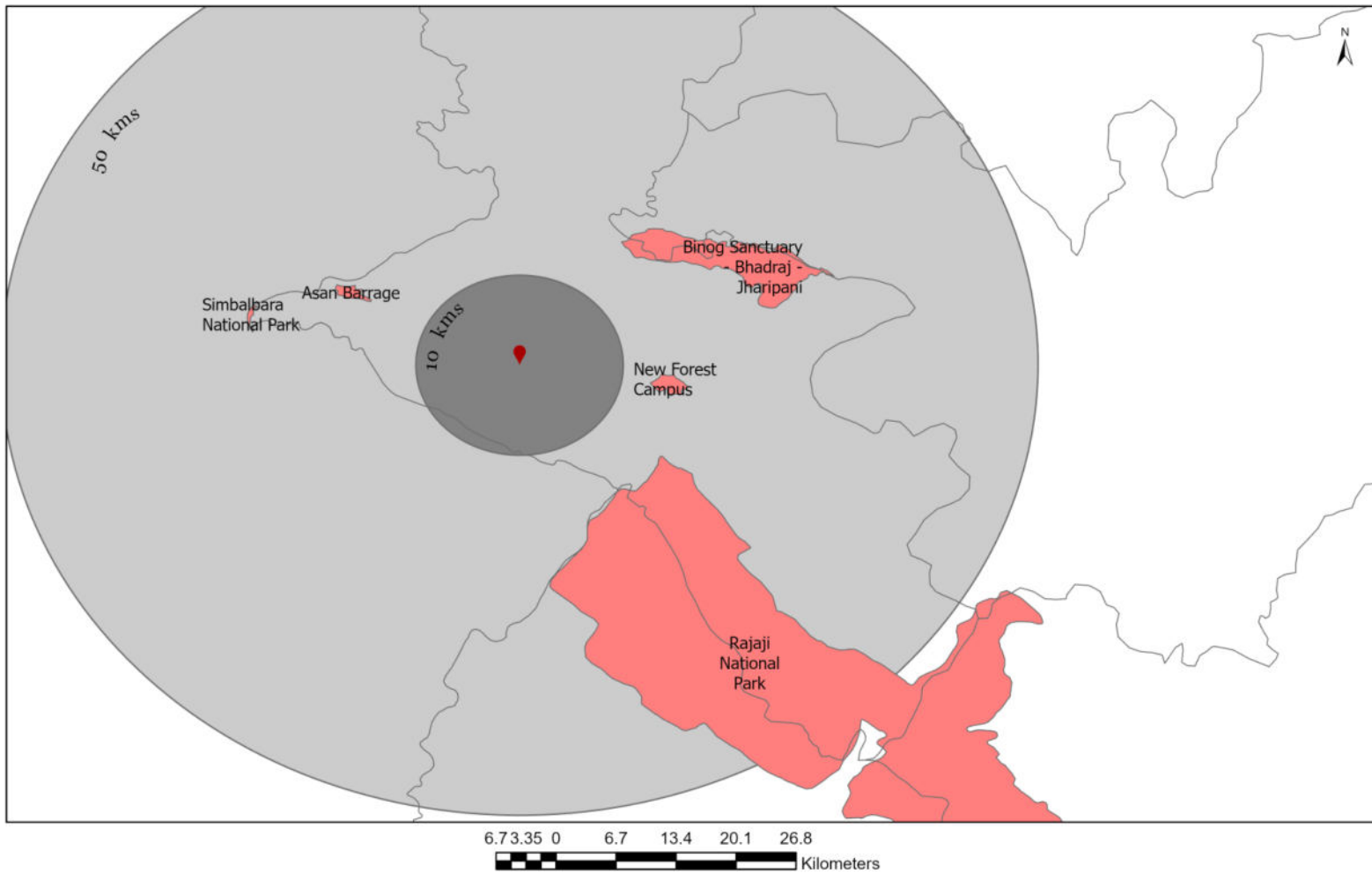
132 KV, (2X40 MVA), AIS Substation, Sarvarkhera – KBA/IBA

132 KV, (2X40 MVA), AIS Substation, Sarvarkhera



220 KV, (2X50 MVA), GIS Substation, Selaqui, Dehradun / 132/33 KV, (2X40 MVA), GIS Substation – Proximity to IBA/KBA

220 KV, (2X50 MVA), GIS Substation, Selaqui



220 KV, (2X50 MVA), GIS Substation, Selaqui, Dehradun / 132/33 KV, (2X40 MVA), GIS Substation, Araghar



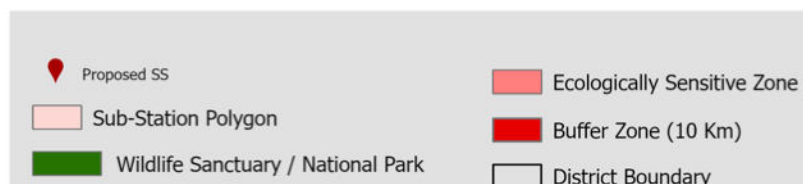
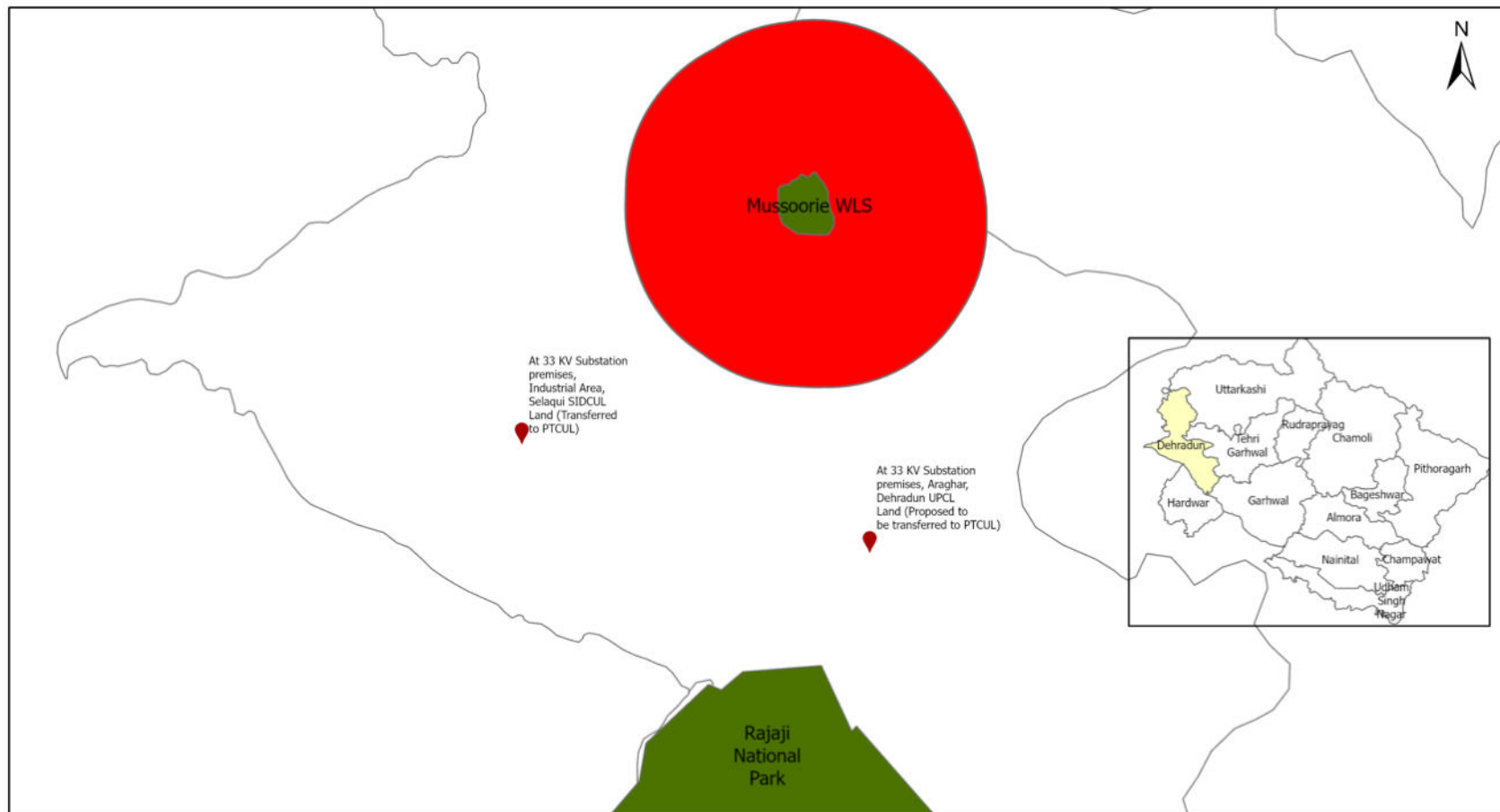
Legend

