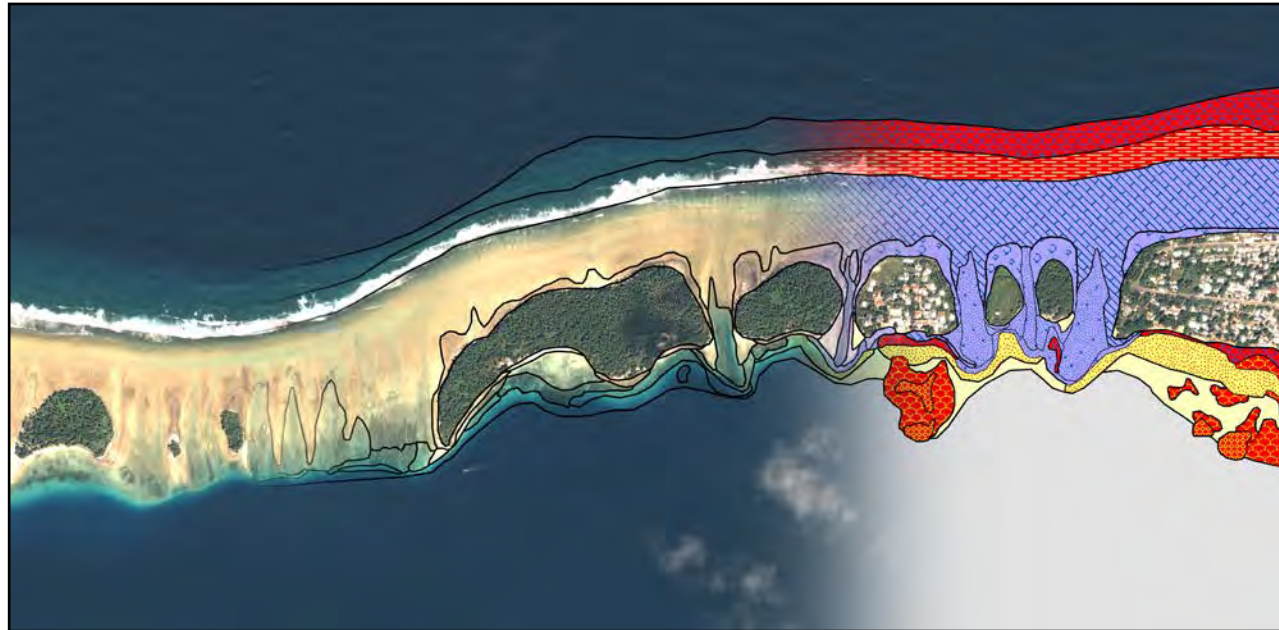
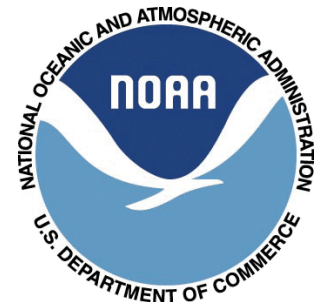


Atlas of the Shallow-Water Benthic Habitats of Majuro Atoll, Republic of the Marshall Islands



U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
National Centers of Coastal Ocean Science
Center for Coastal Monitoring and Assessment
Biogeography Branch

NOAA Technical Memorandum NOS NCCOS 153



Acknowledgements

This atlas was produced by the NOAA/NOS/NCCOS/CCMA Biogeography Branch with contributions from various organizations and individuals including: T. Battista, K. Buja, C. Menza, and P. Muller of the Biogeography Branch, the Marshall Islands Marine Resources Authority, and Dean Jacobson of the College of the Marshall Islands.

About this Atlas

Digital maps of the shallow (<~30m deep) coral reef ecosystems of Majuro Atoll, Republic of the Marshall Islands, were created through visual interpretation of remote sensing imagery acquired between 2004 and 2006. Reef ecosystem features were digitized directly into a Geographic Information System. Benthic features were categorized according to a classification scheme with attributes including zone (location such as lagoon or forereef, etc.), structure (bottom type such as sand or patch reef, etc.) and percent hard bottom. This atlas consists of 27 detailed maps displaying reef zone and structure of coral ecosystems around Majuro. Adjacent maps in the atlas overlap slightly to ensure complete coverage. Maps and associated products can be used to support science and management activities on Majuro reef ecosystems including inventory, monitoring, conservation, and sustainable development applications. Maps are not to be used for navigation.

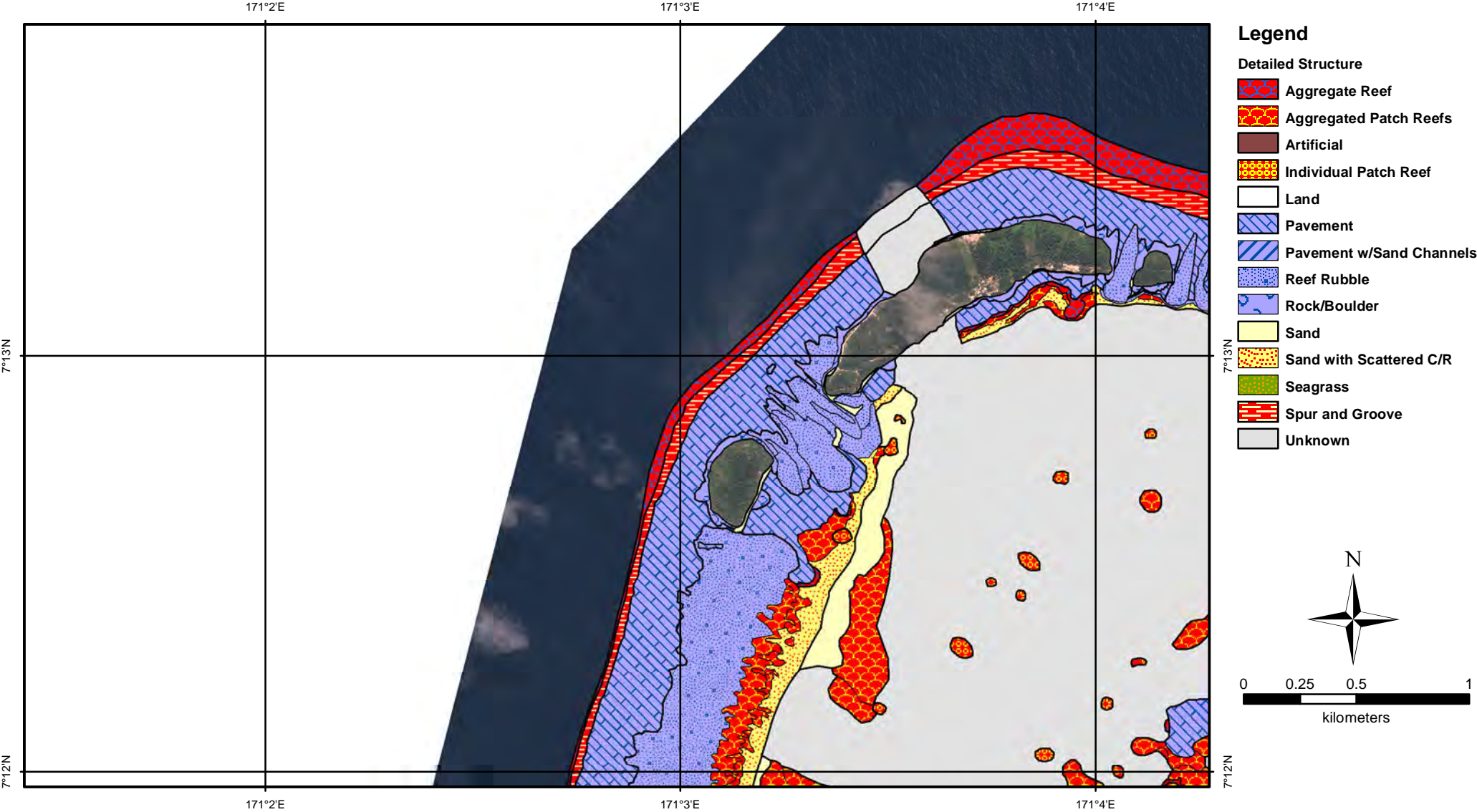
Related Products

In addition to this atlas, other products available include digital map files, a summary report, and an internet mapping system. The digital files are available as a geodatabase in ArcMap v.10. The summary report is a technical memorandum (PDF format, NOAA Technical Memorandum NOS NCCOS 144) that documents the methods and overall results of the mapping project. The internet mapping tool (Biomapper) enables creations of customized map layouts including bottom features and satellite imagery and also provides access to field pictures and videos at ground validation sites. This atlas and all the related projects are available from the website:

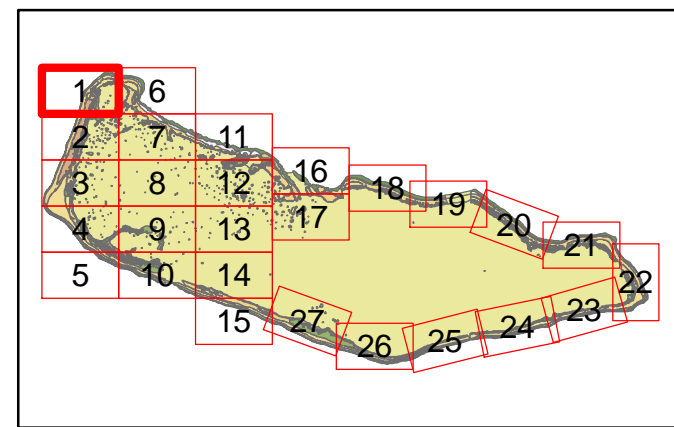
http://ccma.nos.noaa.gov/ecosystems/coralreef/majuro_mapping.aspx

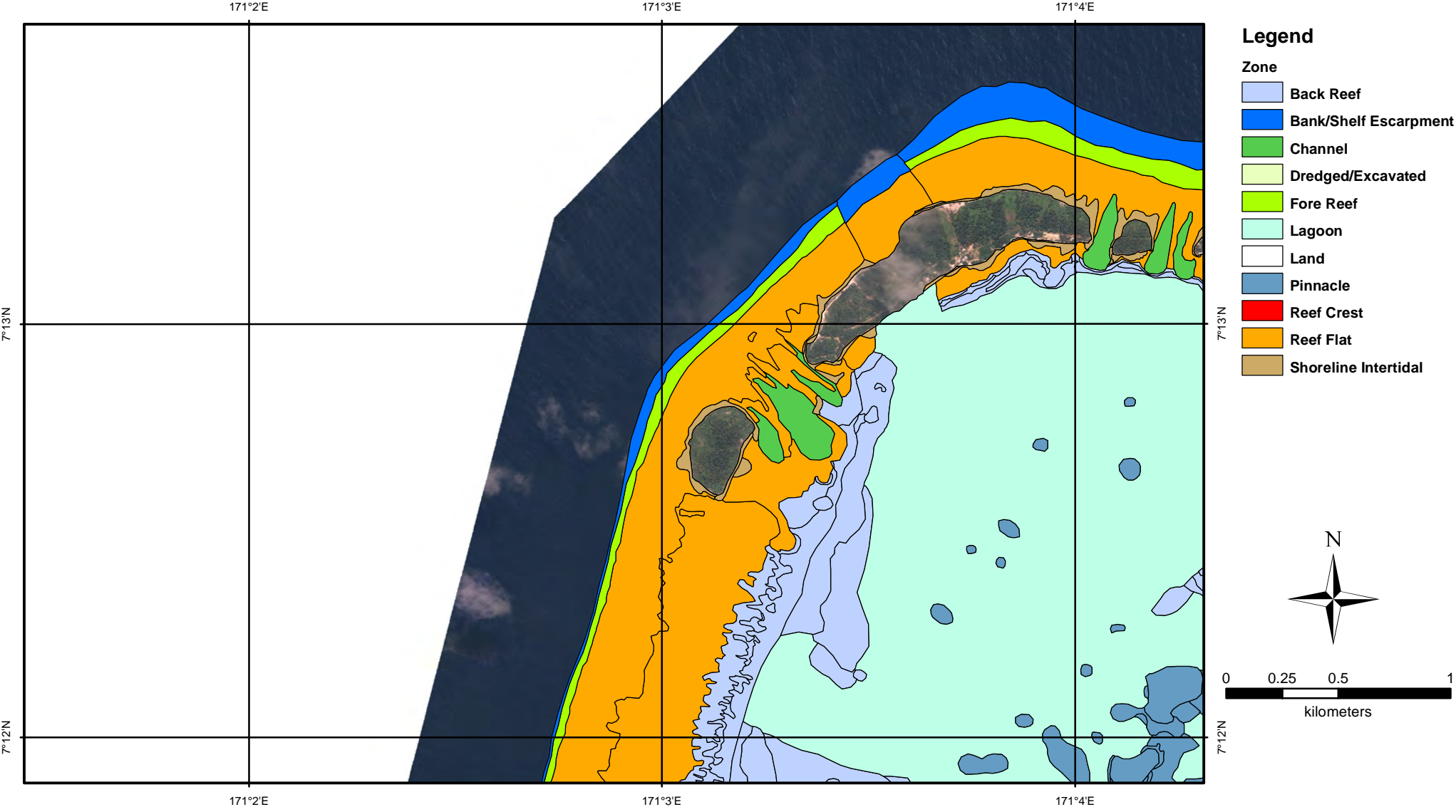
Suggested Citation

Edwards, KF, MS Kendall and KR Buja. 2012. Atlas of the Shallow-Water Benthic Habitats of Majuro Atoll, Republic of the Marshall Islands. NOAA Technical Memorandum NOS NCCOS 153, Biogeography Branch. Silver Spring, Maryland USA. 55 pp.

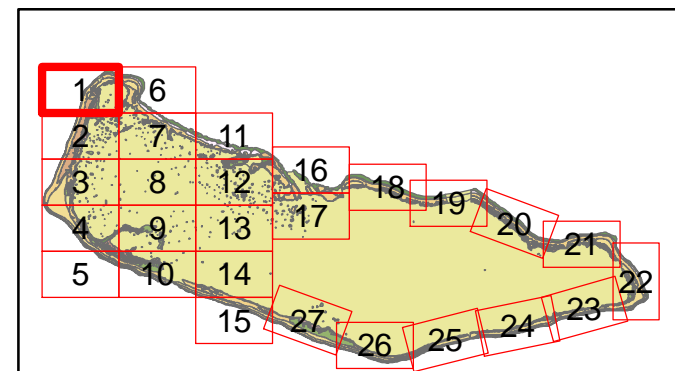


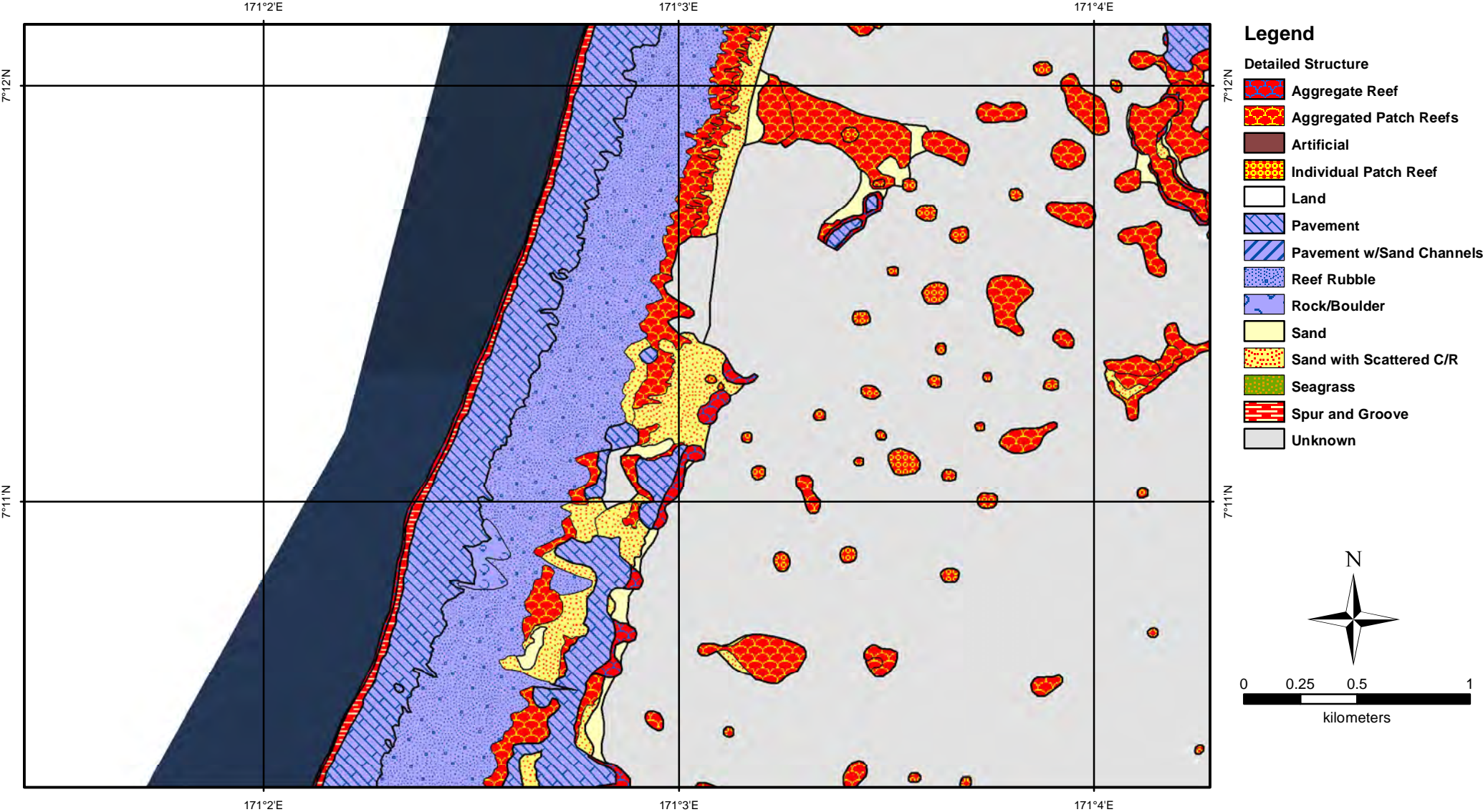
Frame 1 - Detailed Structure



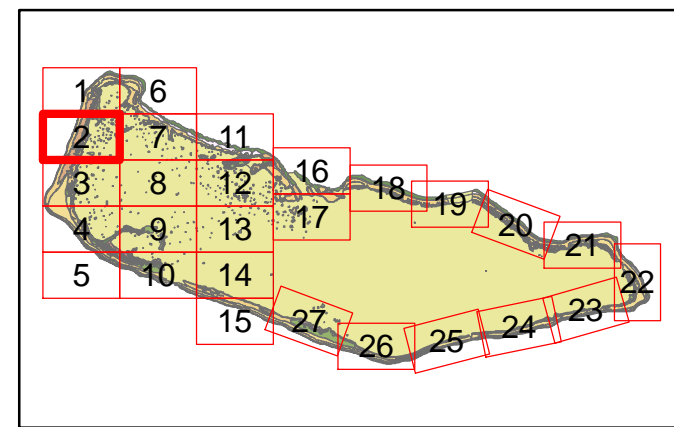


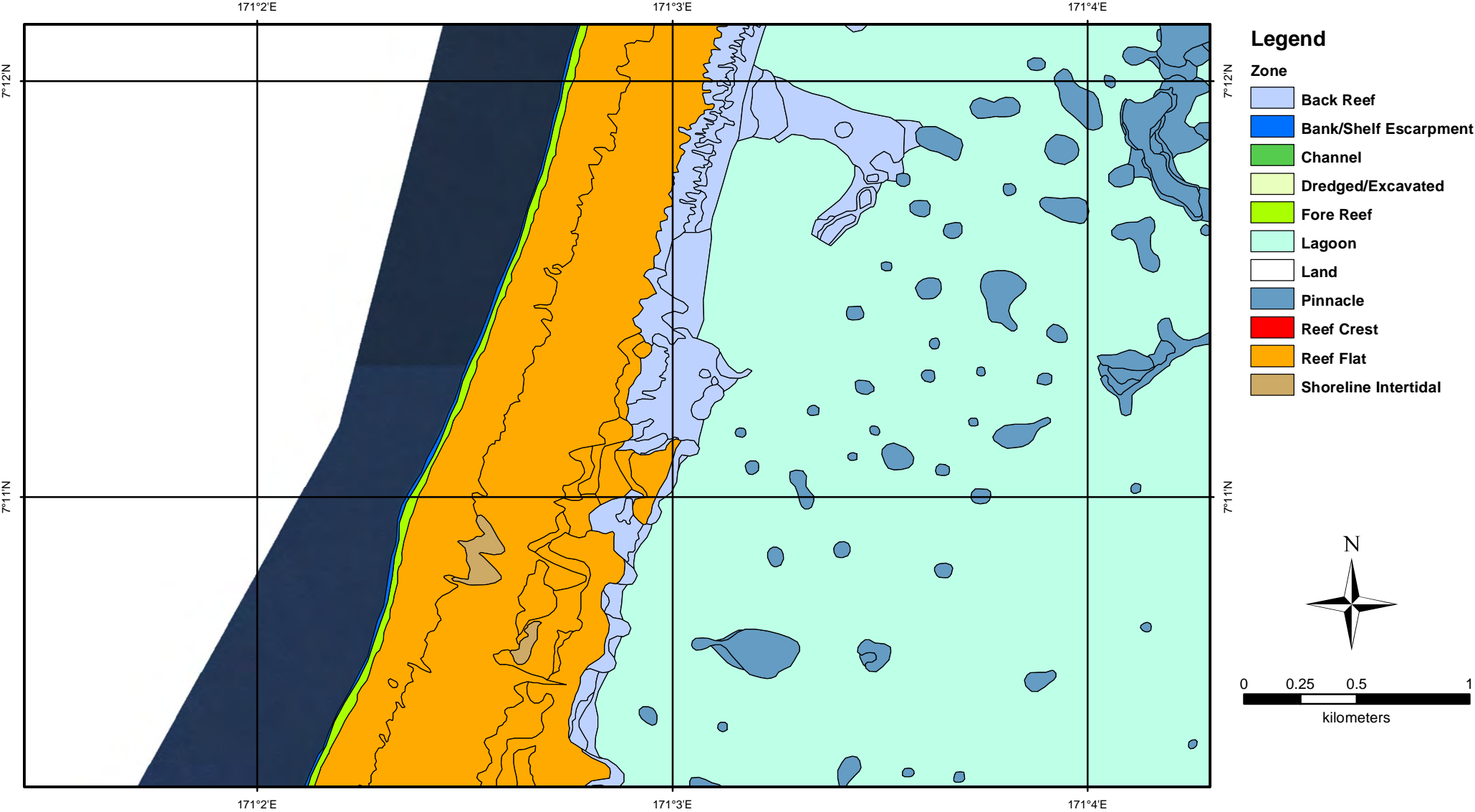
Frame 1 - Zonation



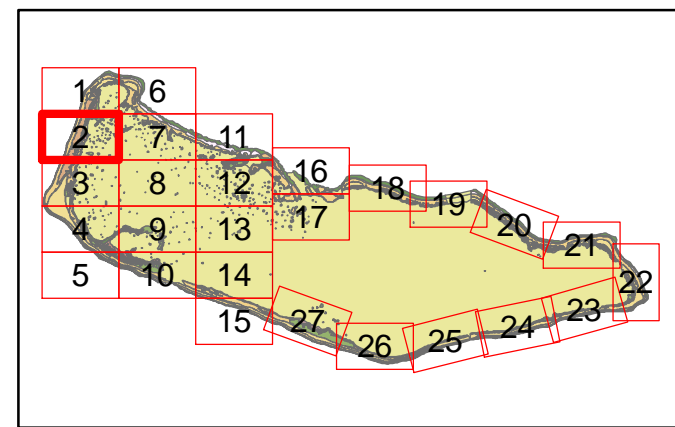


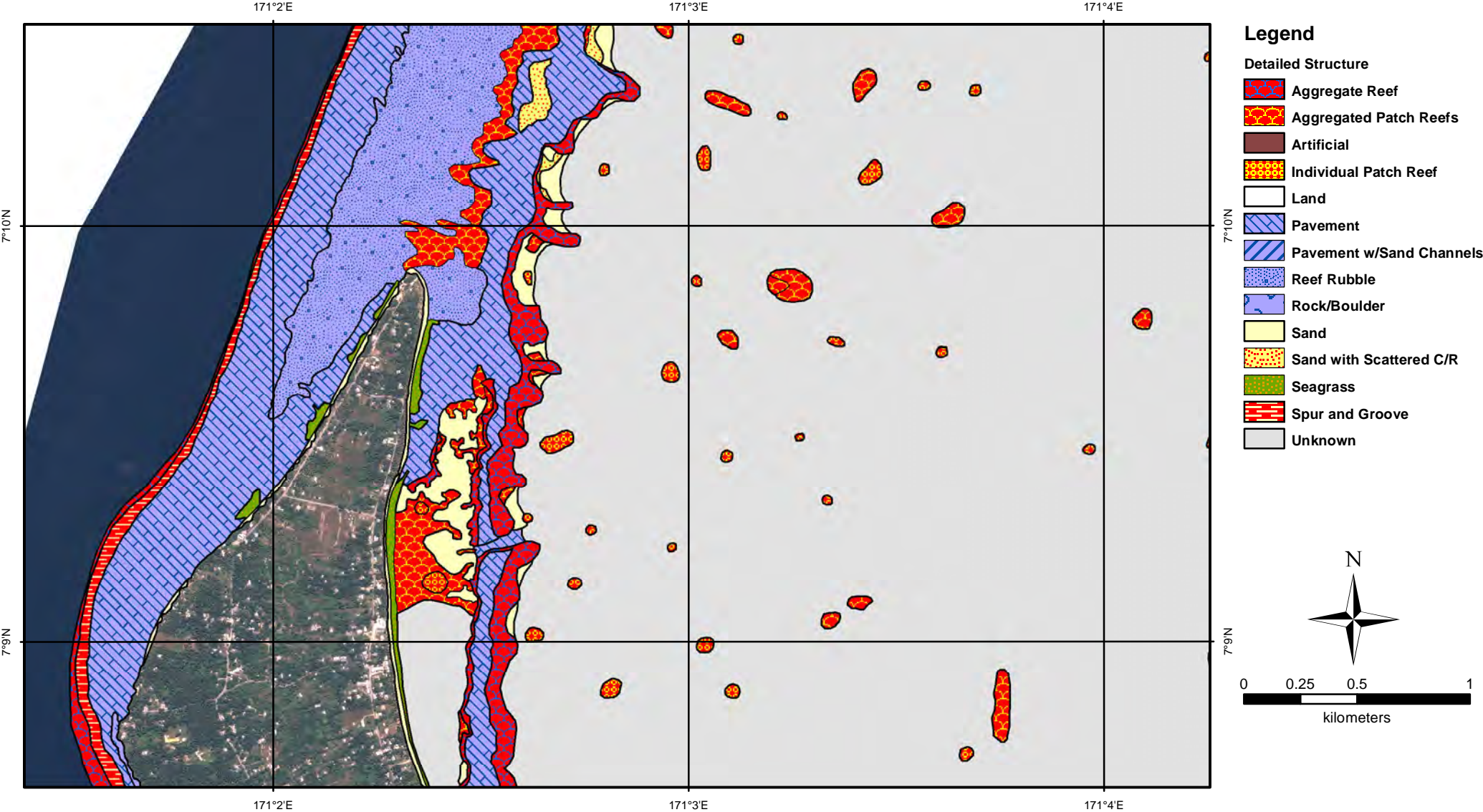
Frame 2 - Detailed Structure



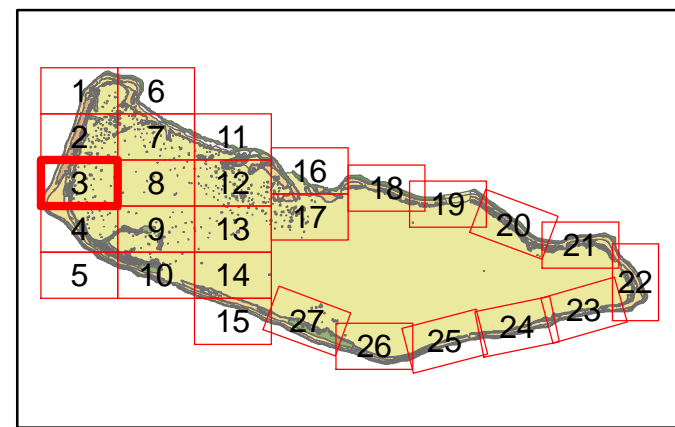


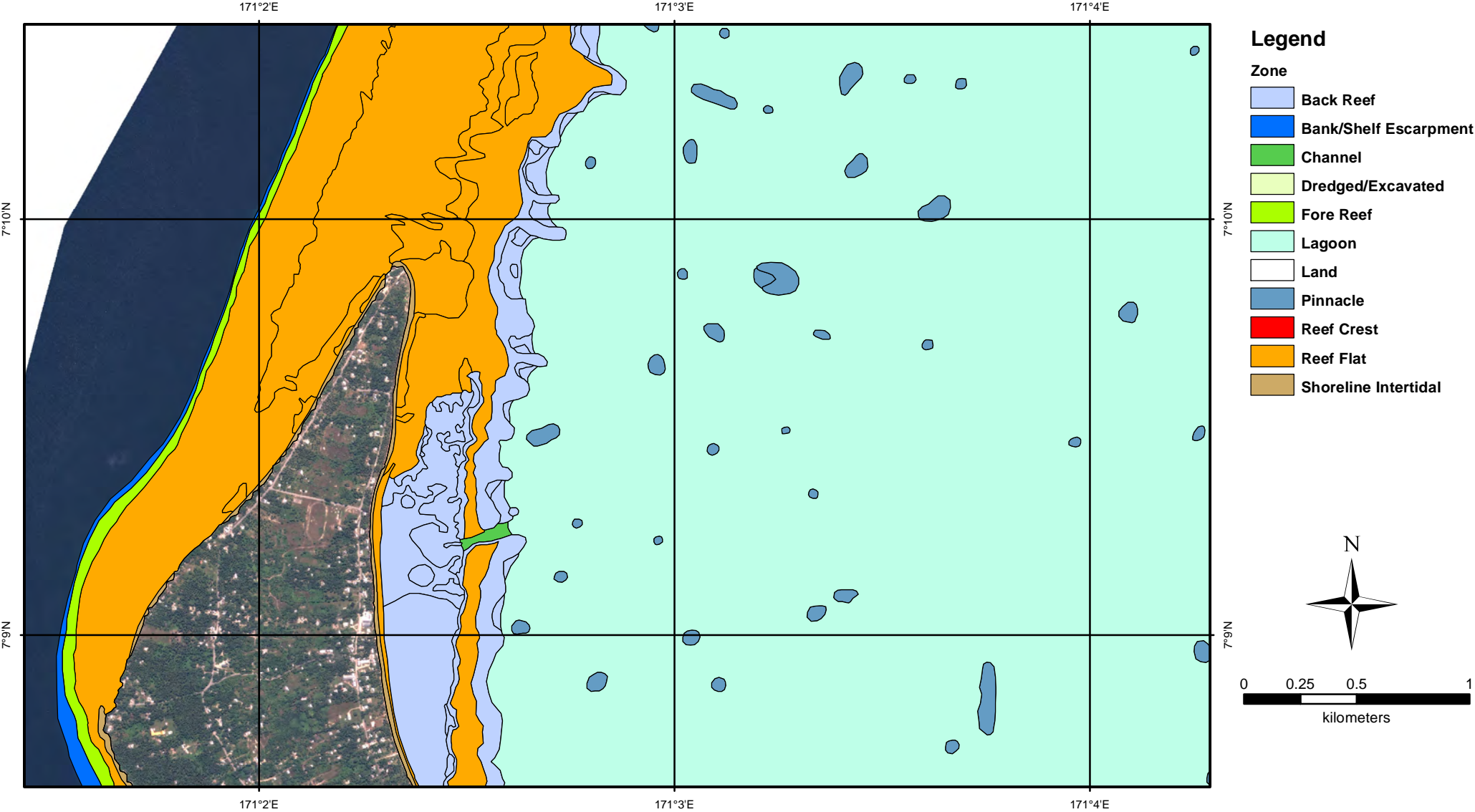
Frame 2 - Zonation



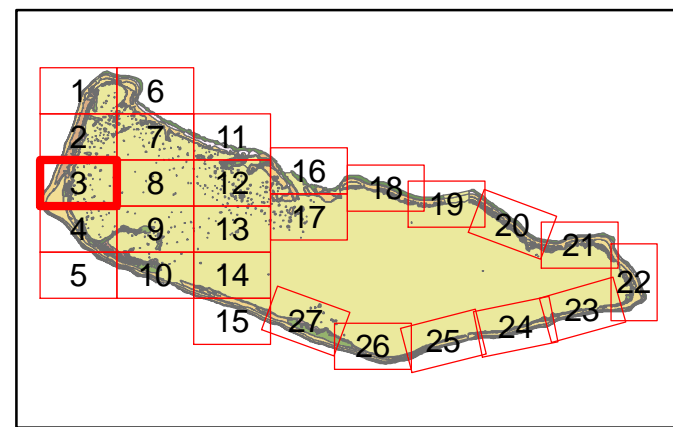