- Reserve Forests
- Proposed SS

220 KV, (2X50 MVA), GIS Substation, Selaqui, Dehradun
/ 132/33 KV, (2X40 MVA), GIS Substation

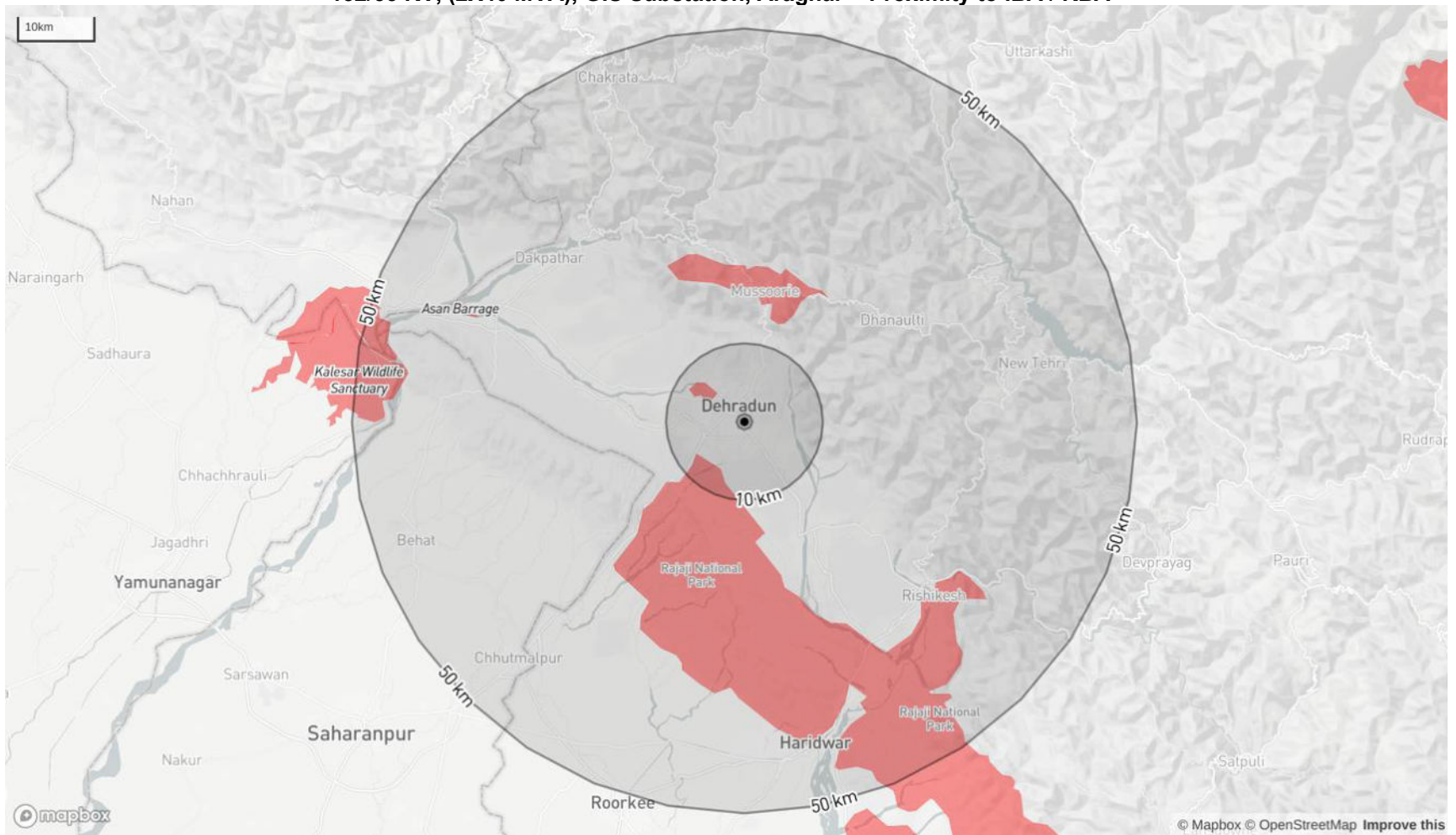
Data Credits: PUTCUL

220 KV, (2X50 MVA), GIS Substation, Selaqui, Dehradun / 132/33 KV, (2X40 MVA), GIS Substation, Araghar

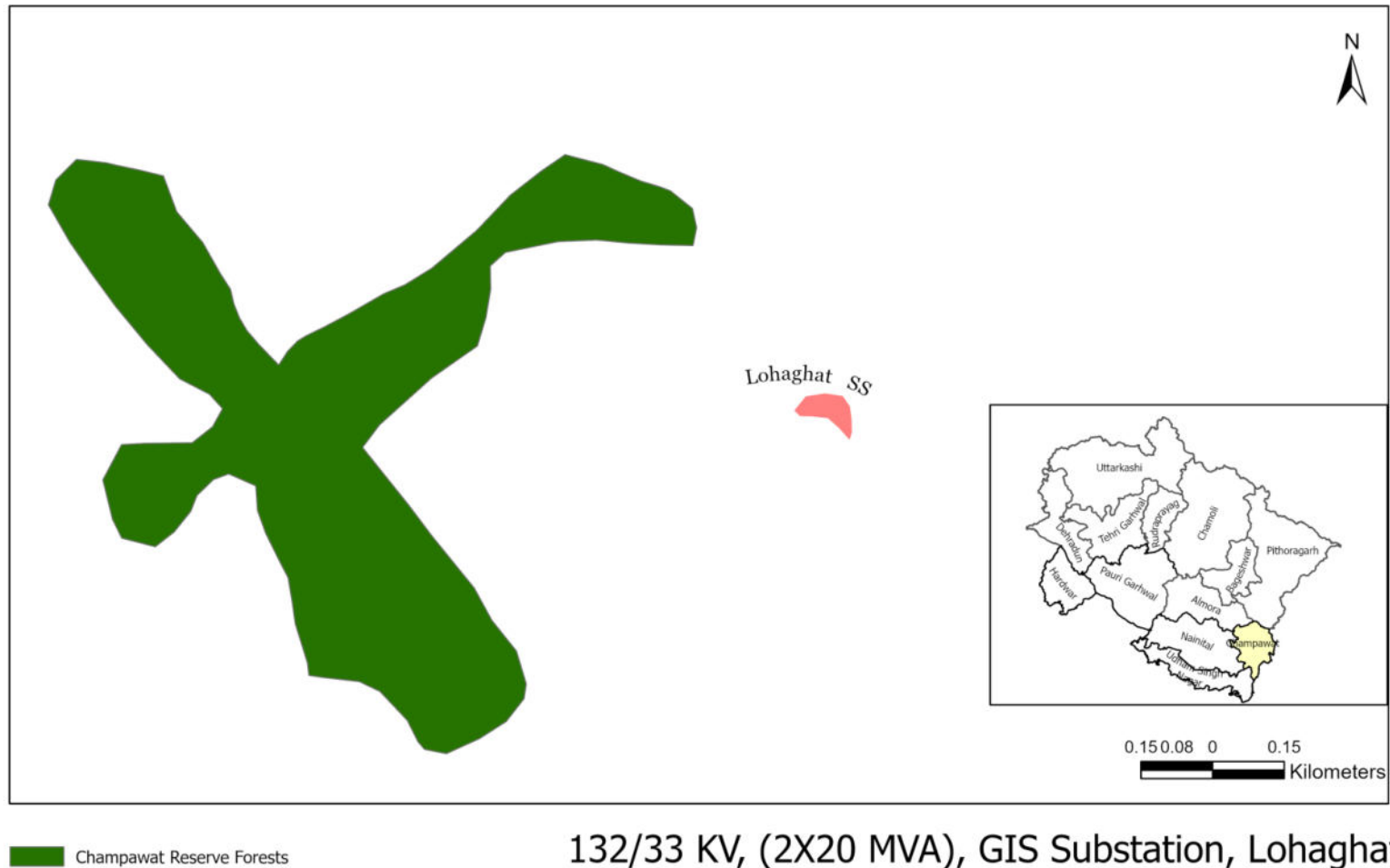


Data Credits: PTCUL, MoEF (India), and ENVIS

132/33 KV, (2X40 MVA), GIS Substation, Araghar – Proximity to IBA / KBA



132/33 KV, (2X20 MVA), GIS Substation, Lohaghat

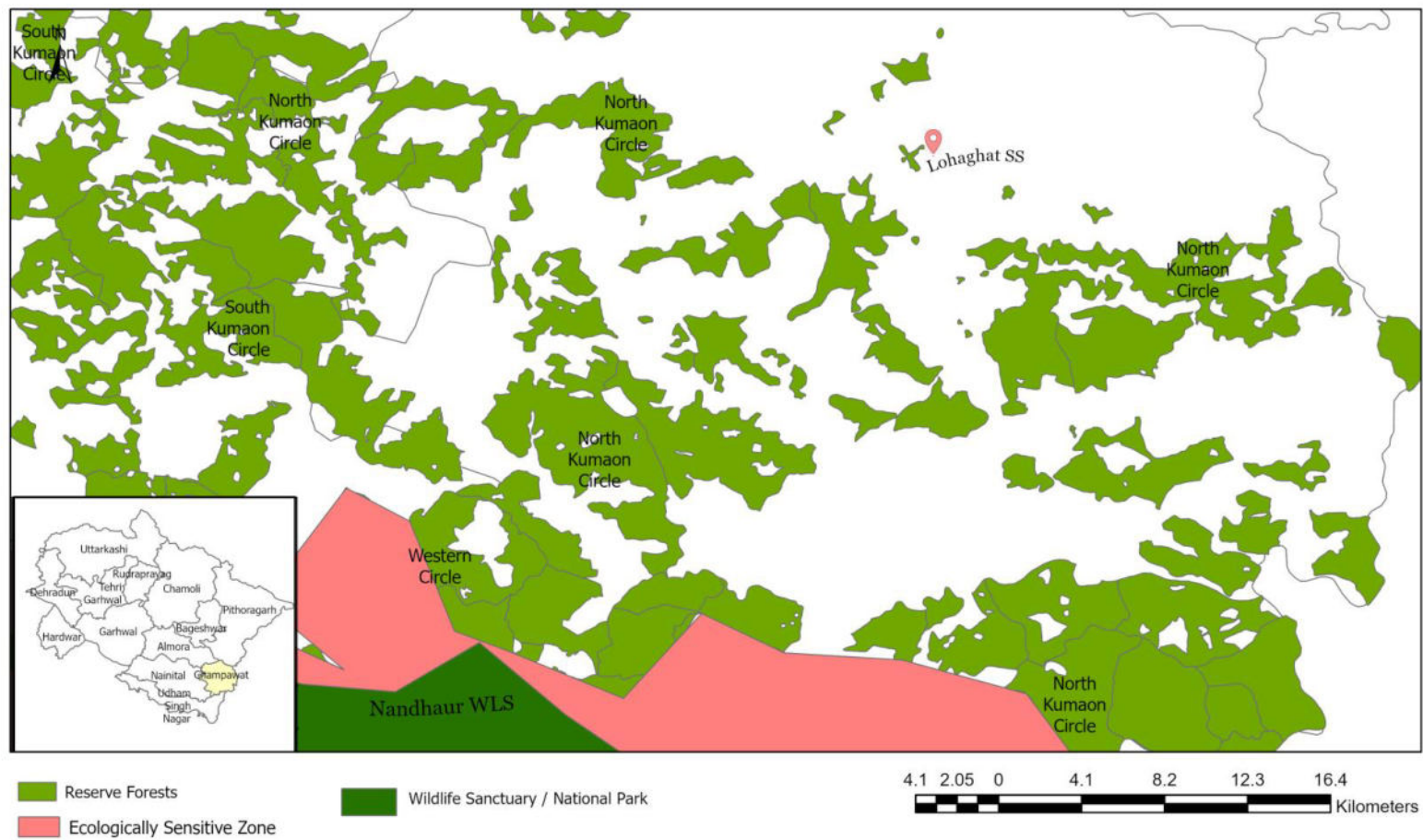


132/33 KV, (2X20 MVA), GIS Substation, Lohaghat

Data Credits: Power Transmission Corporation of Uttarakhand Limited (PTCUL) and Survey Of India - 2021 (SOI)

132/33 KV, (2X20 MVA), GIS Substation, Lohaghat

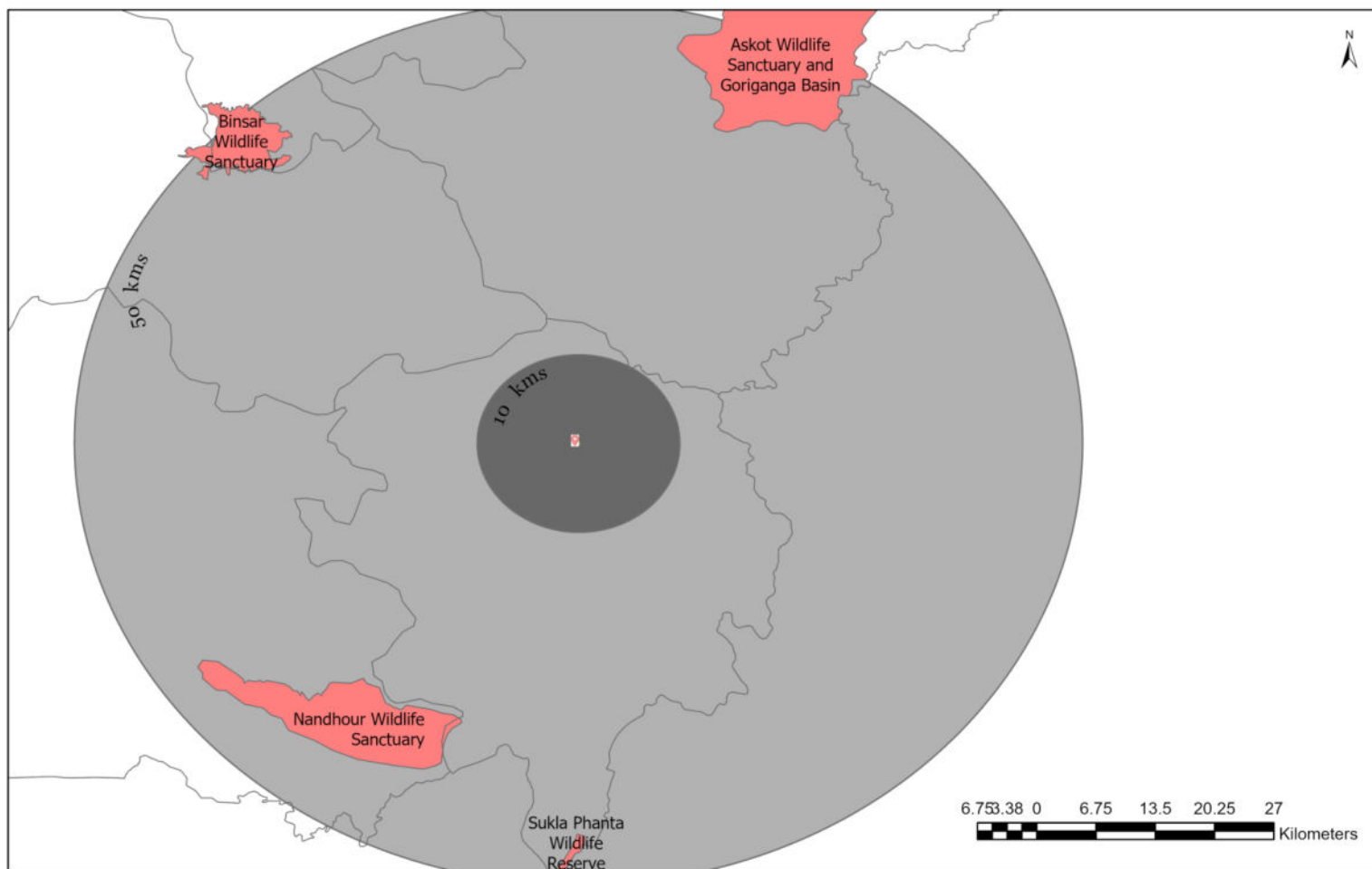
132/33 KV, (2X20 MVA), GIS Substation, Lohaghat