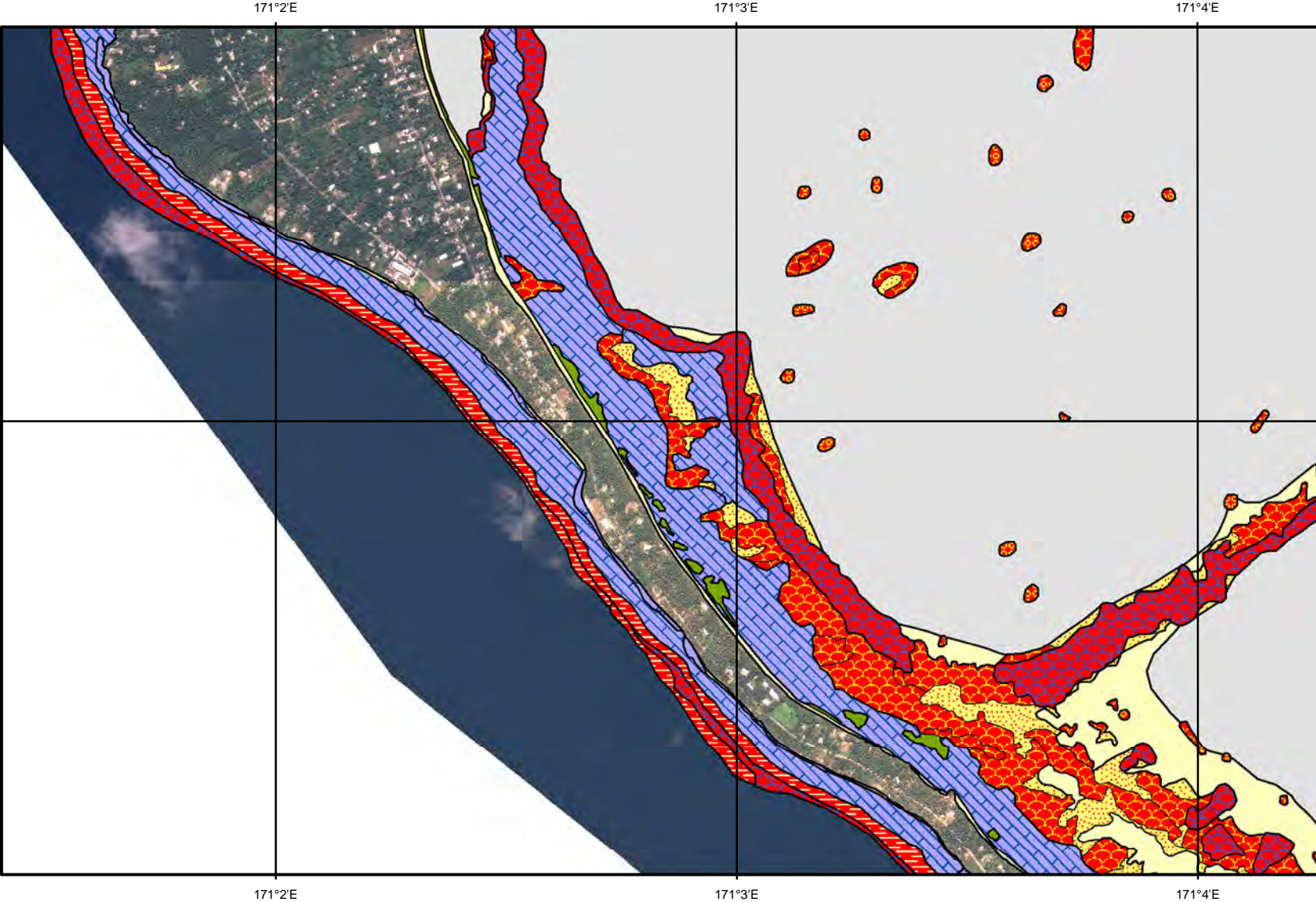
Frame 3 - Detailed Structure



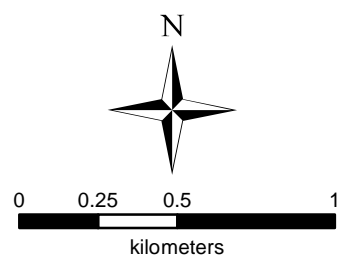


Frame 3 - Zonation

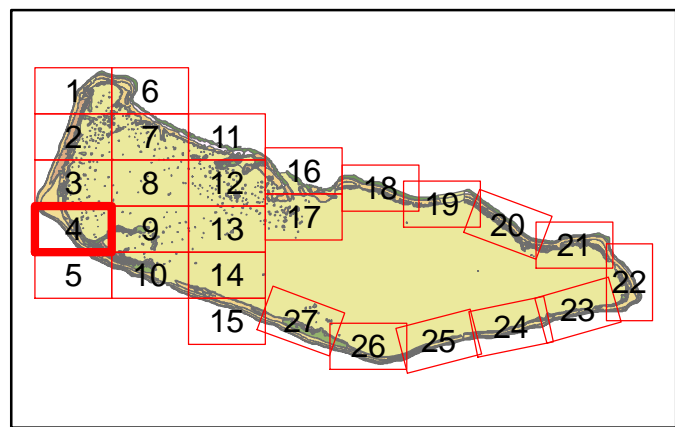


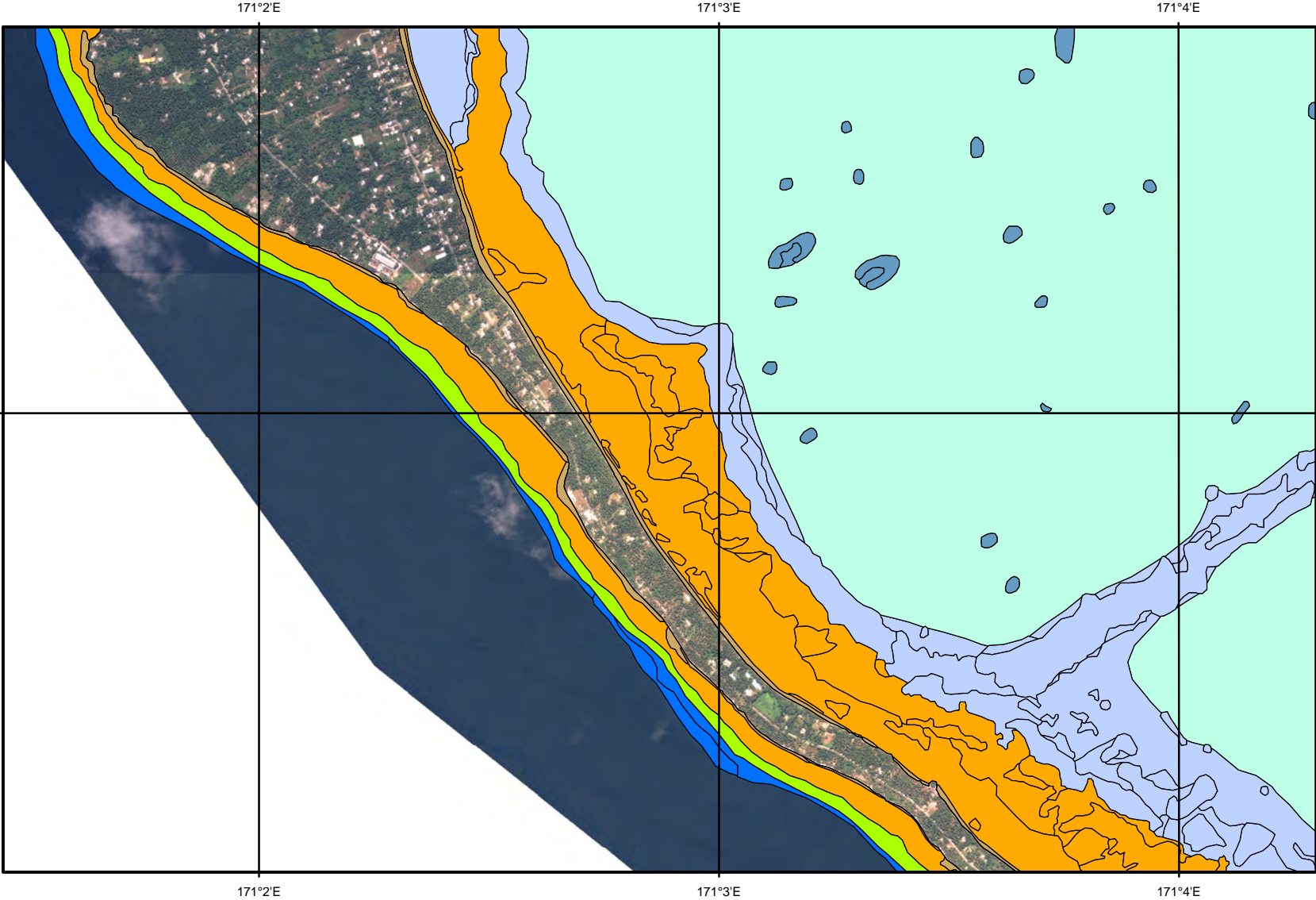


- ### Legend
- Detailed Structure
- Aggregate Reef
 - Aggregated Patch Reefs
 - Artificial
 - Individual Patch Reef
 - Land
 - Pavement
 - Pavement w/Sand Channels
 - Reef Rubble
 - Rock/Boulder
 - Sand
 - Sand with Scattered C/R
 - Seagrass
 - Spur and Groove
 - Unknown

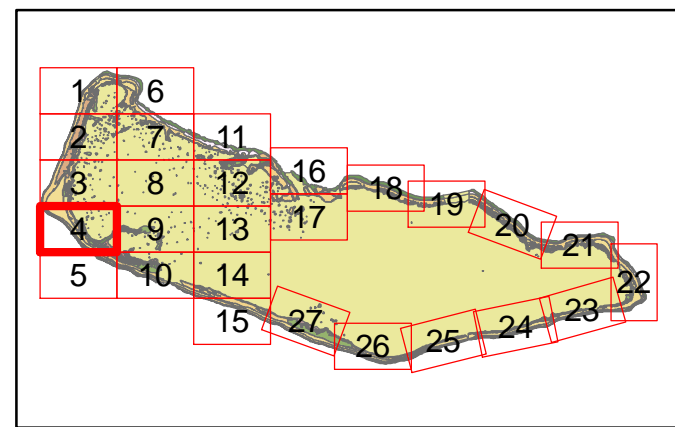


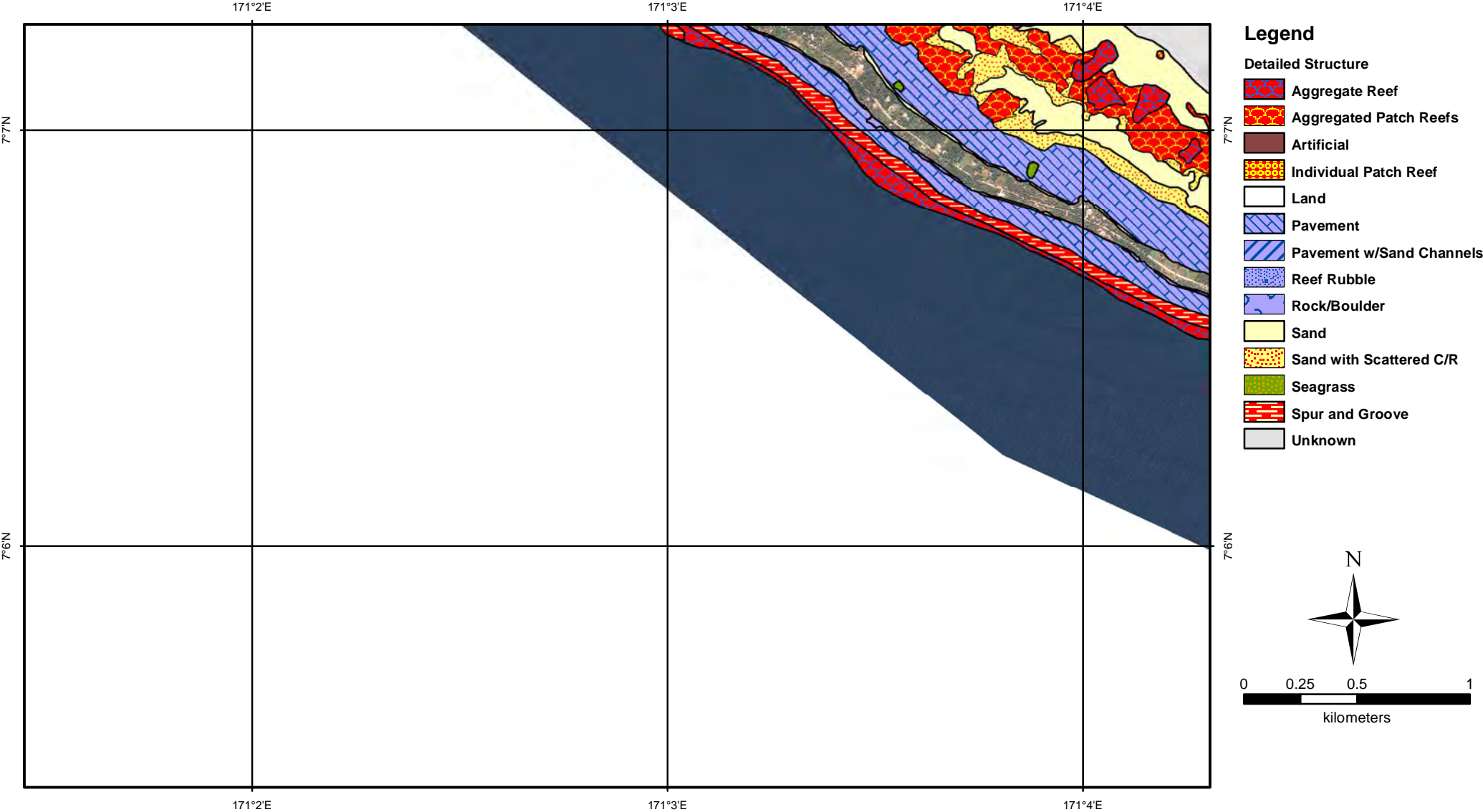
Frame 4 - Detailed Structure



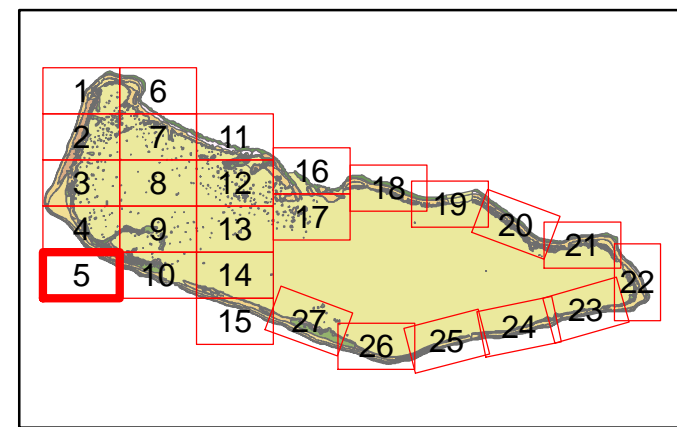


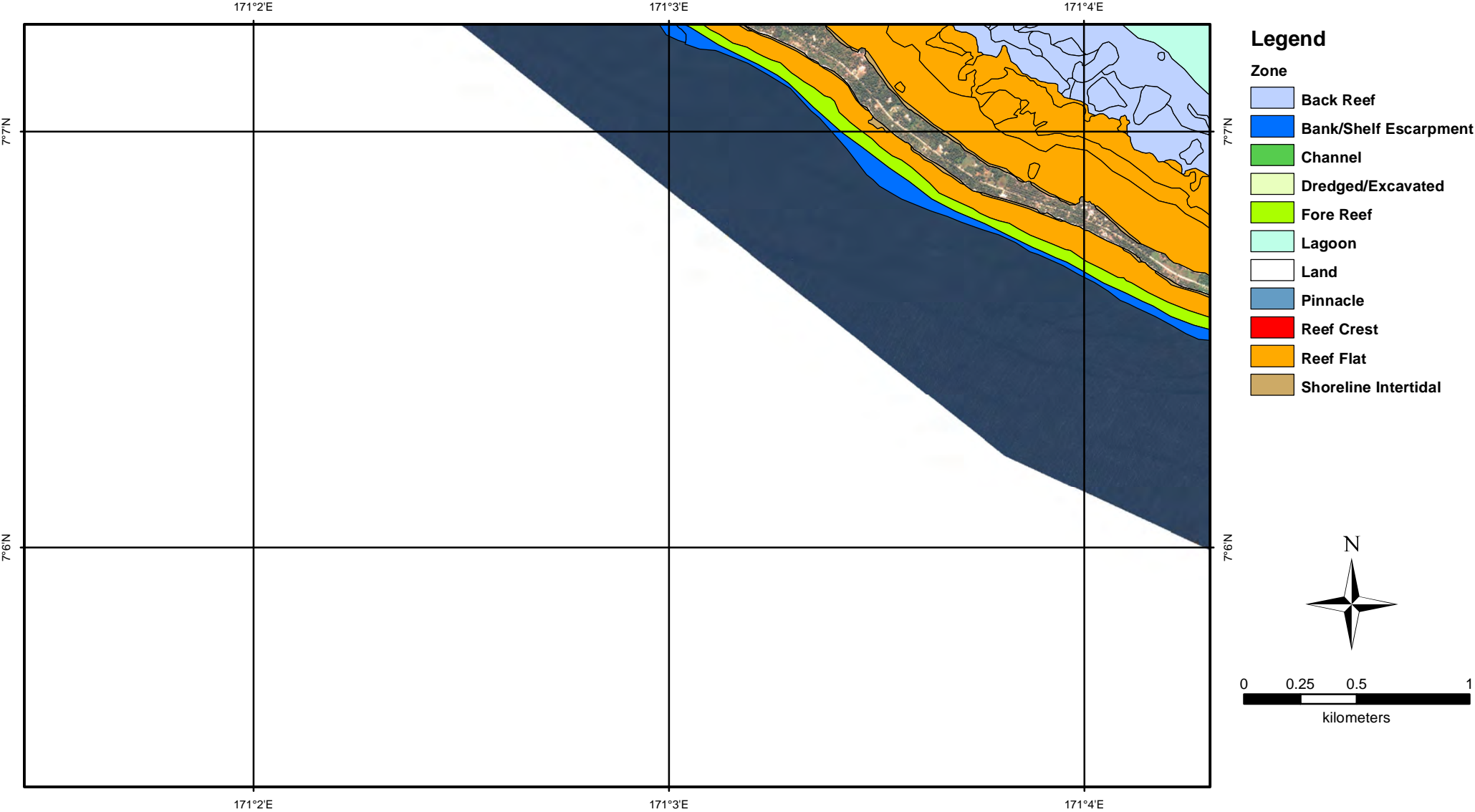
Frame 4 - Zonation



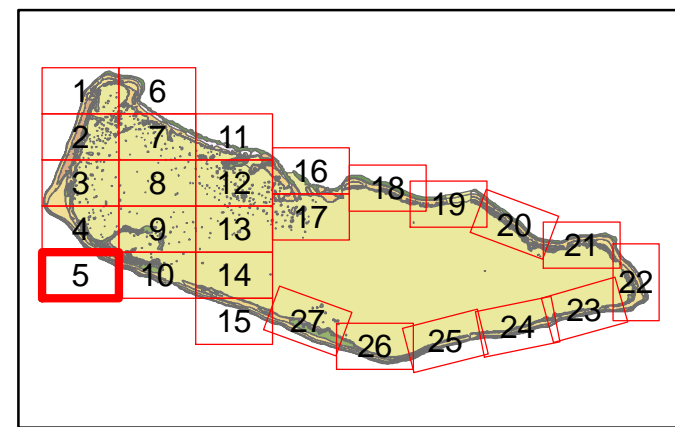


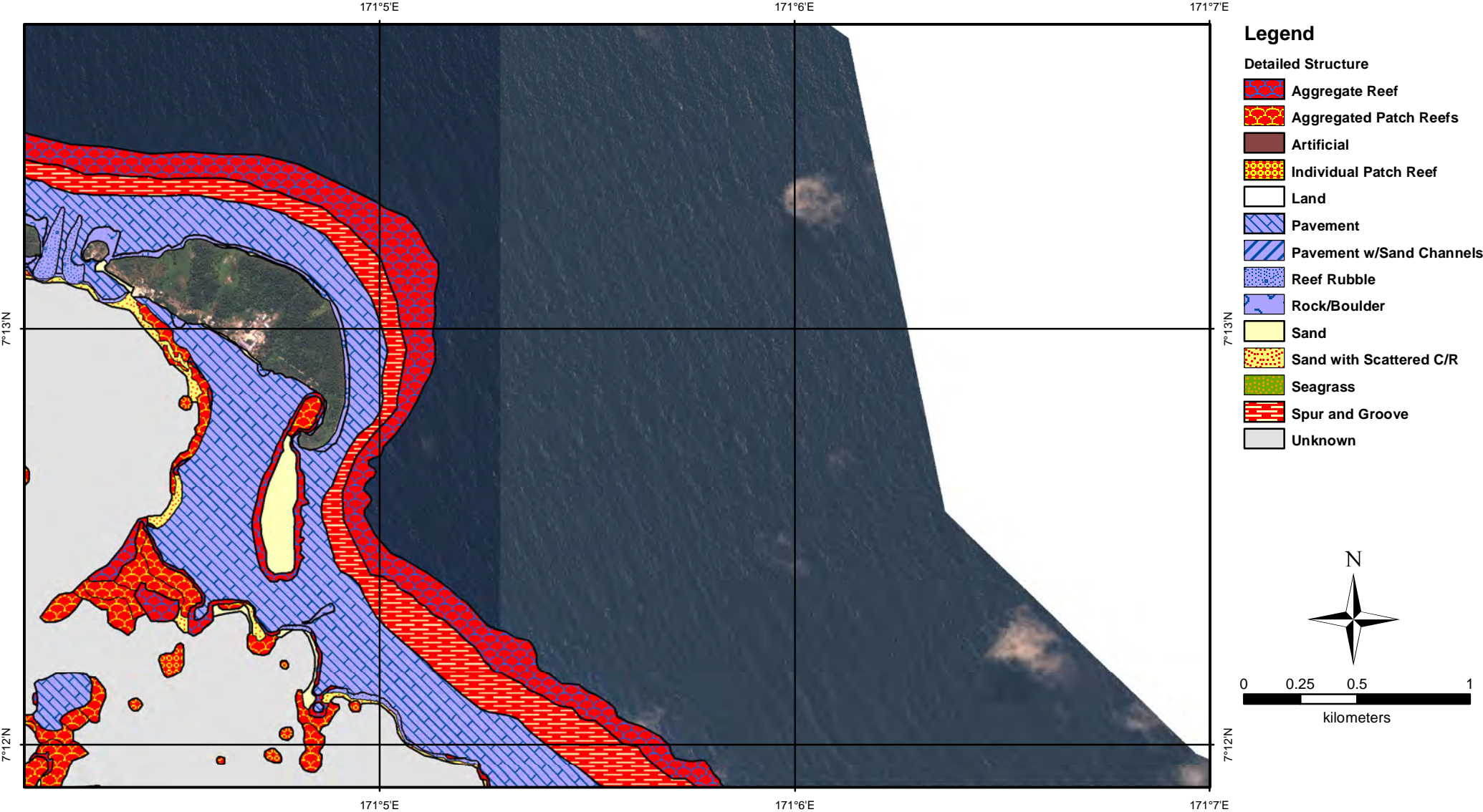
Frame 5 - Detailed Structure



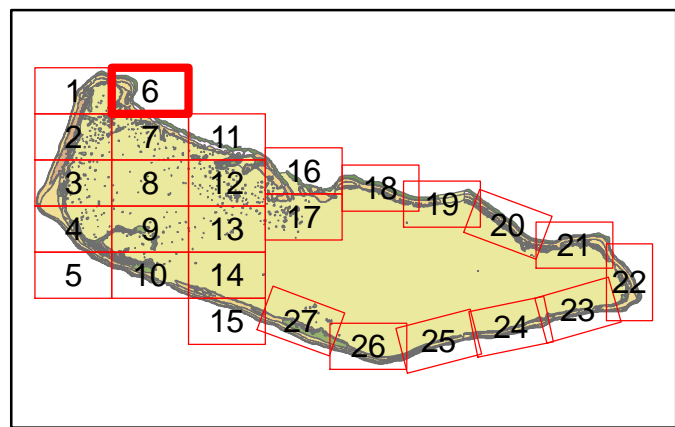


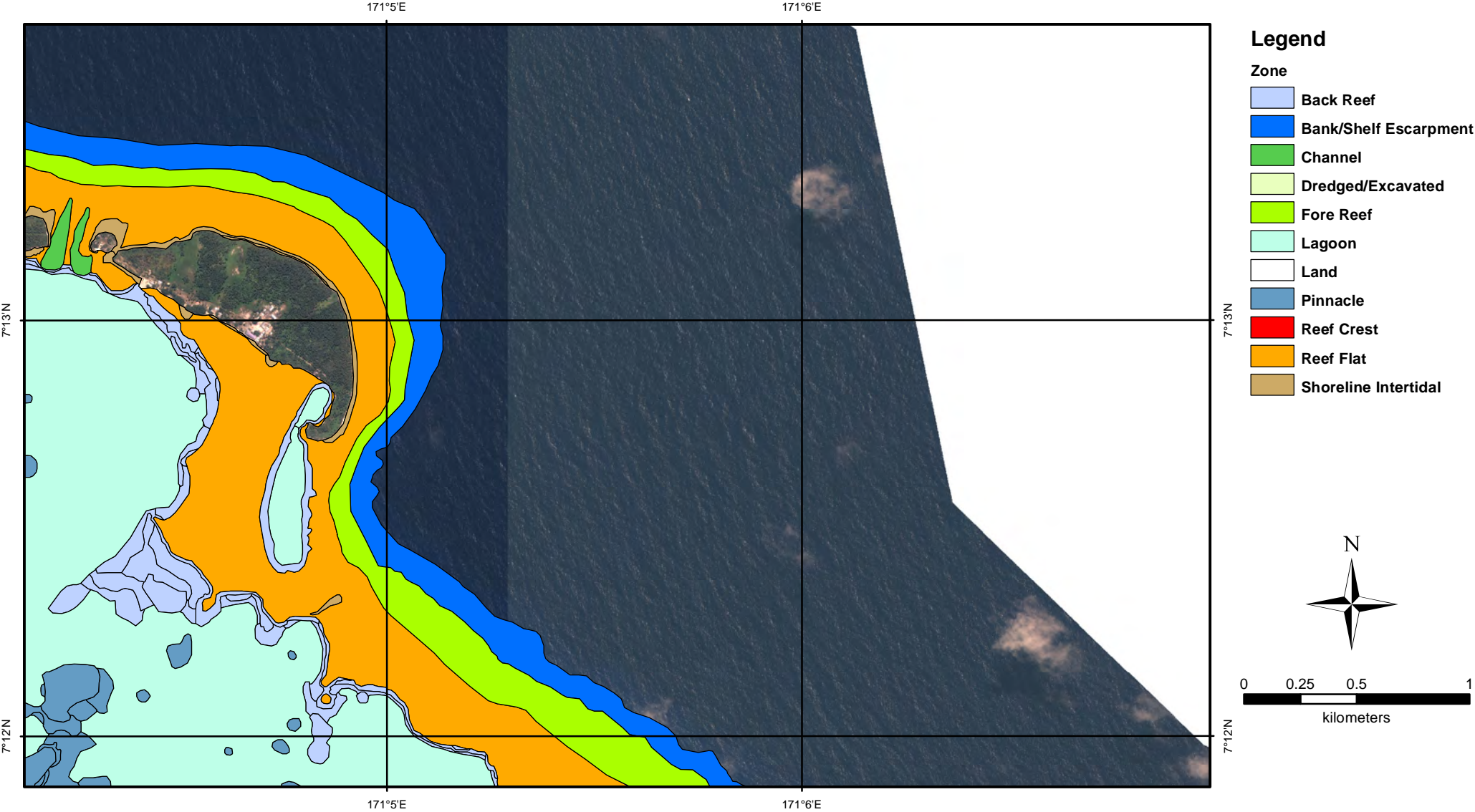
Frame 5 - Zonation