Data Credits: PTCUL, MoEF (India), and ENVIS

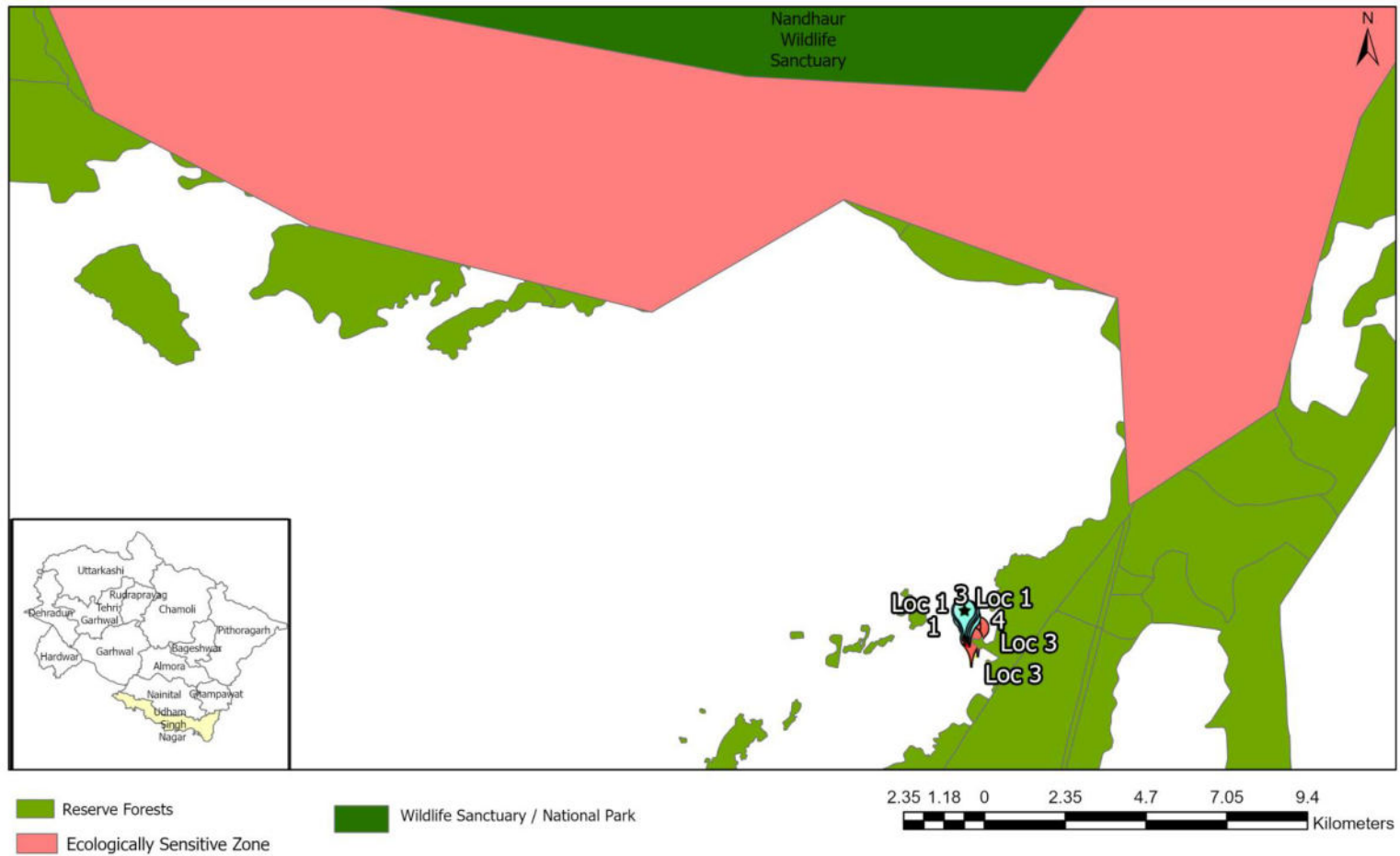
132/33 KV, (2X20 MVA), GIS Substation, Lohaghat – Proximity to IBA / KBA

132/33 KV, (2X20 MVA), GIS Substation, Lohaghat



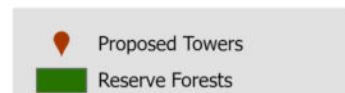
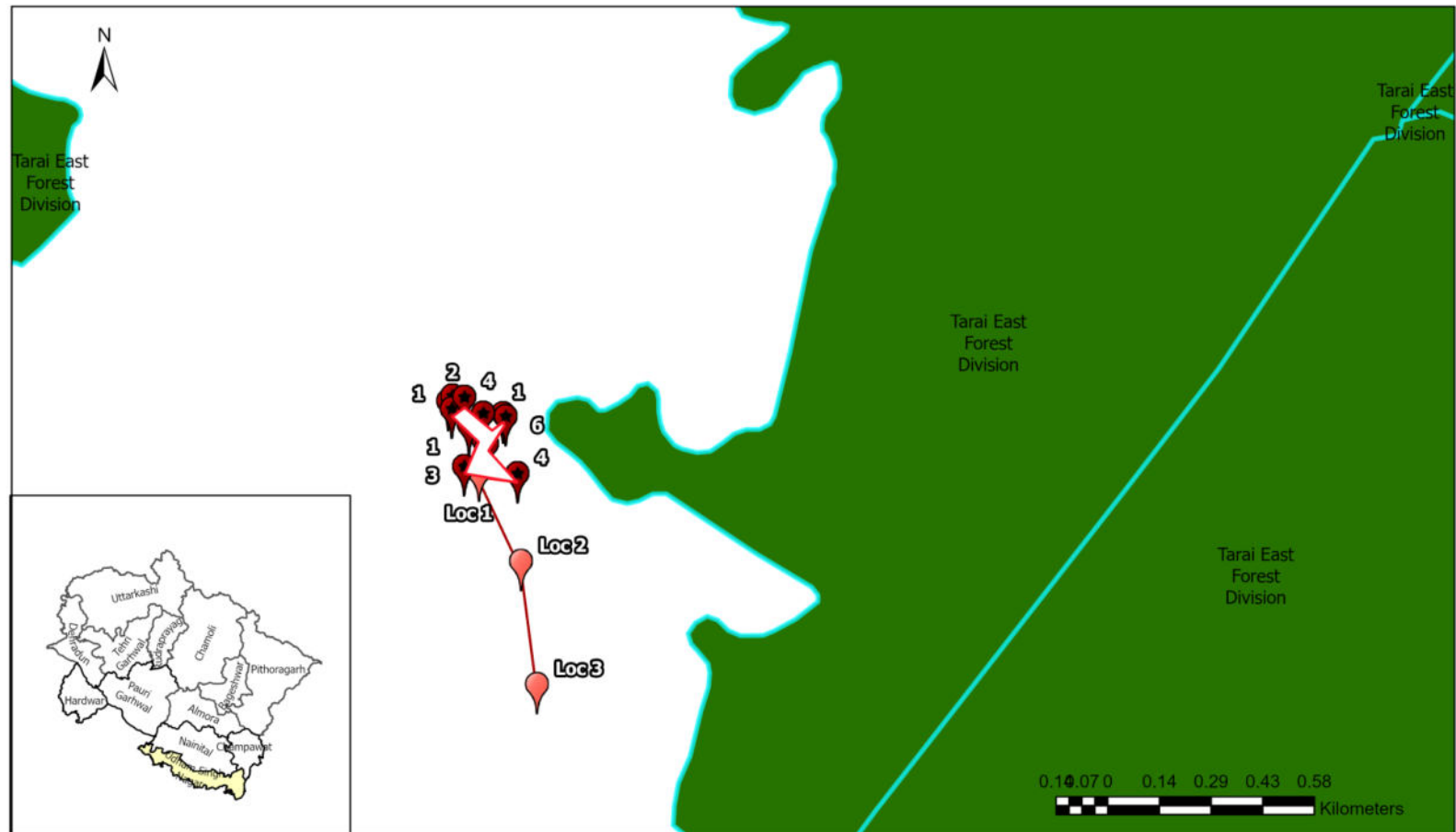
132/33 KV, (2X40 MVA), Khatima-II Substation

132 kV Khatima – Sitarganj



Data Credits: PTCUL, MoEF (India), and ENVIS

132/33 KV, (2X40 MVA), Khatima-II Substation

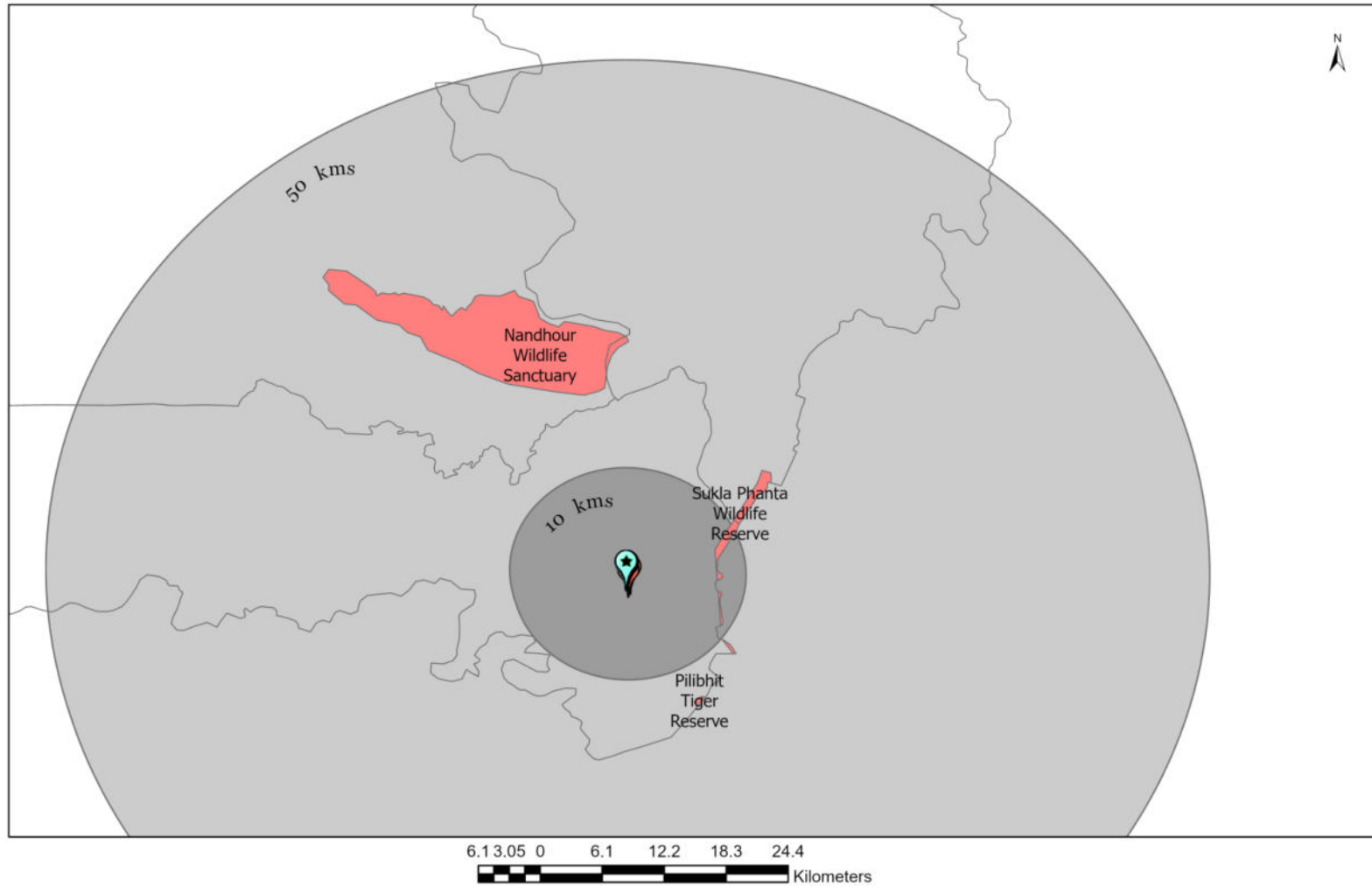


LILO: Khatima - Sitarganj (132 Kv)