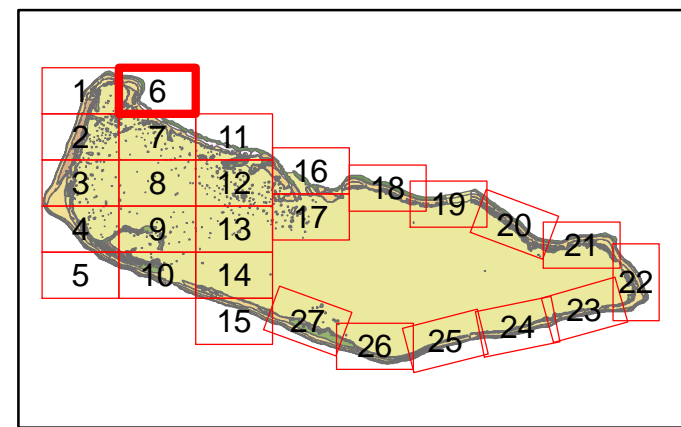


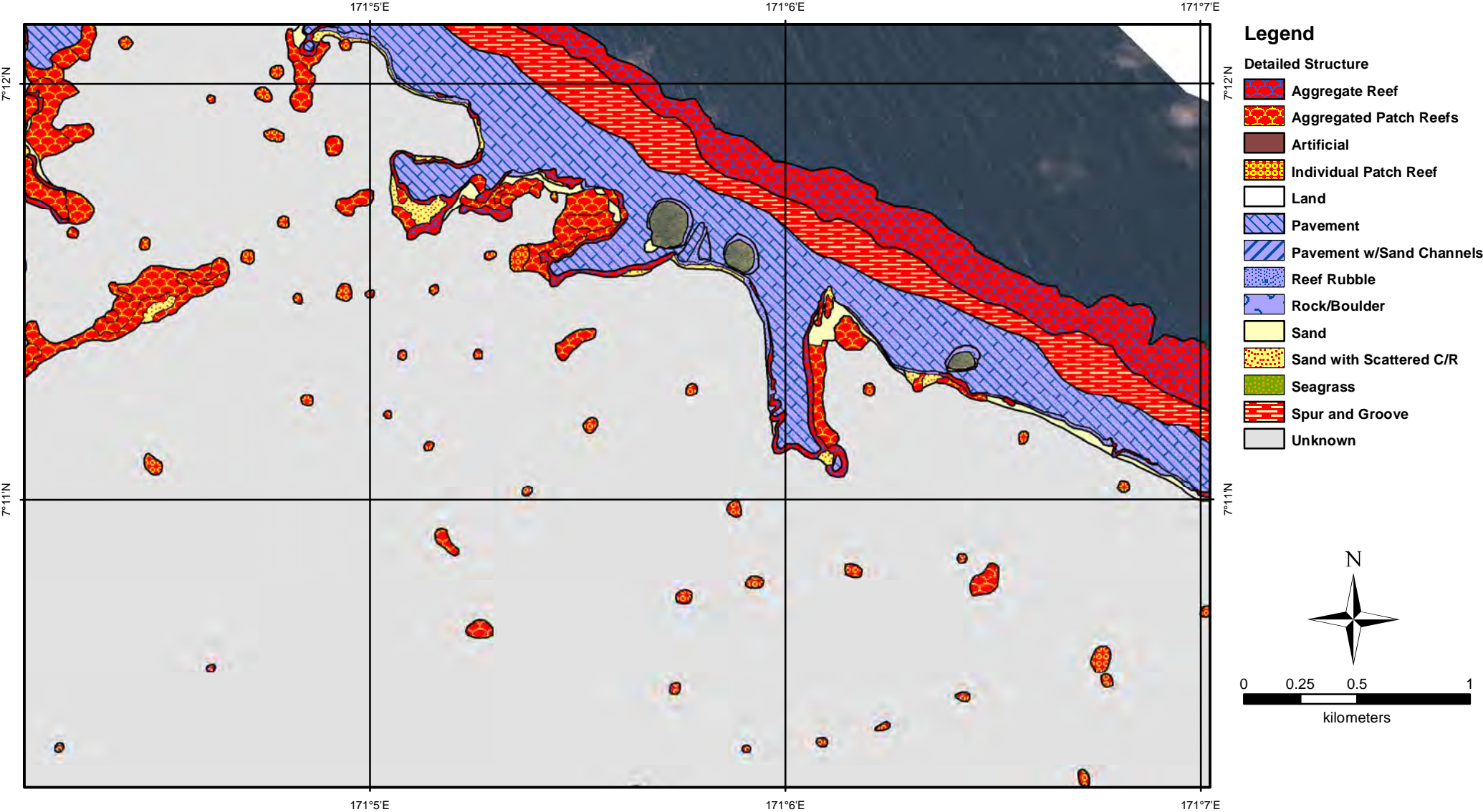
Frame 6 - Detailed Structure



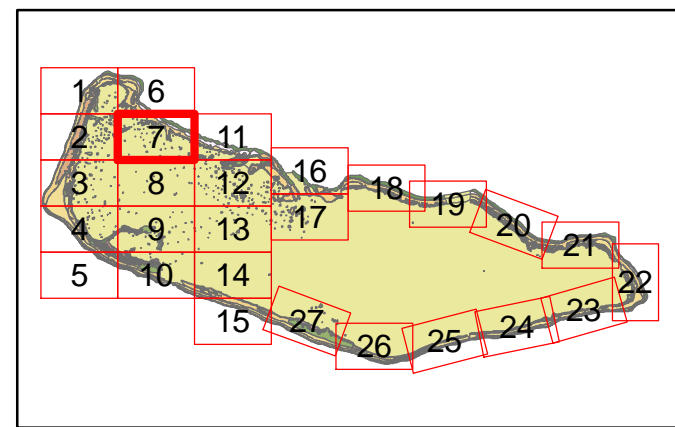


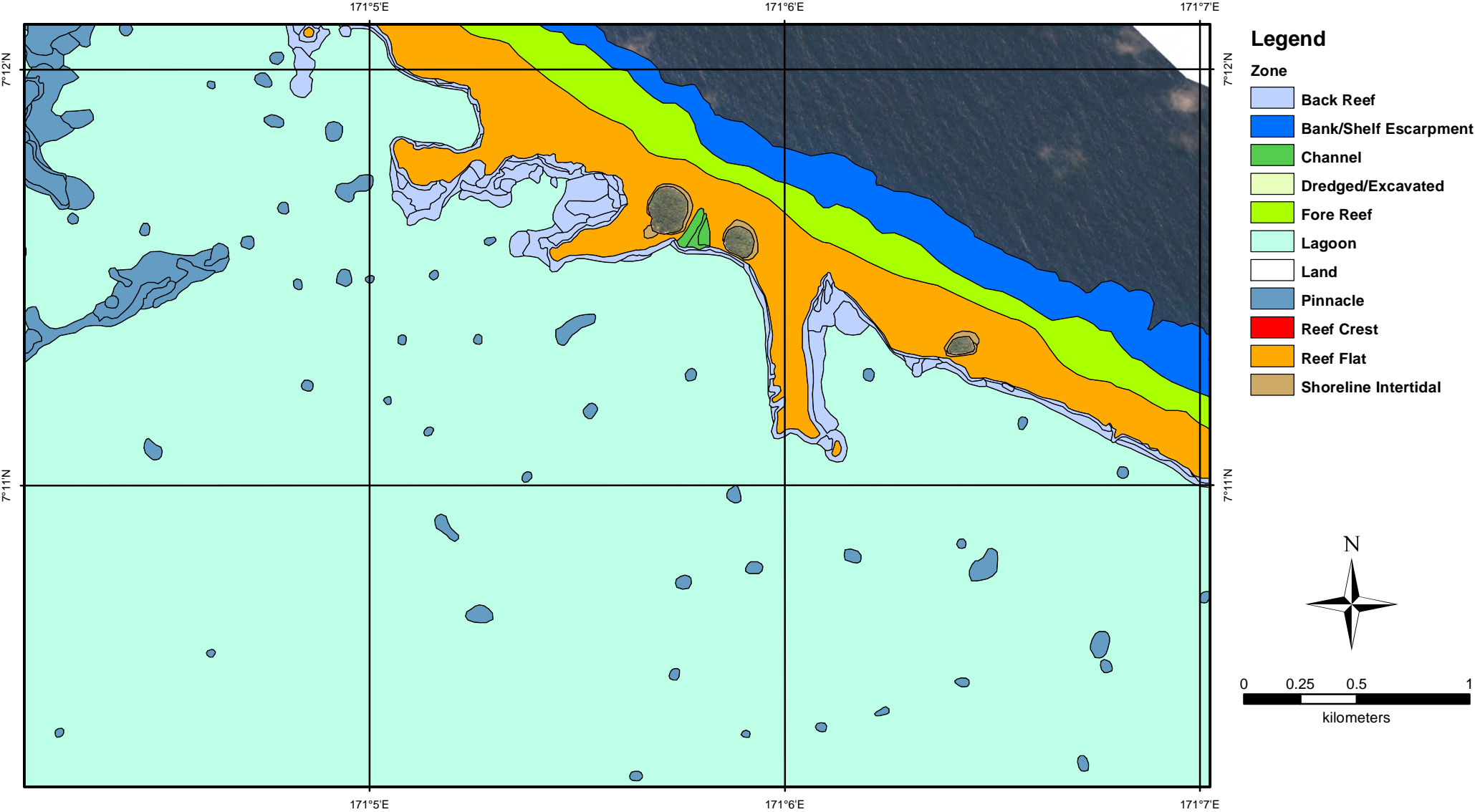
Frame 6 - Zonation



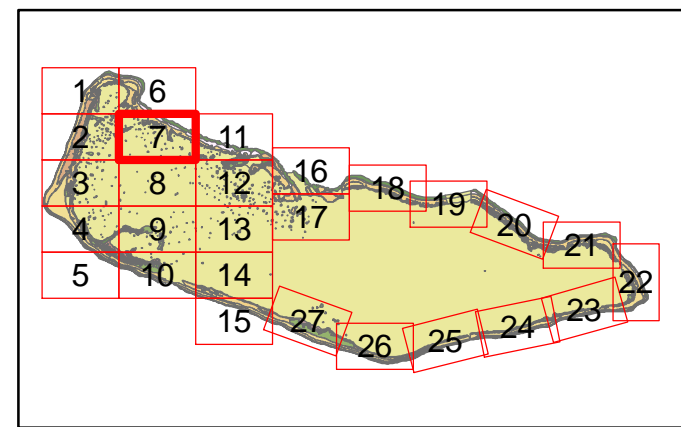


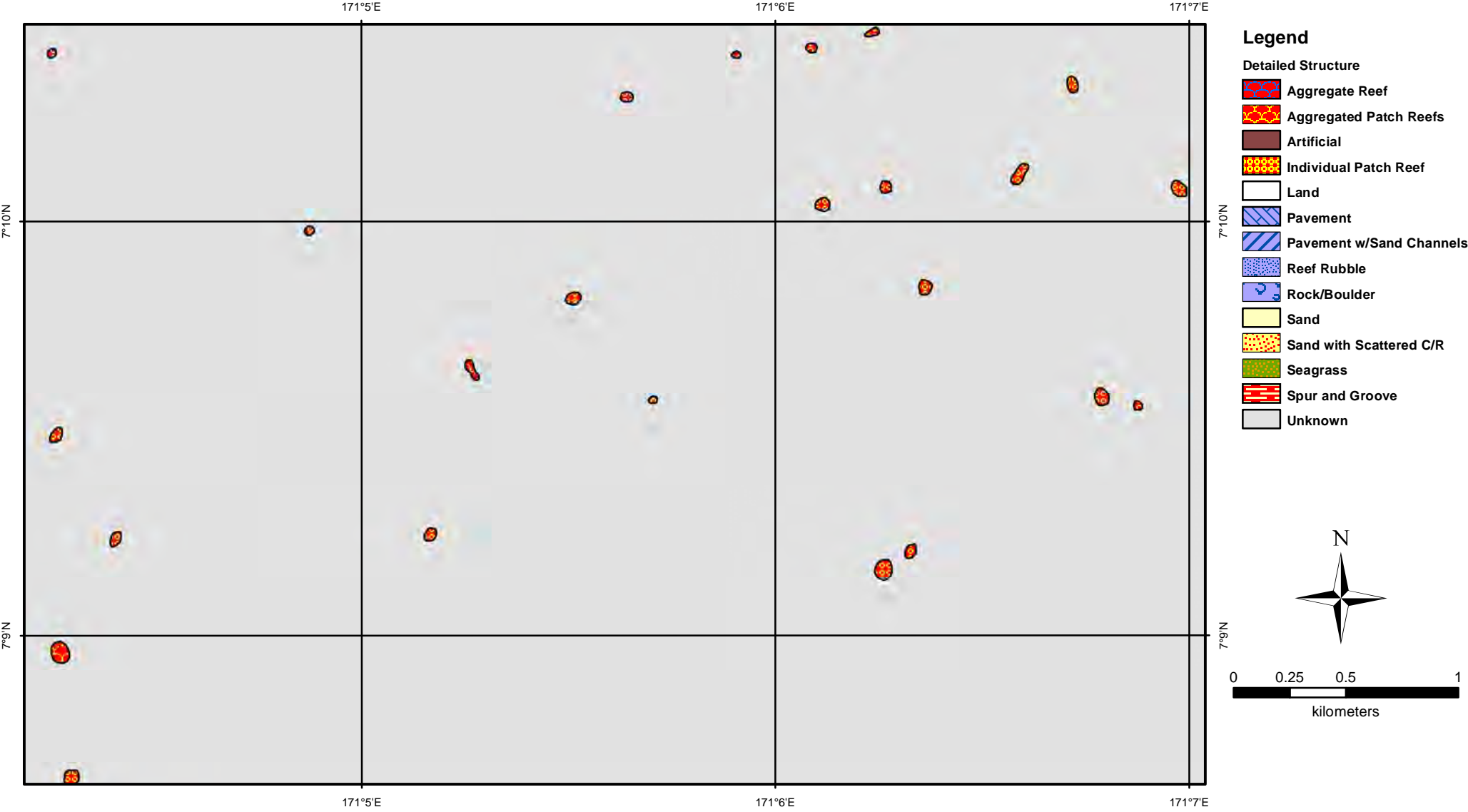
Frame 7 - Detailed Structure



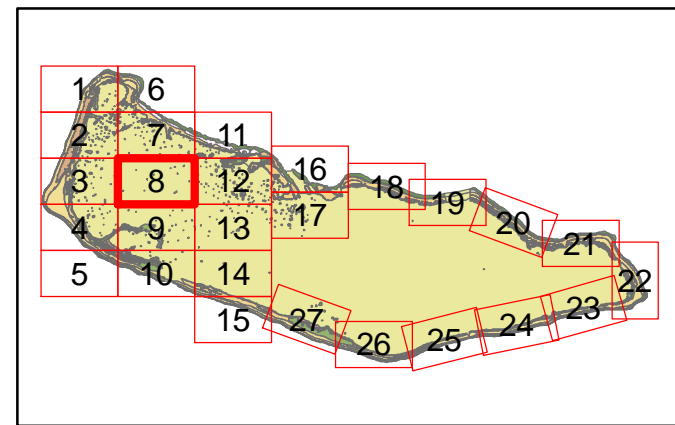


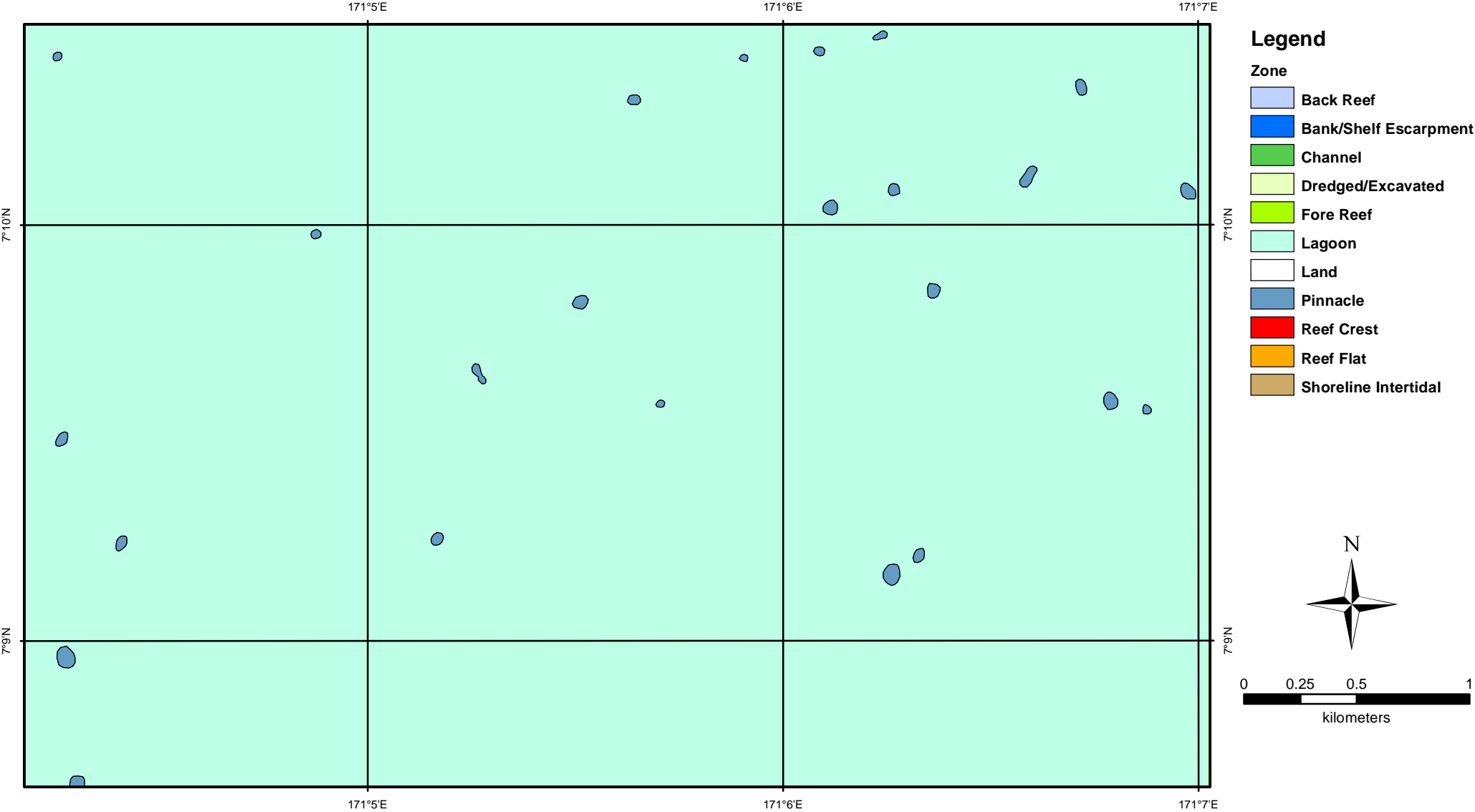
Frame 7 - Zonation



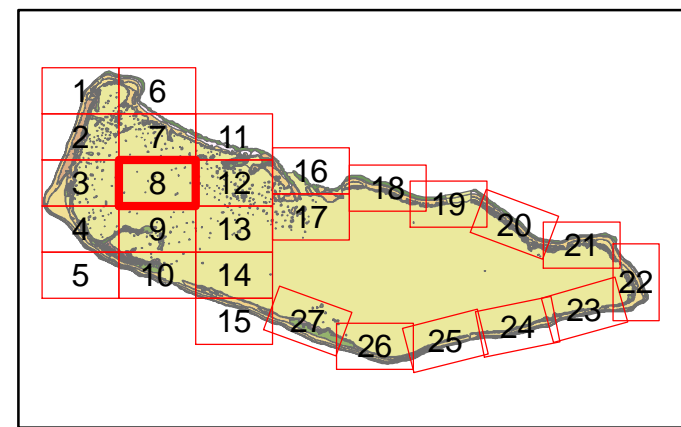