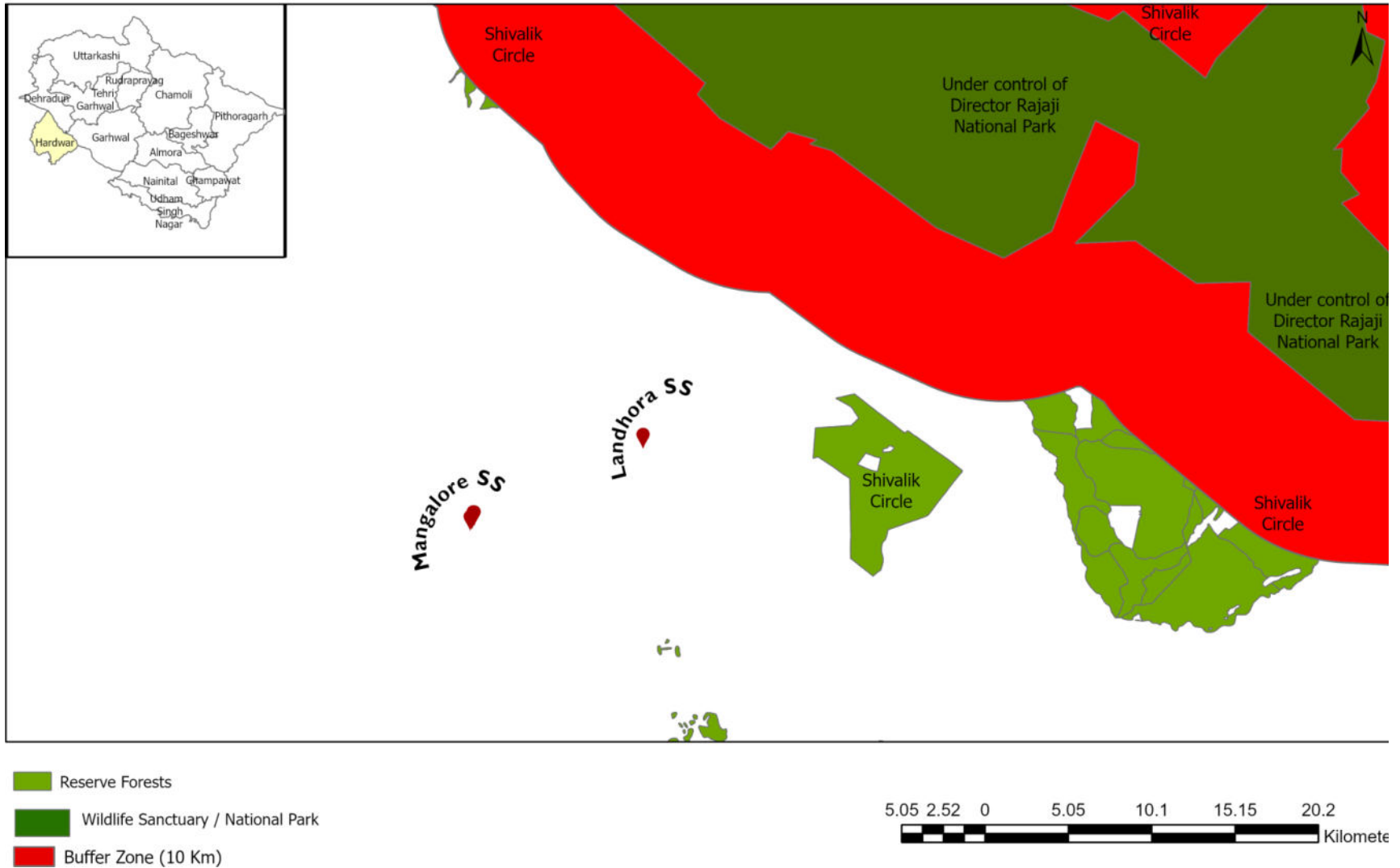
Data Credits: PTCUL

132/33 KV, (2X40 MVA), Khatima-II Substation – Proximity to IBA / KBA

132 kV Khatima – Sitarganj



220/132/33 KV, Manglore Substation / 400/220 KV Substation Landhora
 220/132/33KV, Mangalore Substation/400/220KV Substation Landhora



220/132/33 KV, Manglore Substation / 400/220 KV Substation Landhora



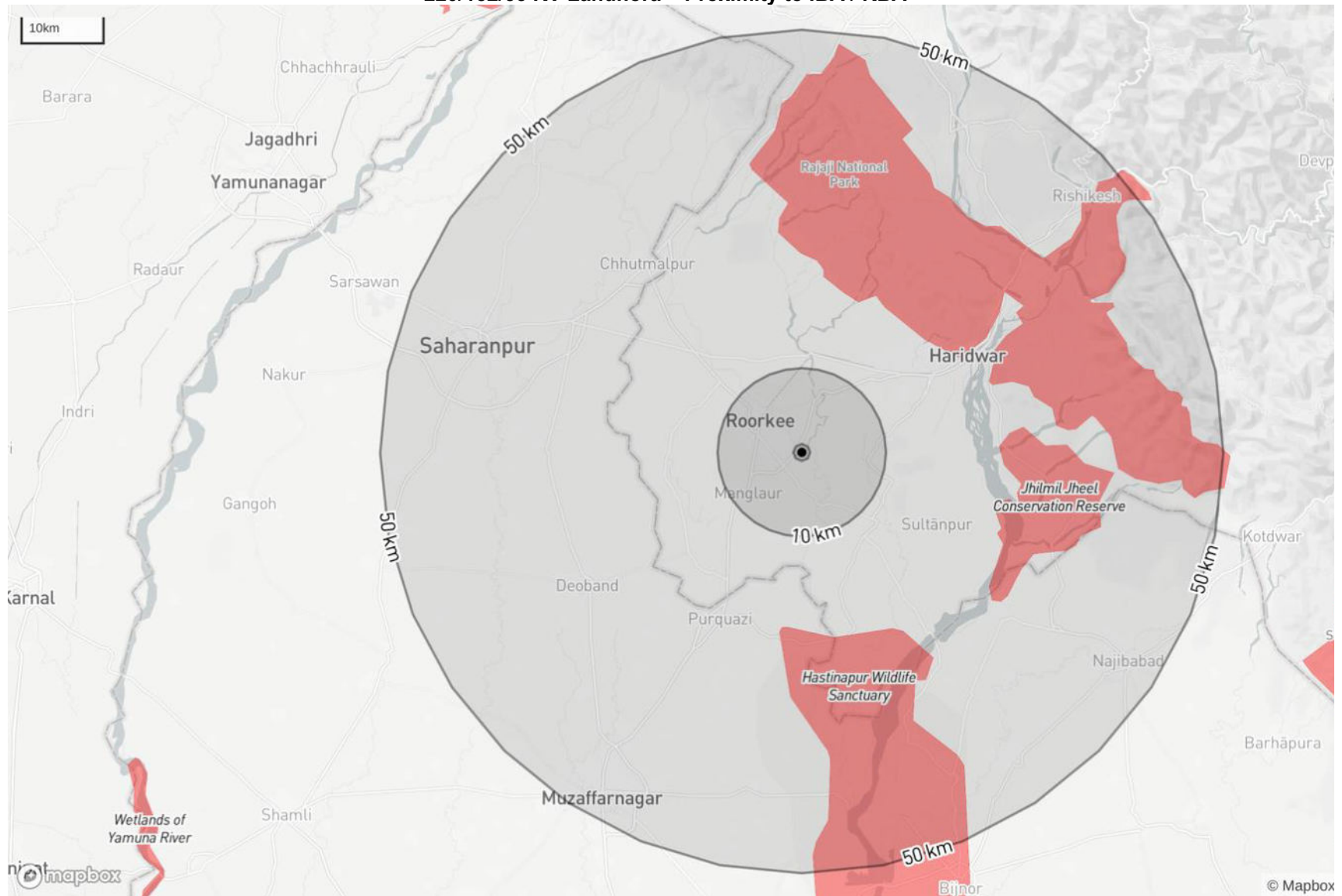
Legend

- Reserve Forests
- Proposed SS

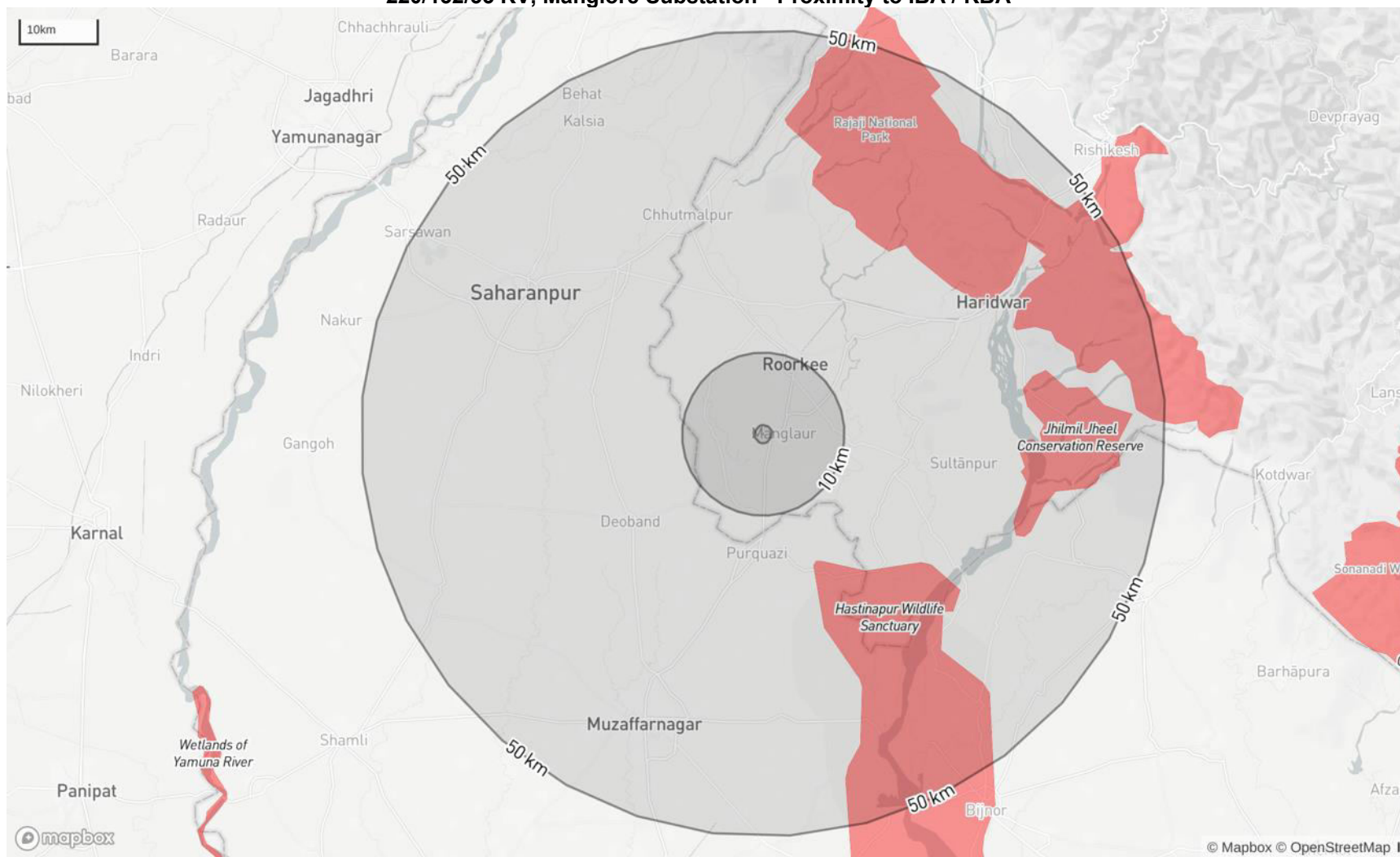
220/132/33 KV, Manglore Substation / 400/220 KV Substation Landhora

Data Credits: PUTCUL

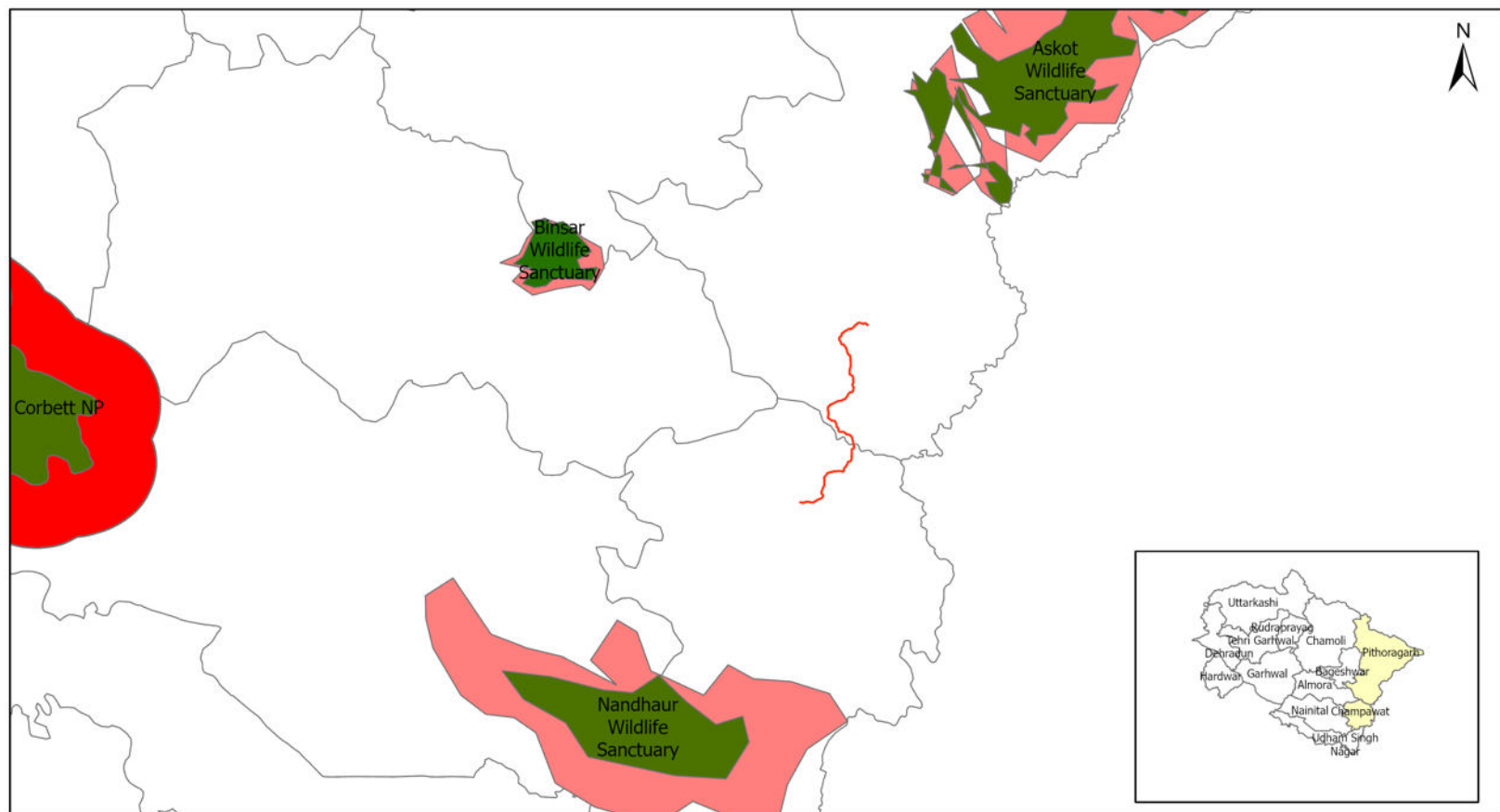
220/132/33 KV Landhora – Proximity to IBA / KBA