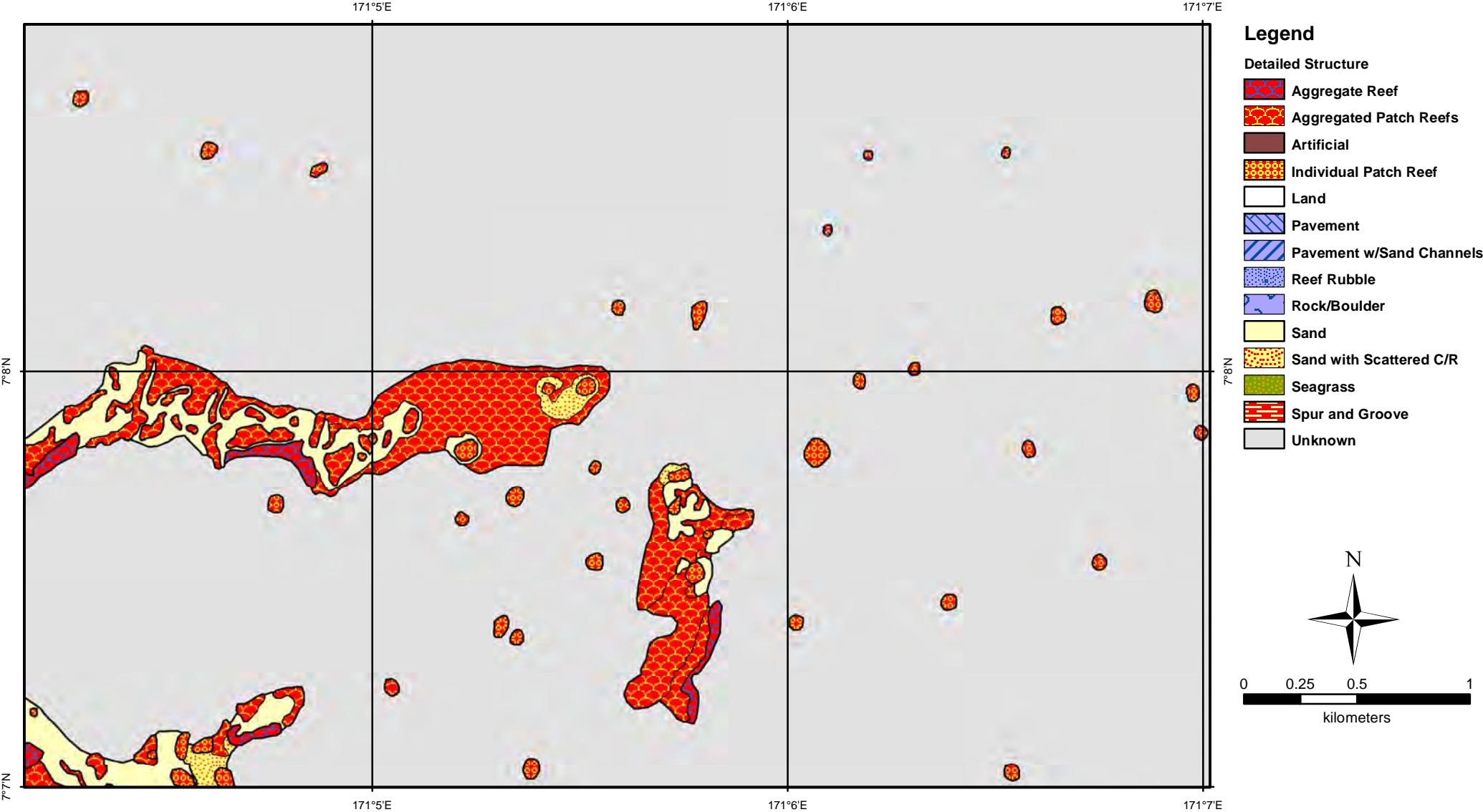
Frame 8 - Detailed Structure



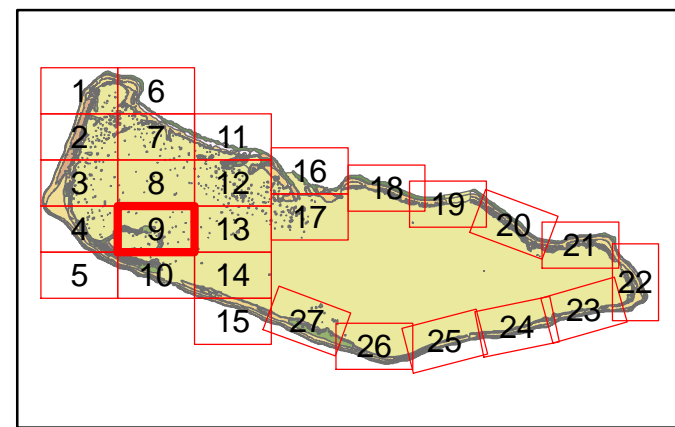


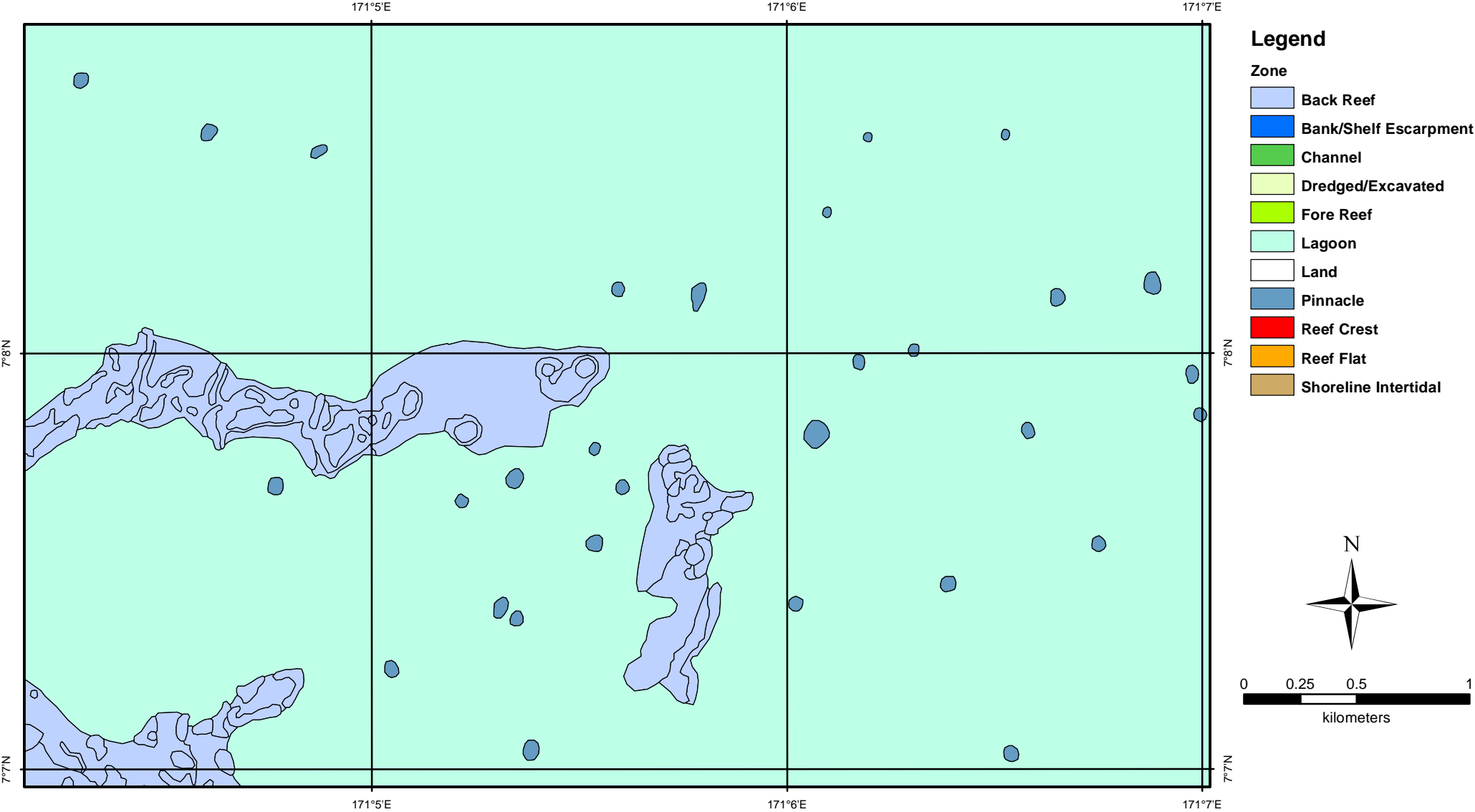
Frame 8 - Zonation



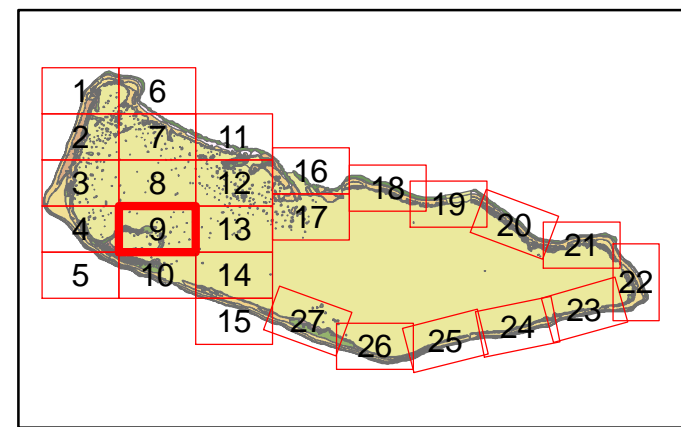


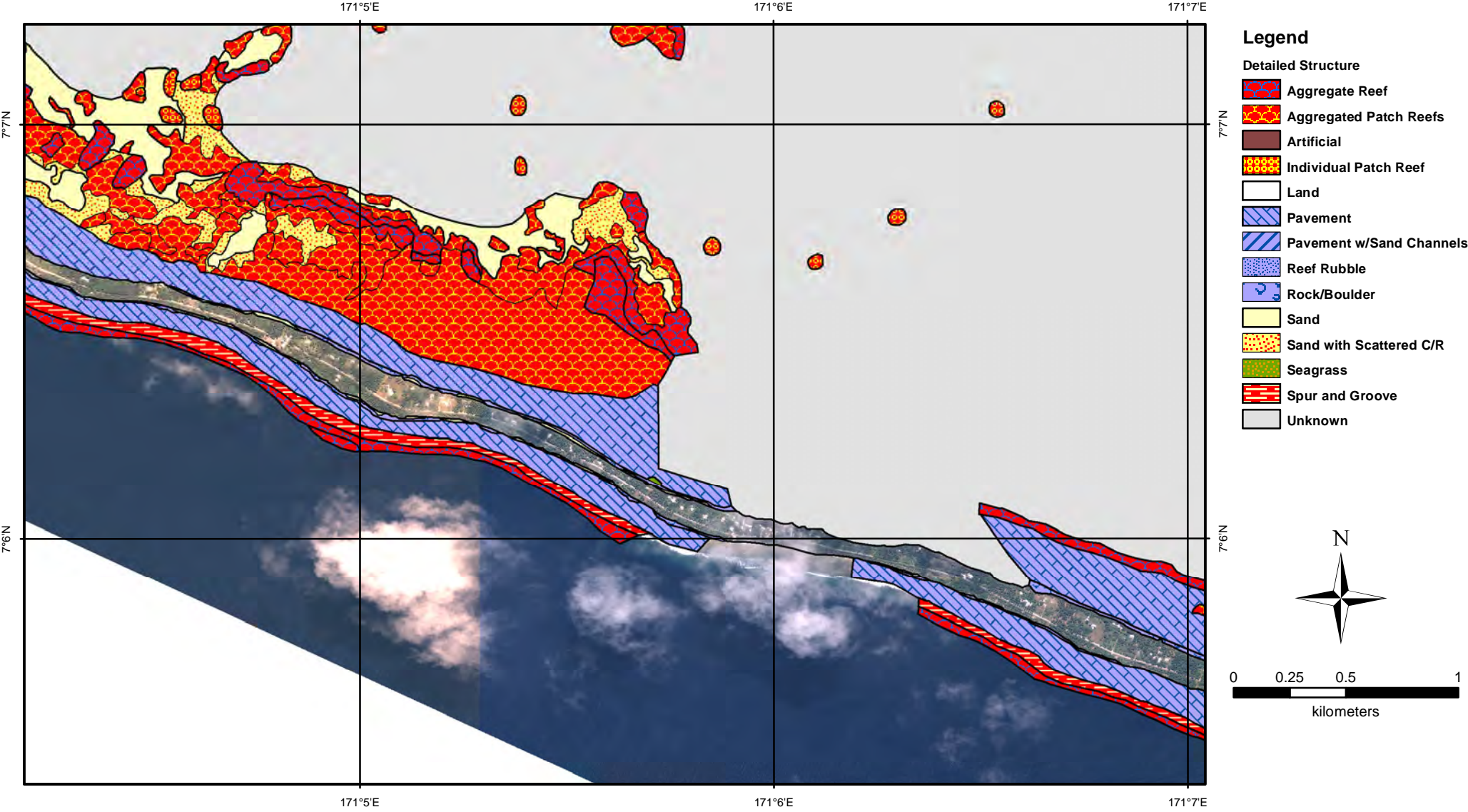
Frame 9 - Detailed Structure



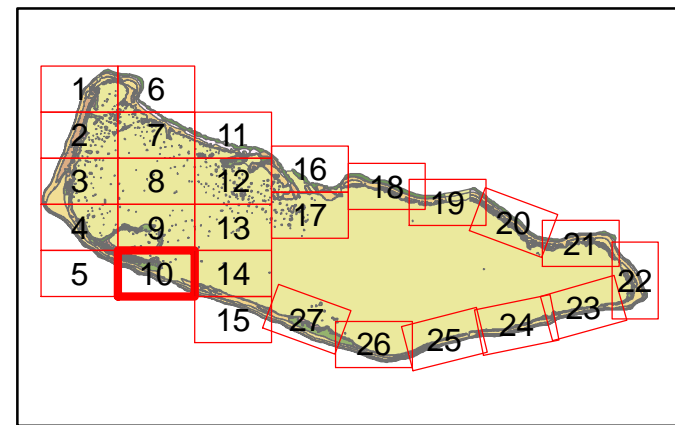


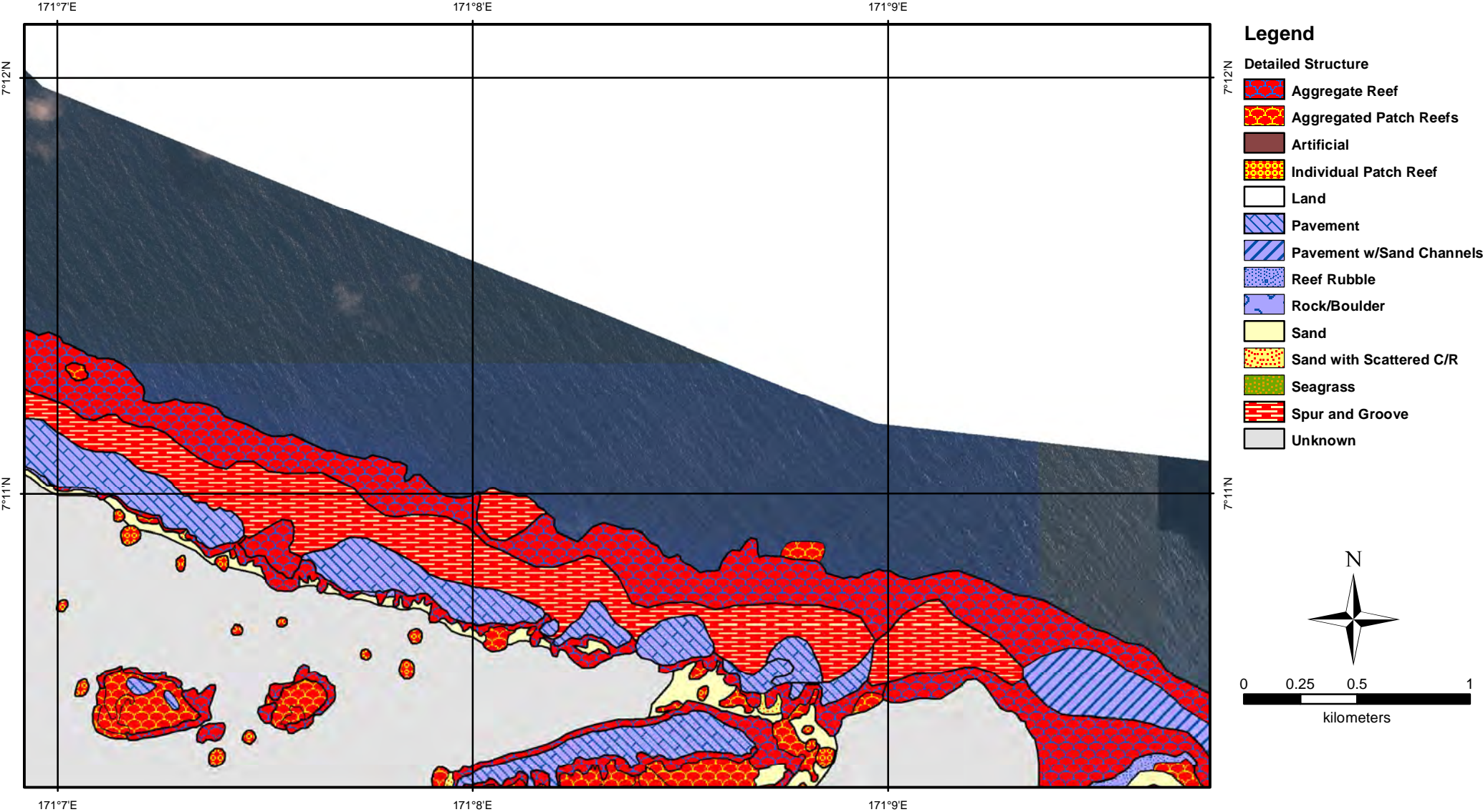
Frame 9 - Zonation



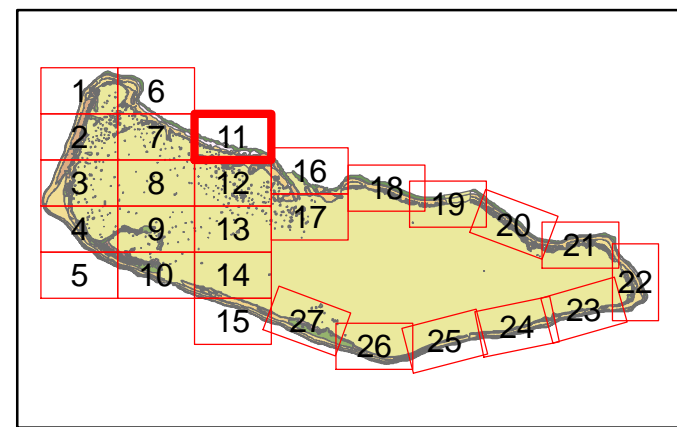


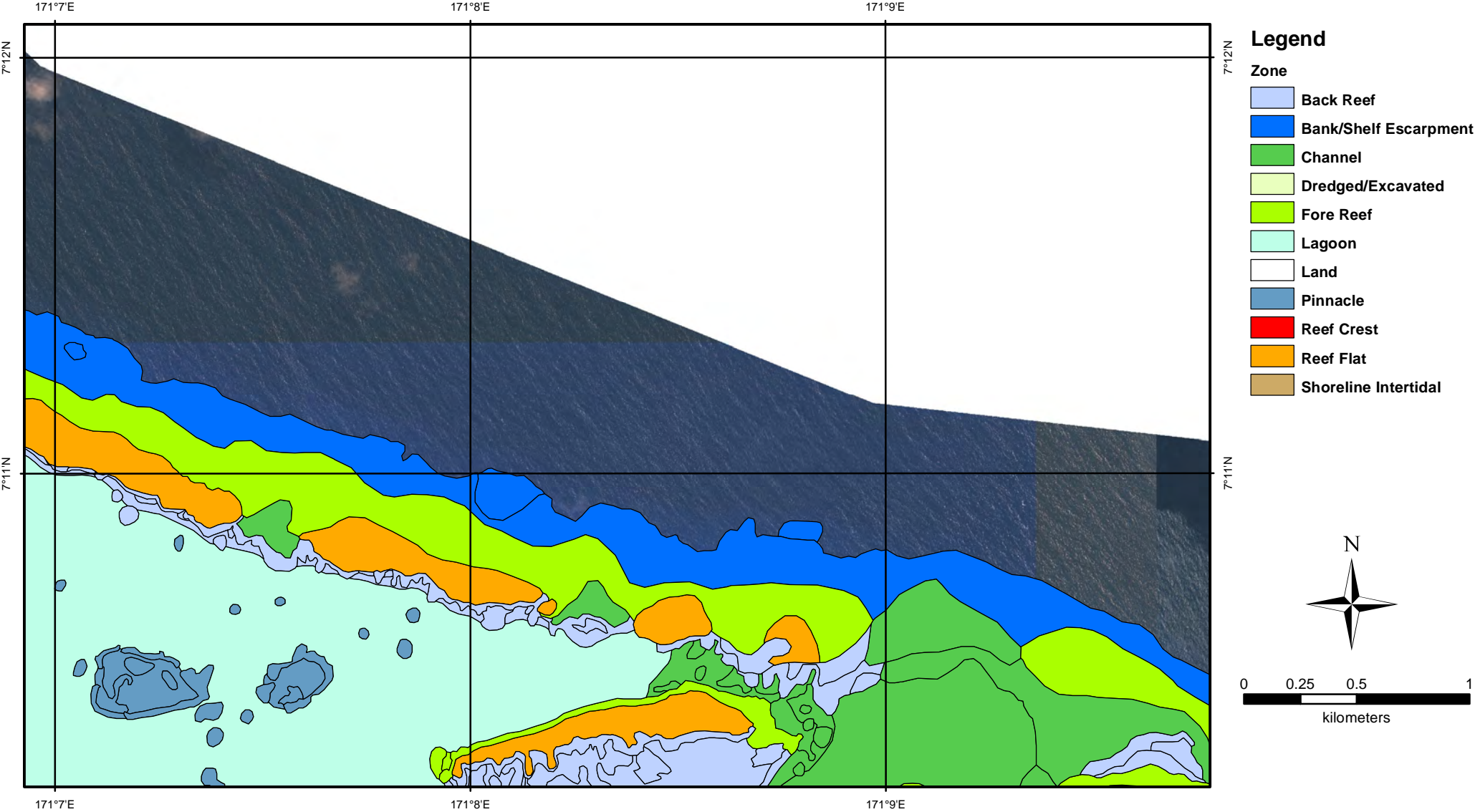
Frame 10 - Detailed Structure



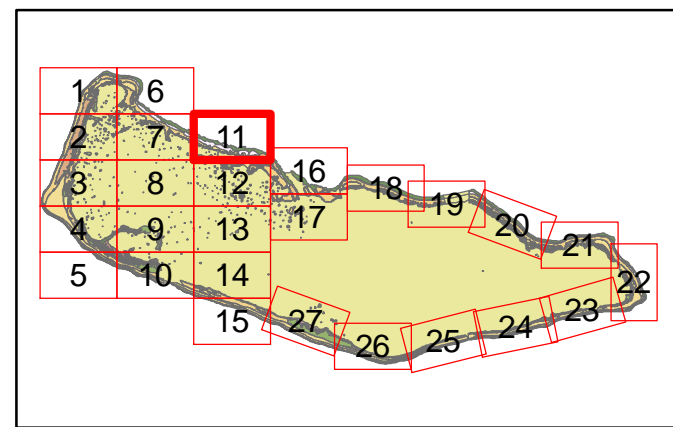


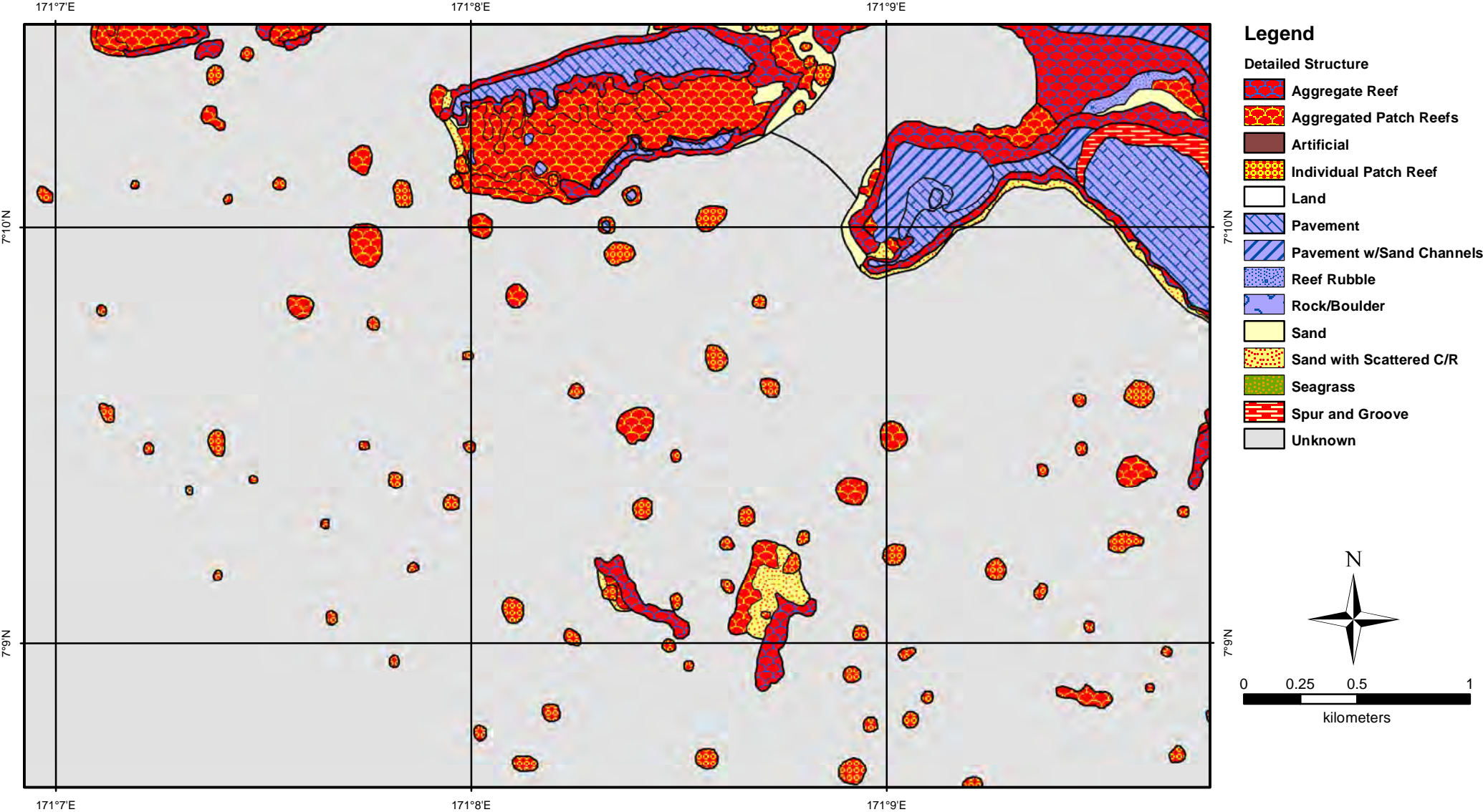
Frame 11 - Detailed Structure



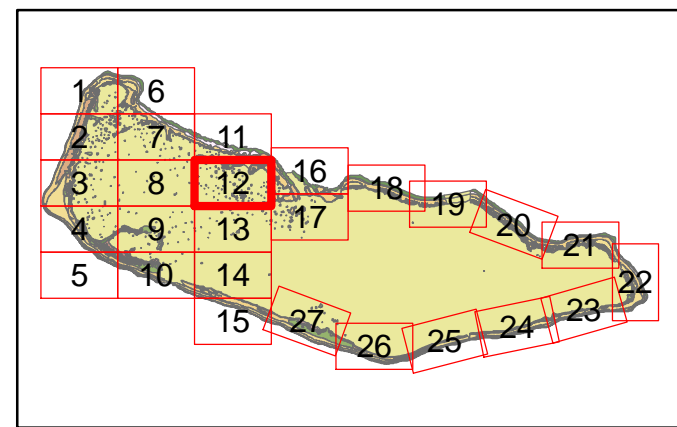


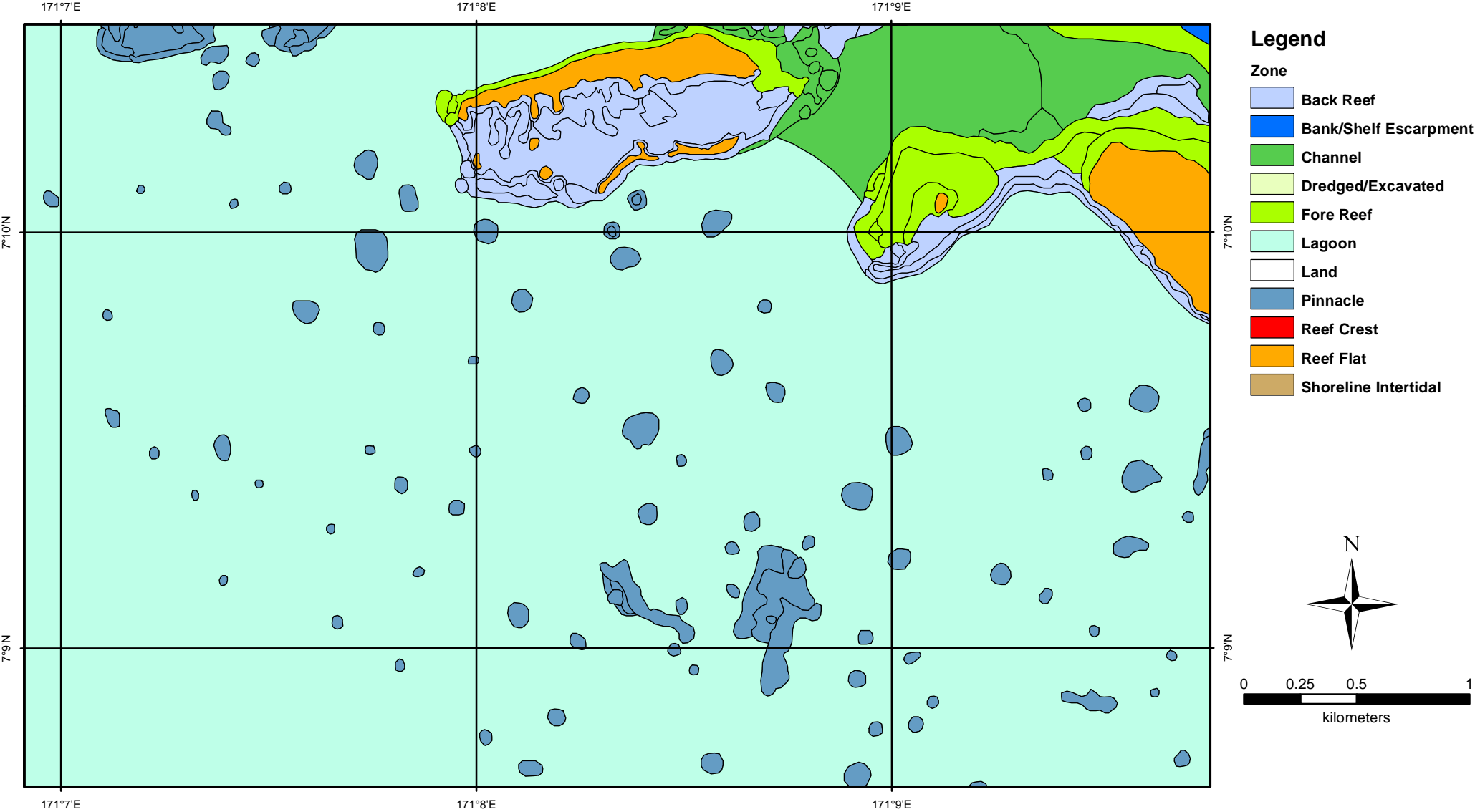
Frame 11 - Zonation



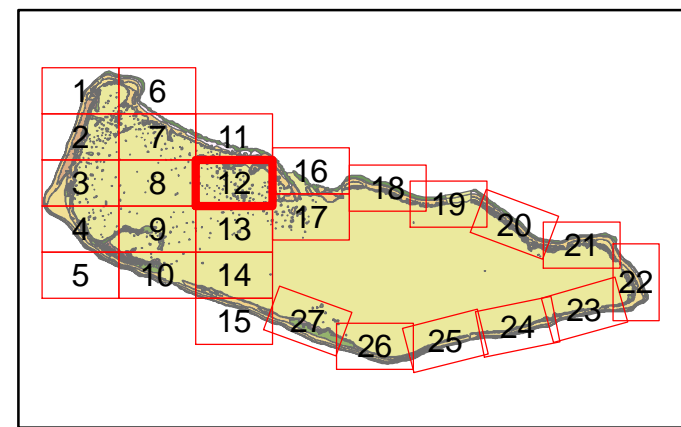


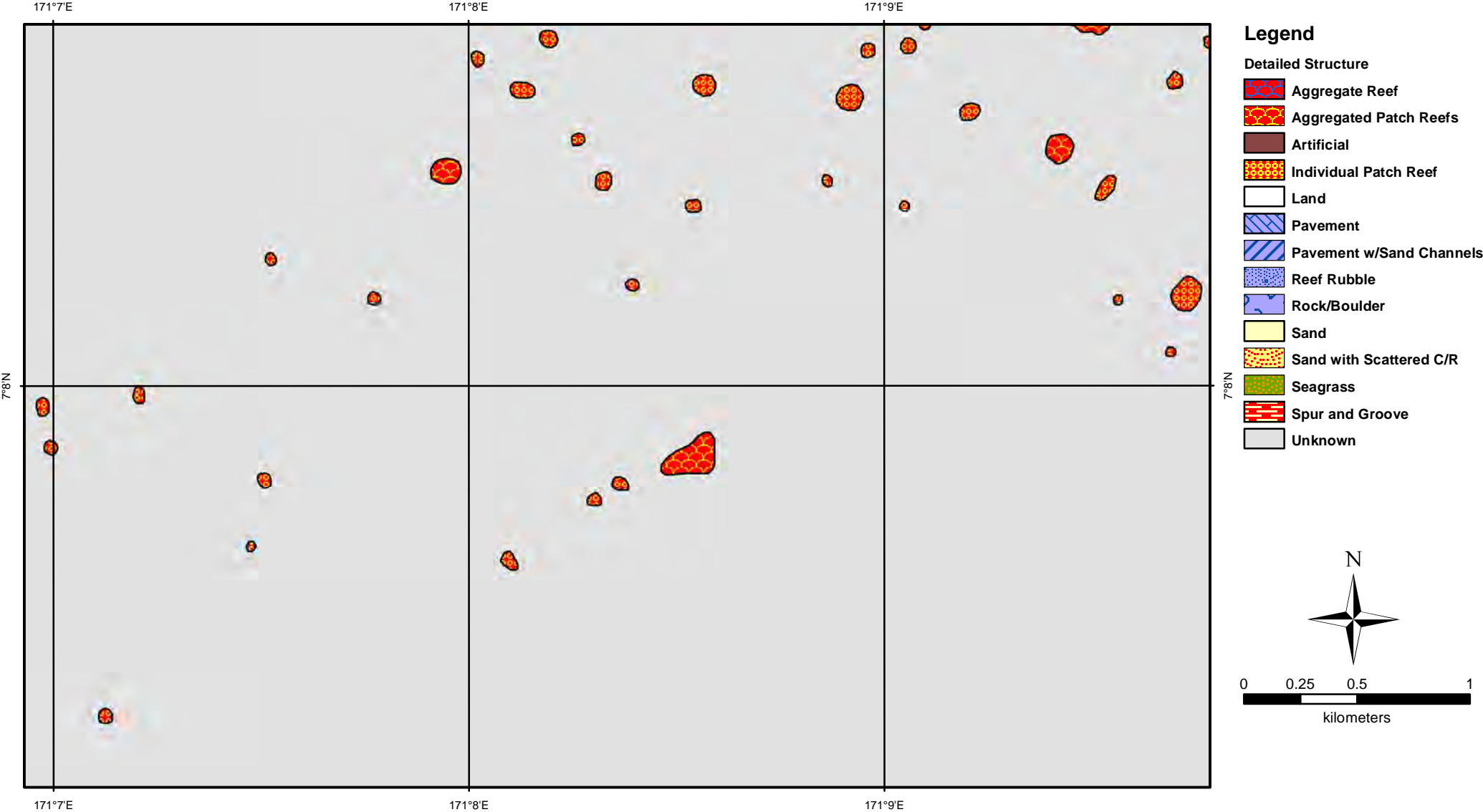
Frame 12 - Detailed Structure



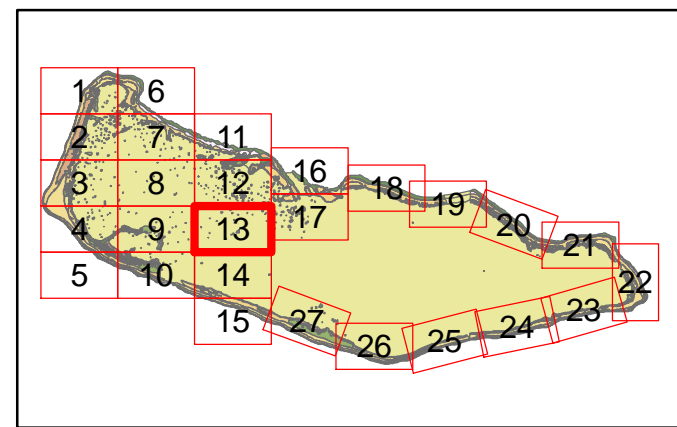