220/132/33 KV, Manglore Substation - Proximity to IBA / KBA

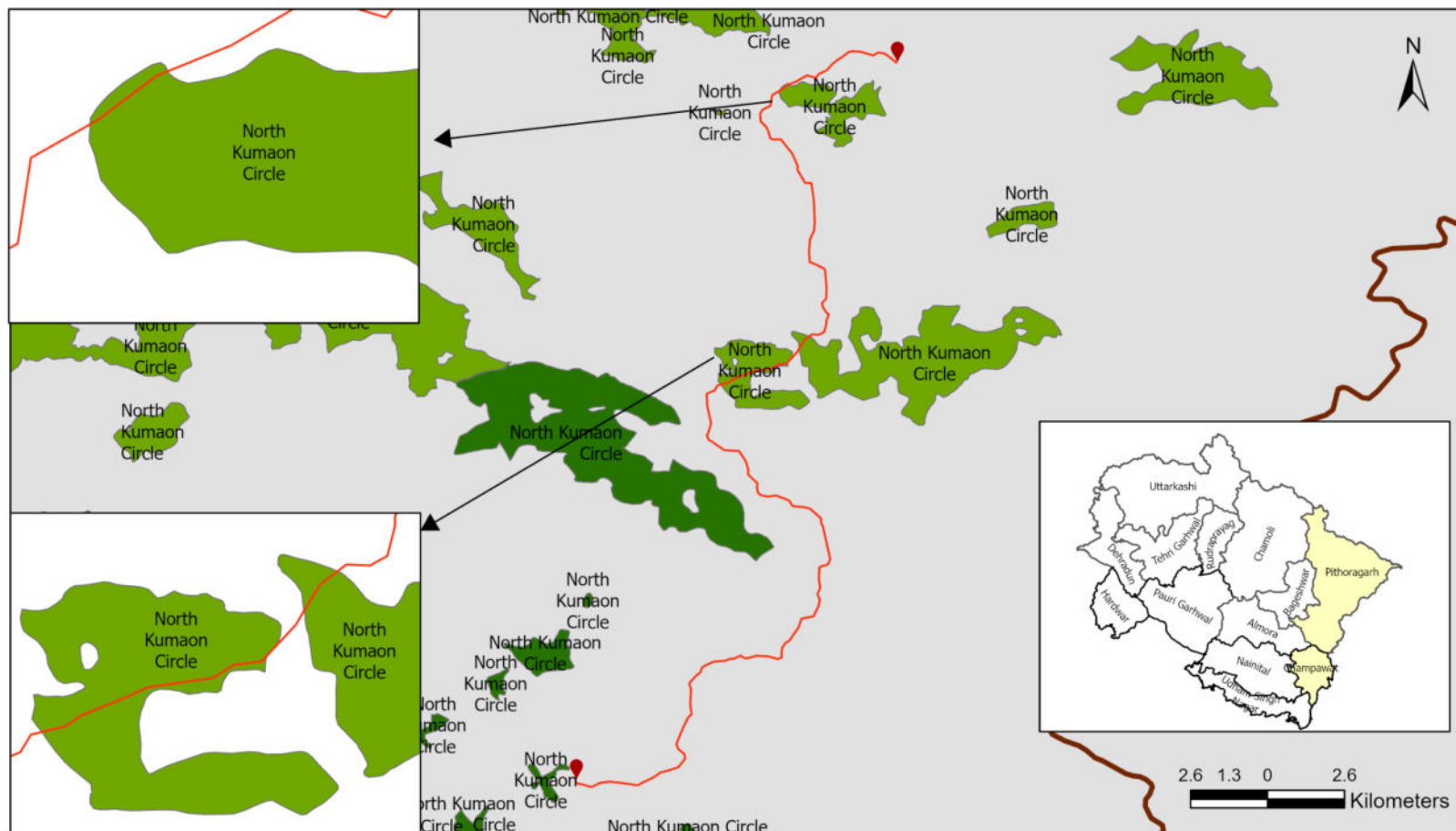


132 kV D/C line on Panther conductor from Pithoragarh (PGCIL) – Champawat (Lohaghat)



Data Credits: PTCUL, MoEF (India), and ENVIS

132 kV D/C line on Panther conductor from Pithoragarh (PGCIL) – Champawat (Lohaghat)



Legend

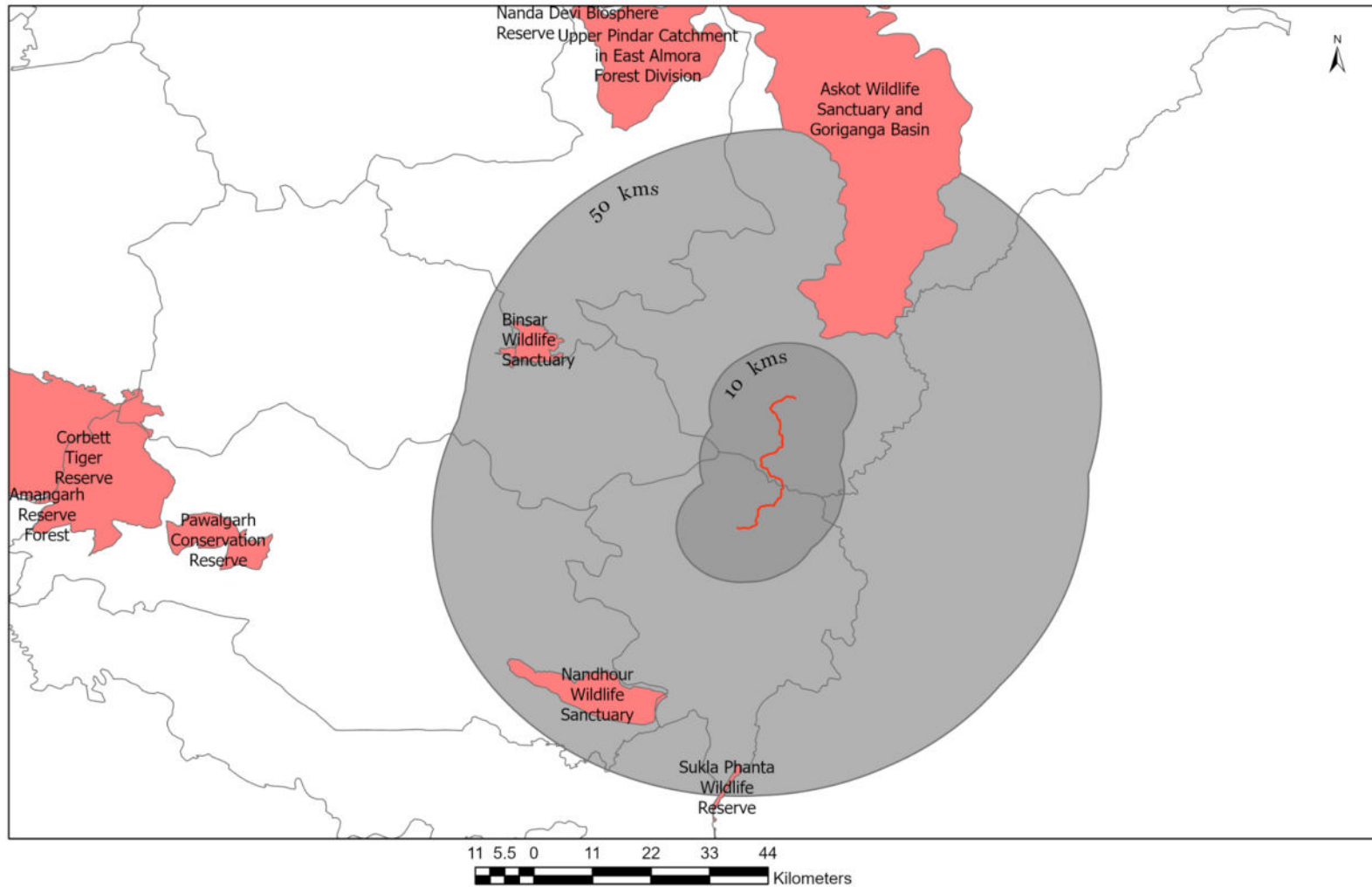
- Reserve Forests
- Proposed Lines
- Champawat Reserve Forests

132 kV D/C Pithoragarh (PGCIL) – Champawat (Lohaghat)

Data Credits: Power Transmission Corporation of Uttarakhand Limited (PTCUL) and Survey Of India - 2021 (SOI)

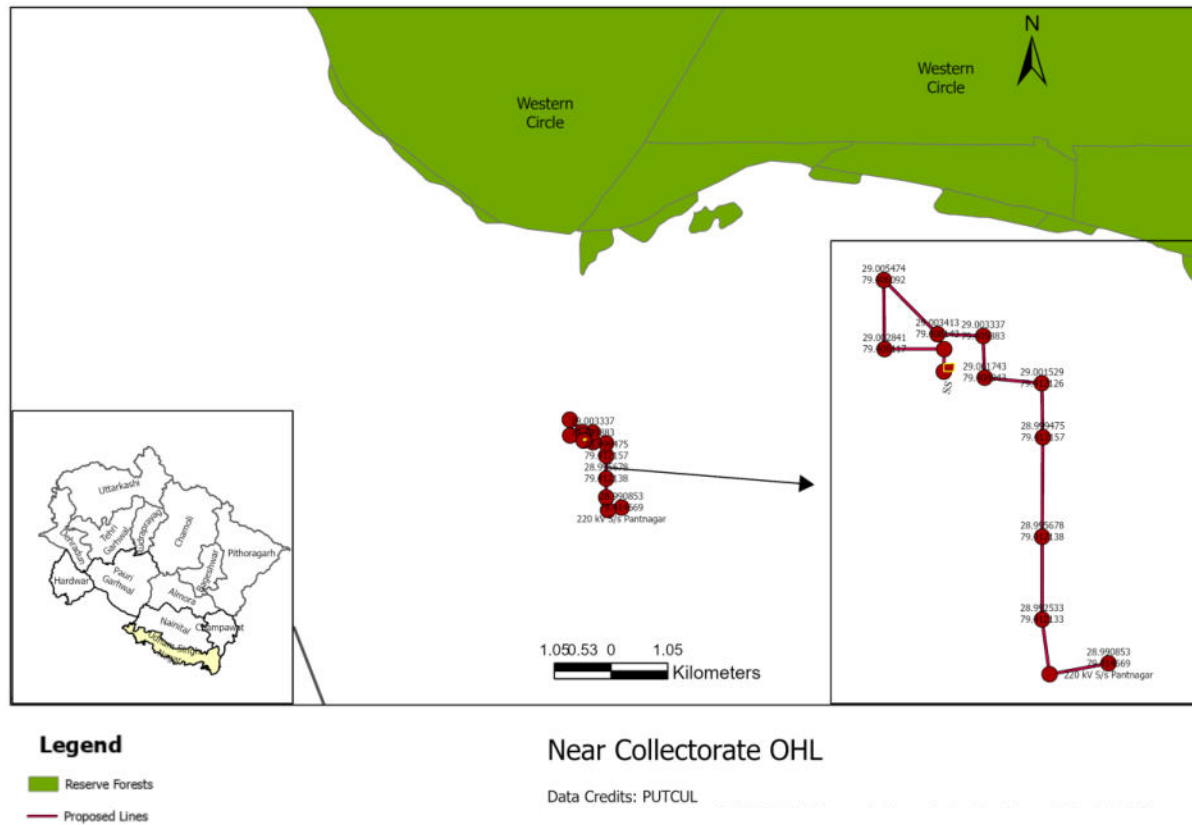
132 kV D/C line on Panther conductor from Pithrogarh (PGCIL) – Champawat (Lohaghat) – Proximity to IBA / KBA

132 kV D/C Pithrogarh (PGCIL) – Champawat (Lohaghat)



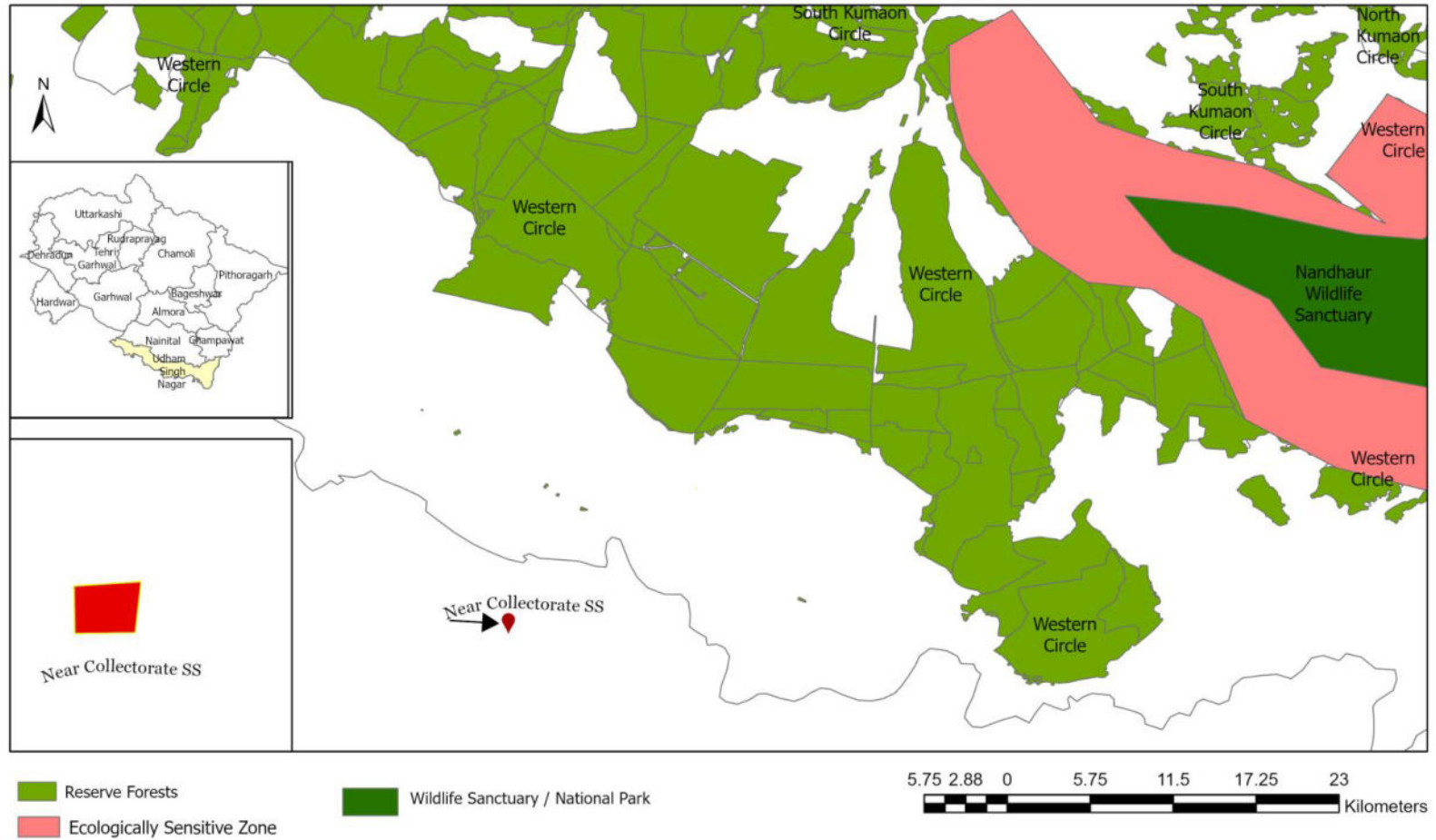
Appendix B – UPCL Biodiversity Mapping (MLV Power Lines and MLV Substations)

Near Collectorate Substation



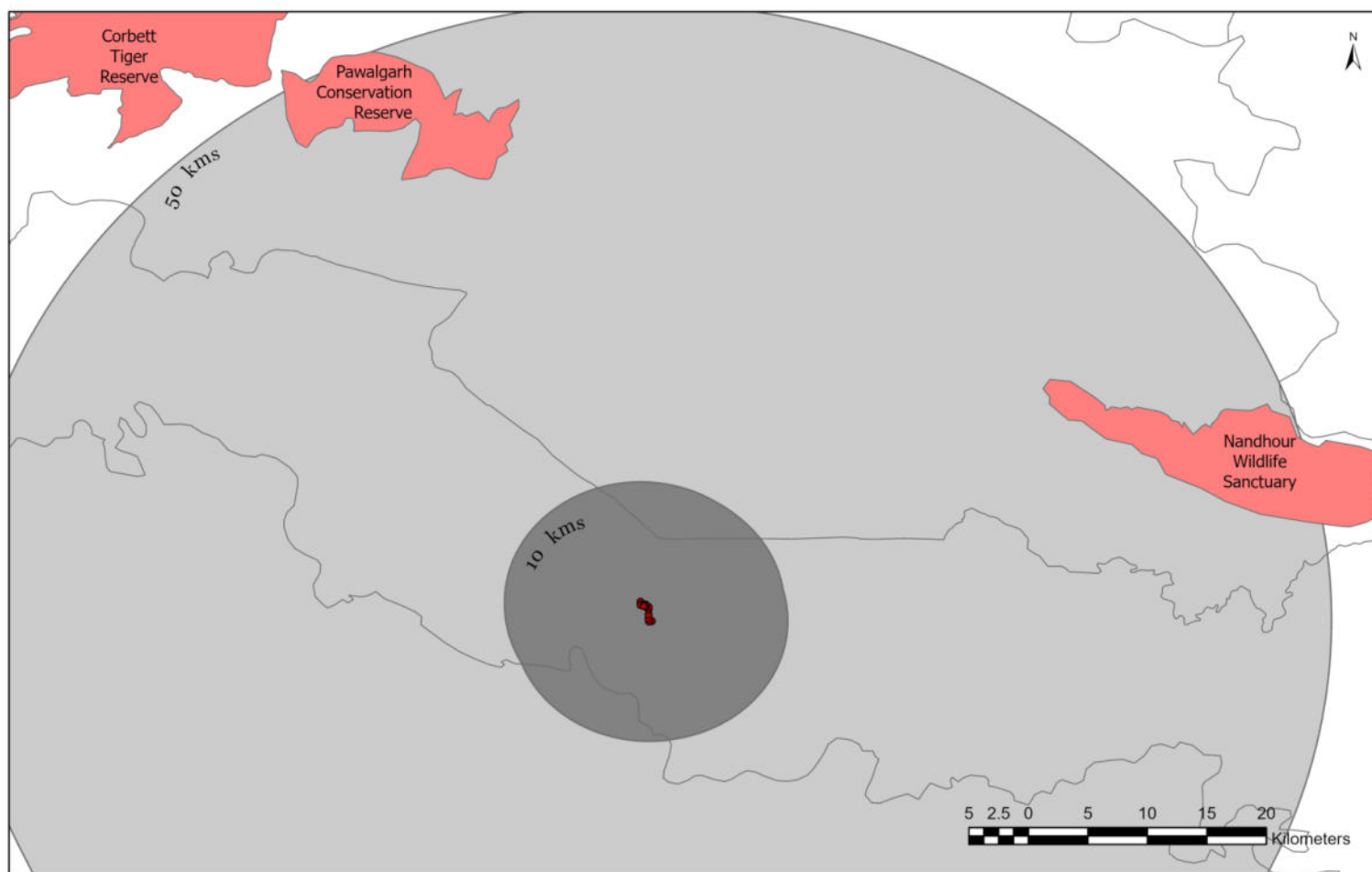
Near Collectorate OHL

Near Collectorate Substation



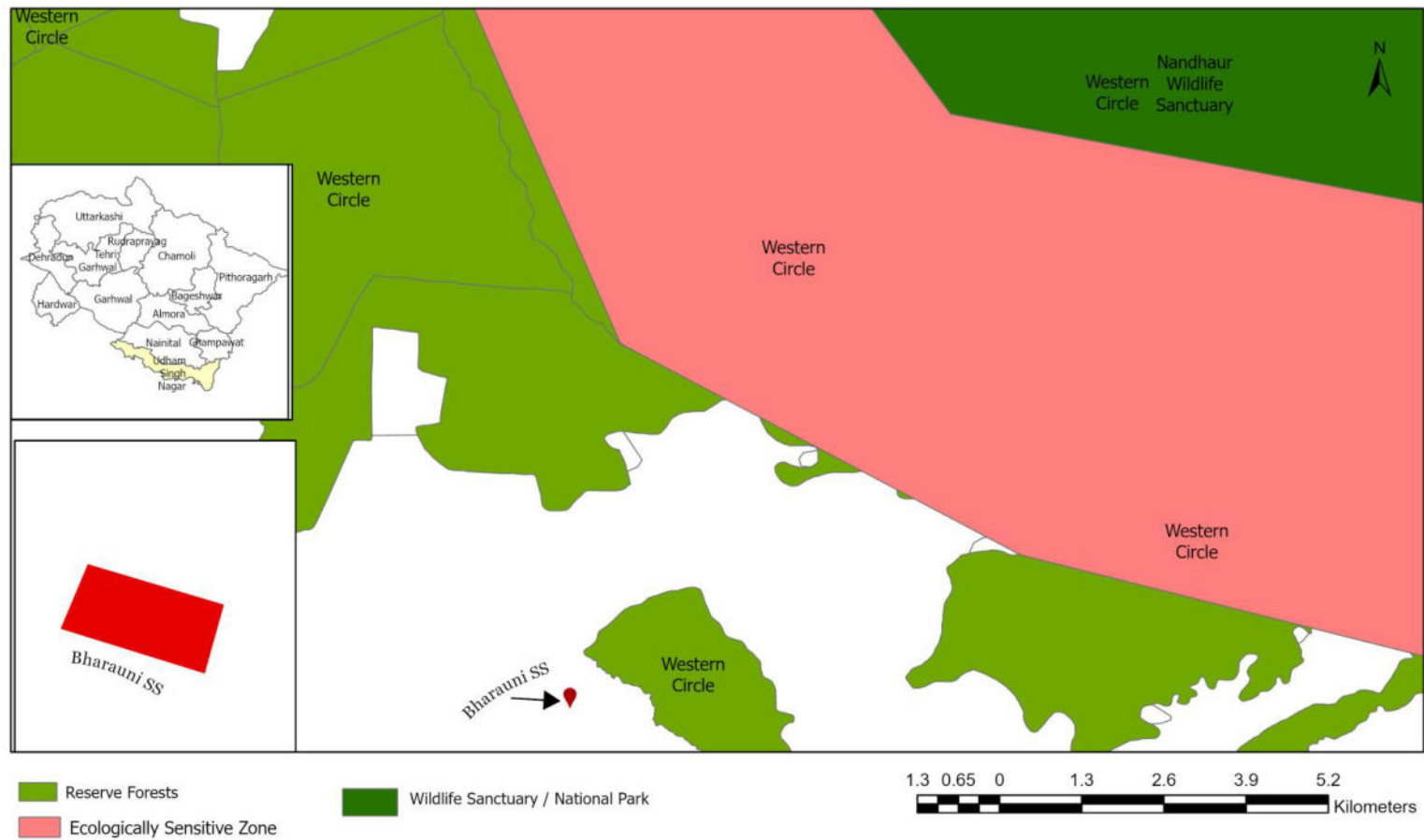
Near Collectorate Substation / OHL – Proximity to IBA / KBA

Near Collectorate Substation / OHL



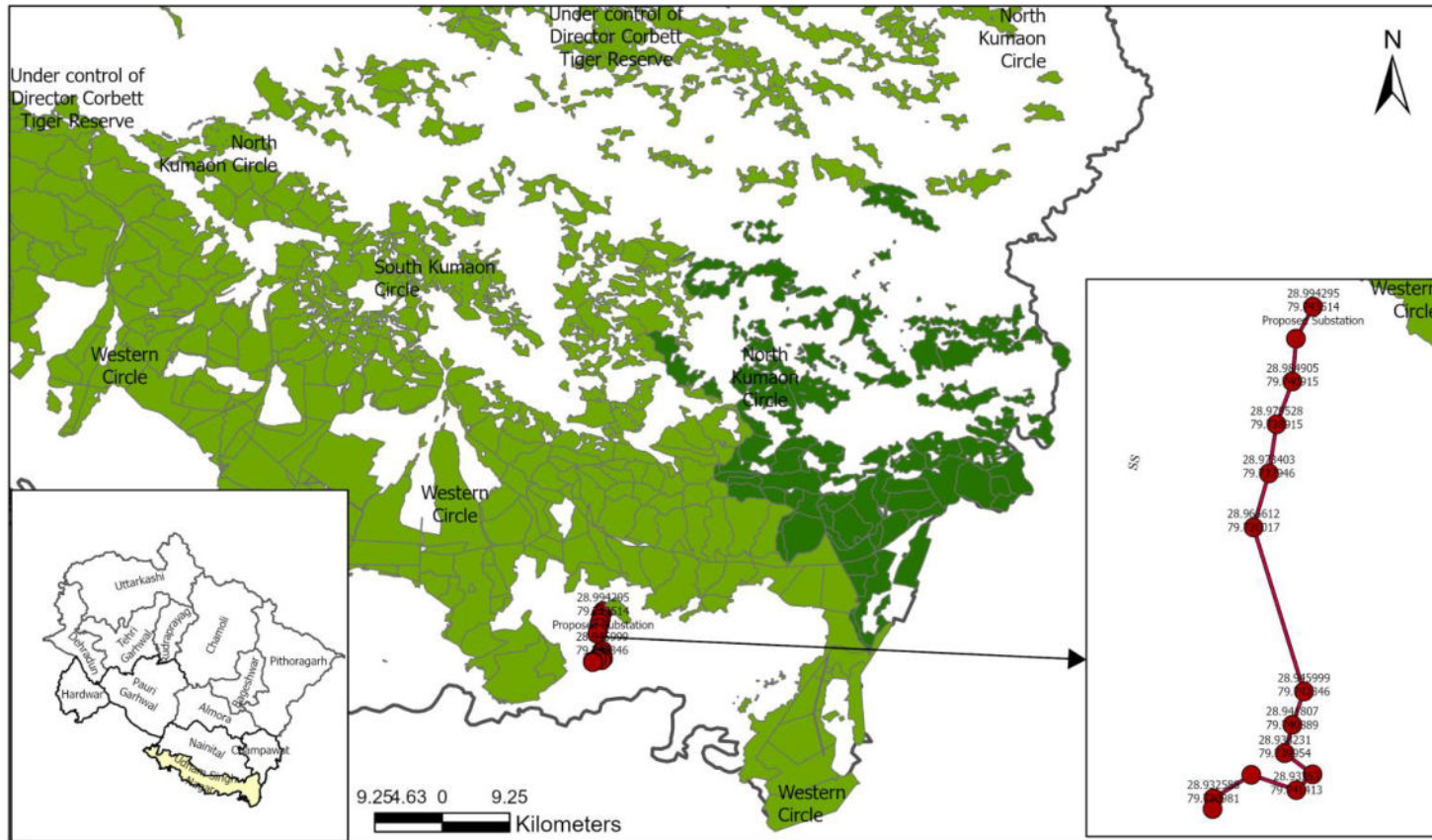
Bharauni SS

Bharauni Substation



Data Credits: PTCUL, MoEF (India), and ENVIS

Bharauni OHL



Legend

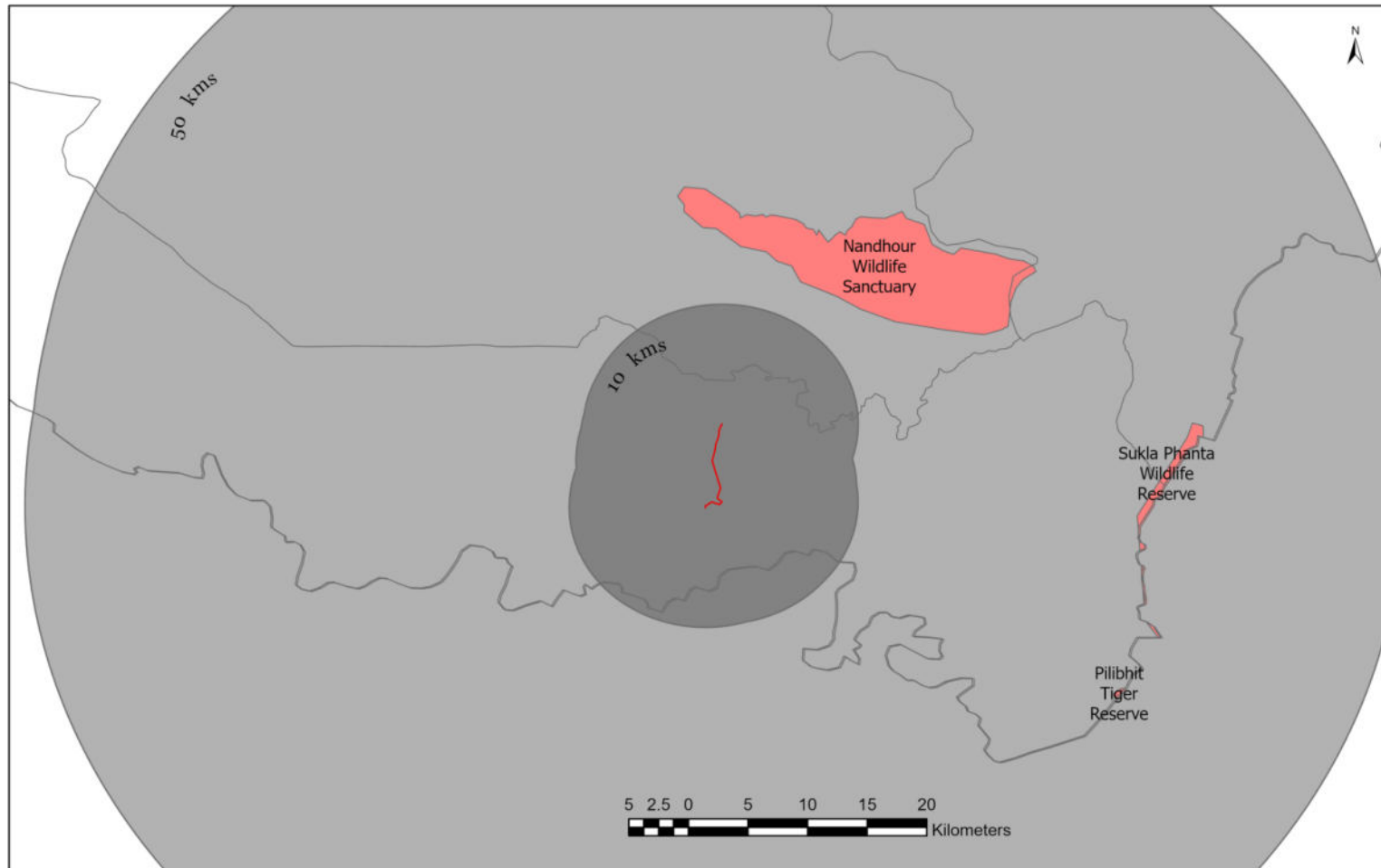
- Reserve Forests
- Proposed Lines

Bharauni OHL

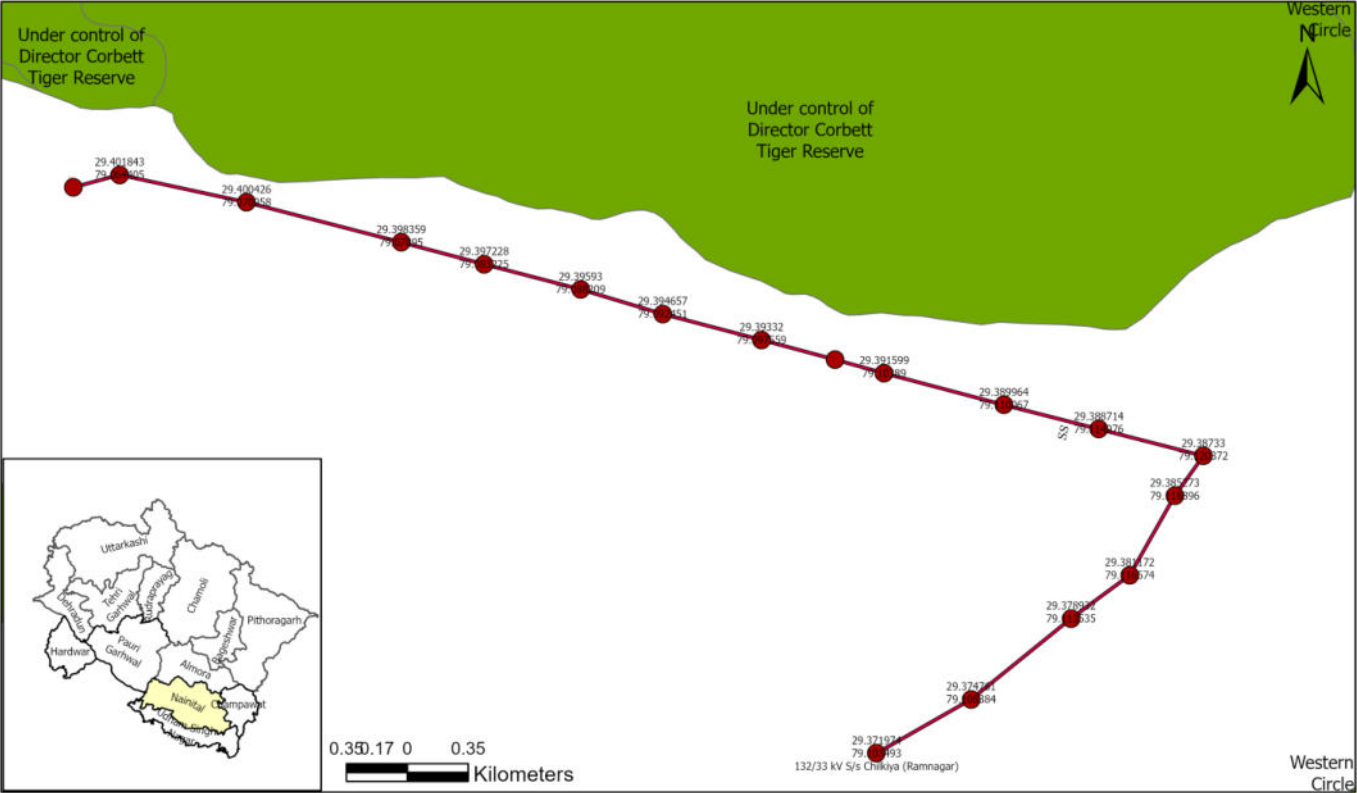
Data Credits: PUTCUL

Bharauni Substation and OHL proximity to KBA

Bharauni Substation and OHL



Kaniya UG Line



Legend

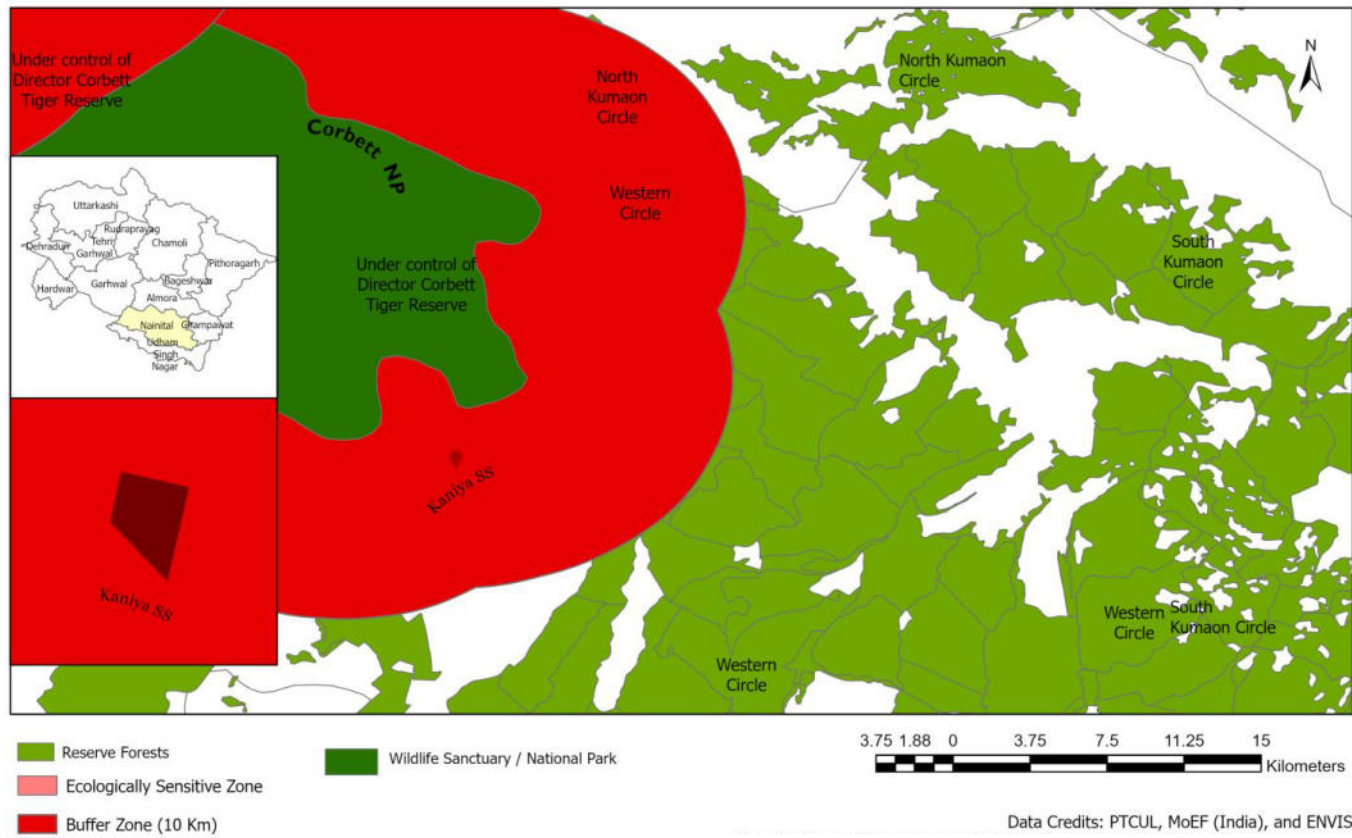
- Reserve Forests
- Proposed Lines

Kaniya UG Line

Data Credits: PUTCUL

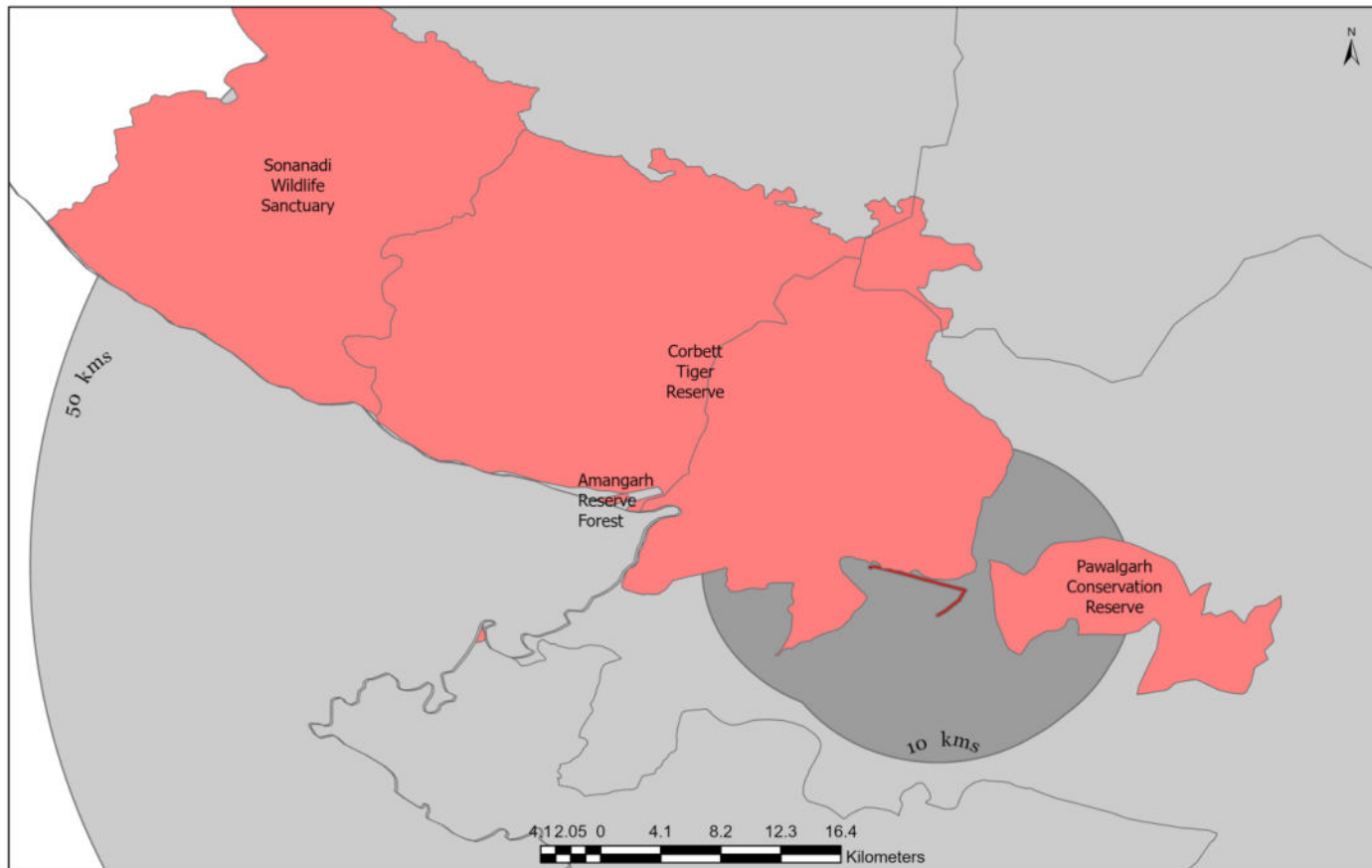
Kaniya SS

Kaniya Substation



Kaniya UG and SS – Proximity to KBA / IBA

Kaniya UG and SS

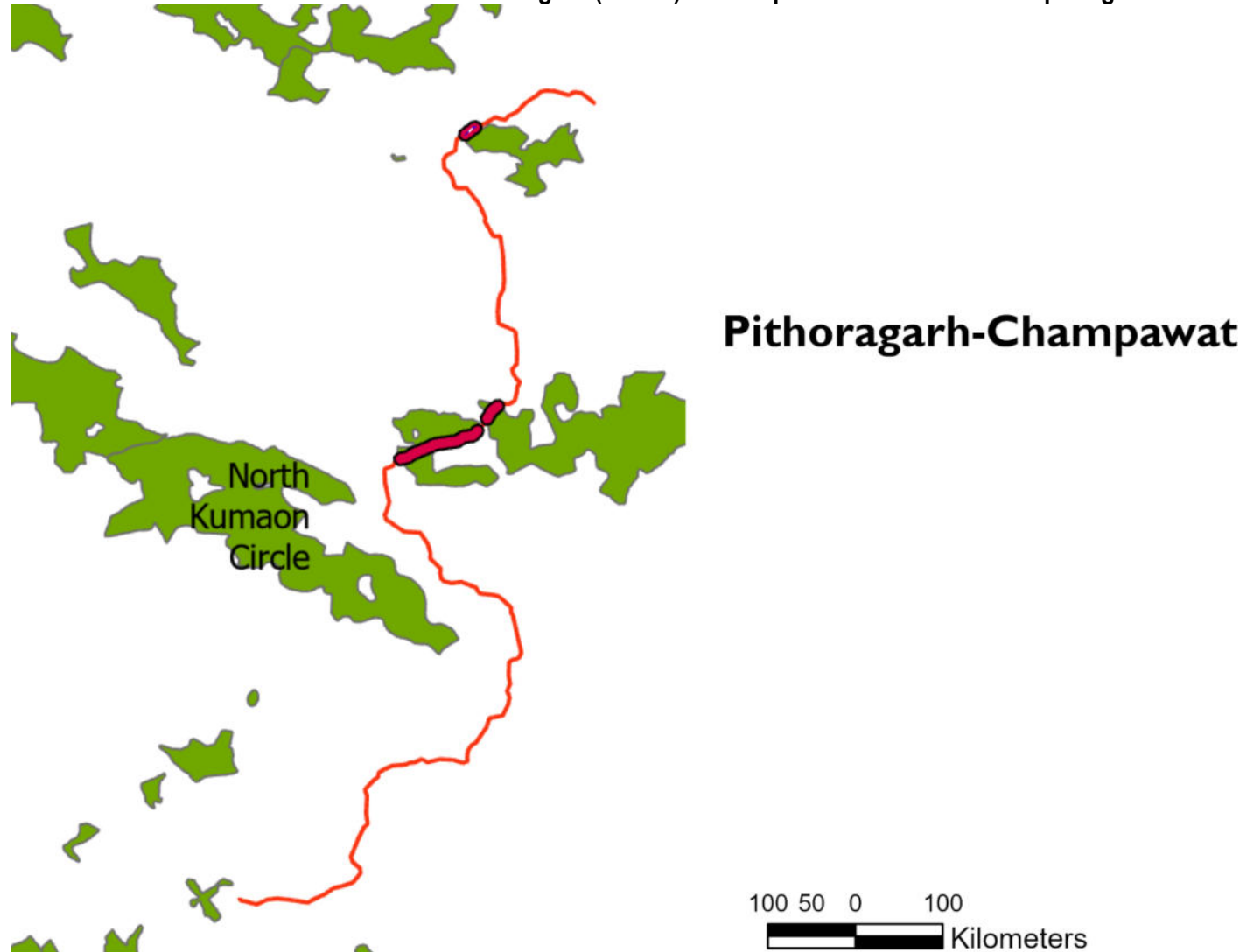


Appendix C – Bird Divertor Locations

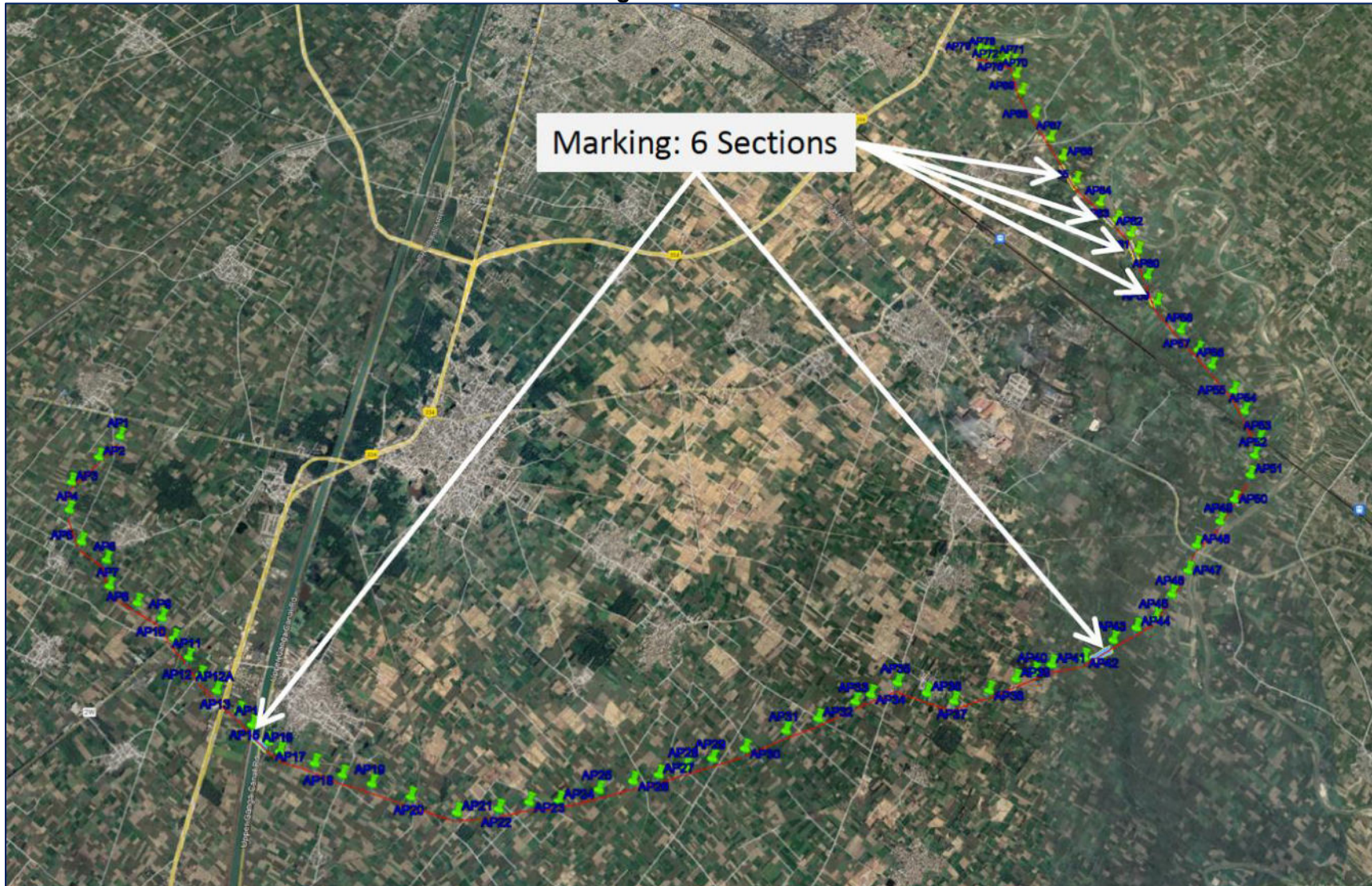
132 kV D/C line on Panther conductor from Pithrogarh (PGCIL) – Champawat - Location Crossing River Requiring Bird Marker



132 kV D/C line on Panther conductor from Pithoragarh (PGCIL) – Champawat - Forest Land Requiring Bird Divertors



Manglaur – Nara LILO



400 kV Kashipur – Mahuakheraganj LIL



Mahuakheraganj - Jaspur LILO