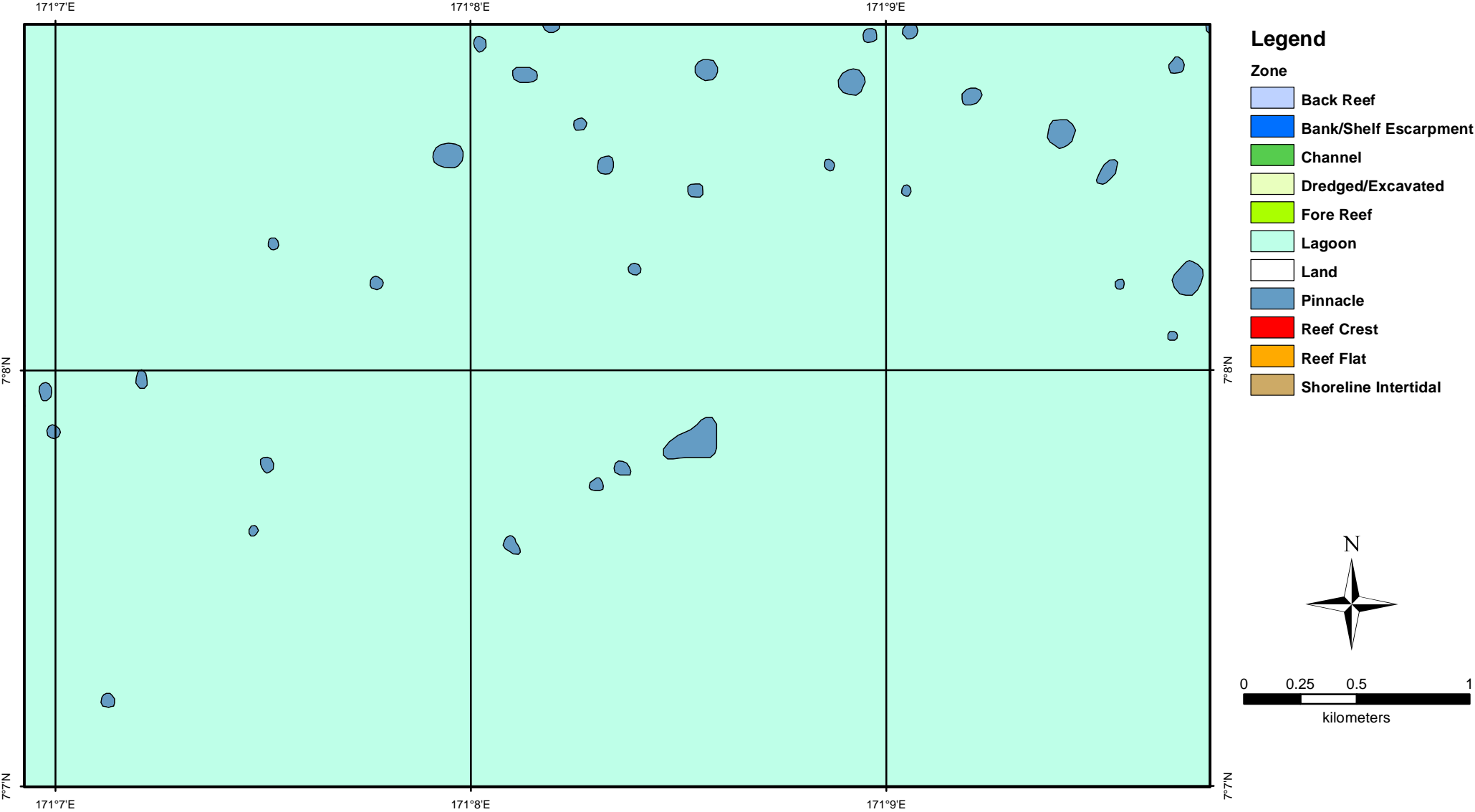
Frame 12 - Zonation



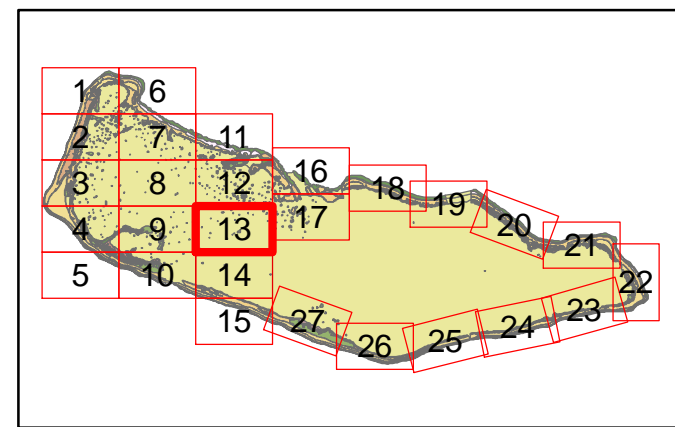


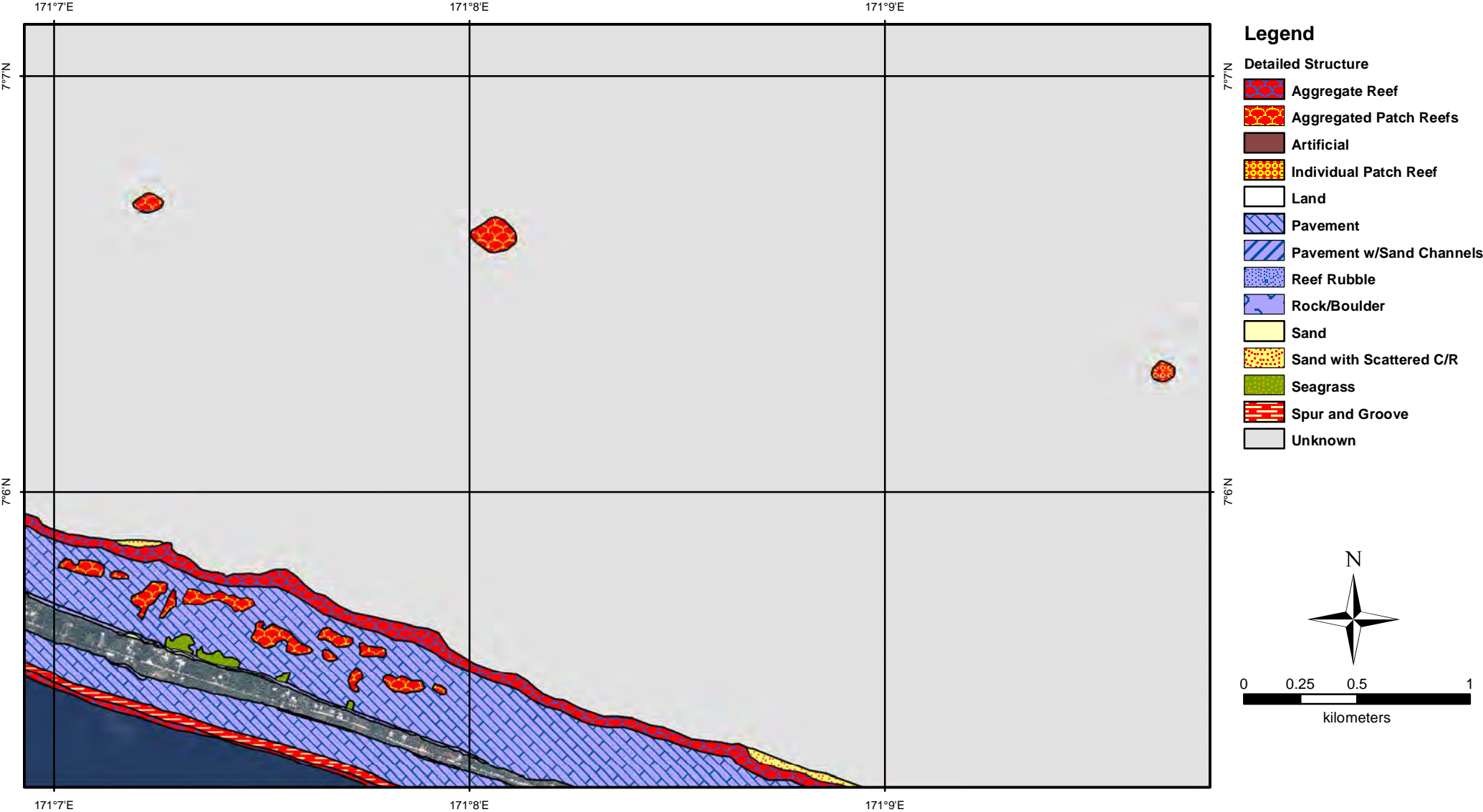
Frame 13 - Detailed Structure



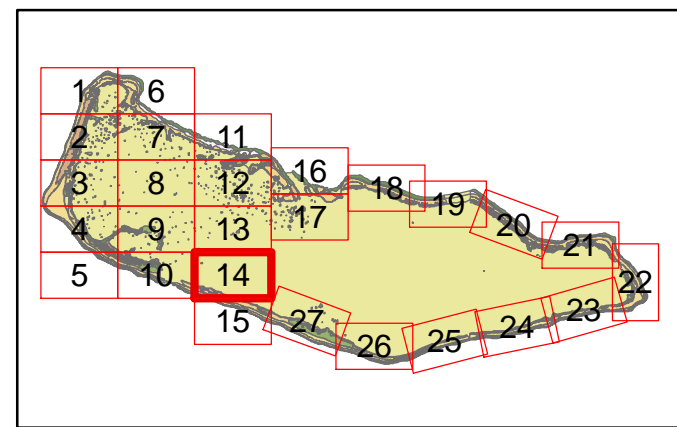


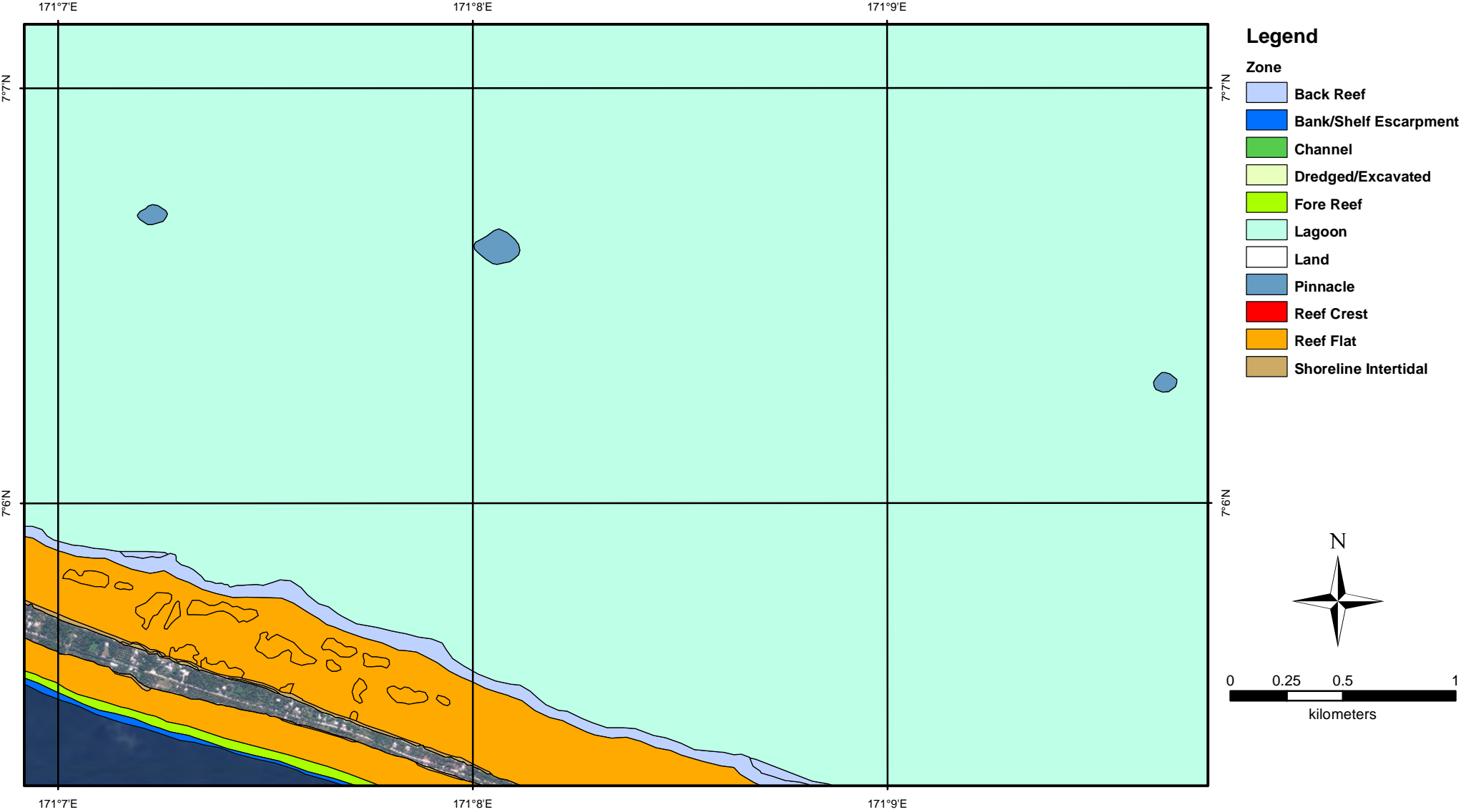
Frame 13 - Zonation



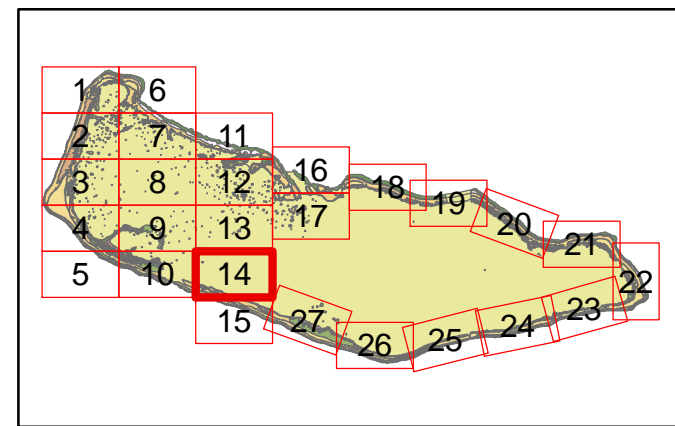


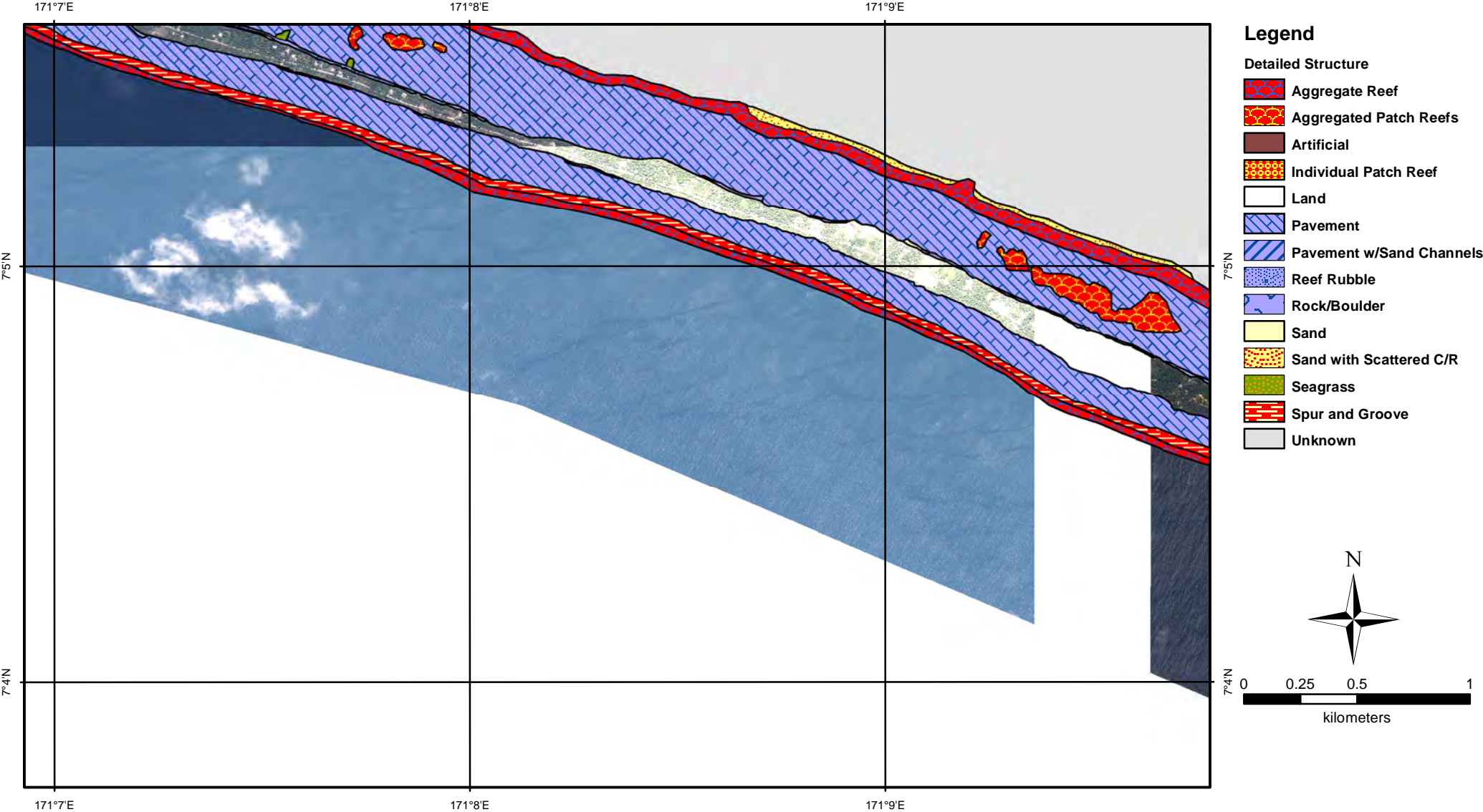
Frame 14 - Detailed Structure



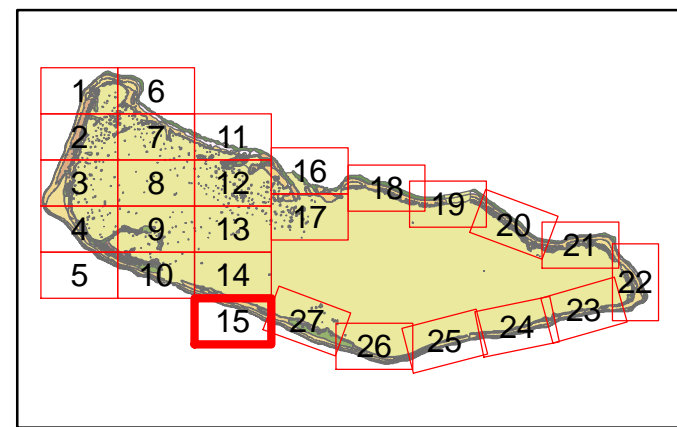


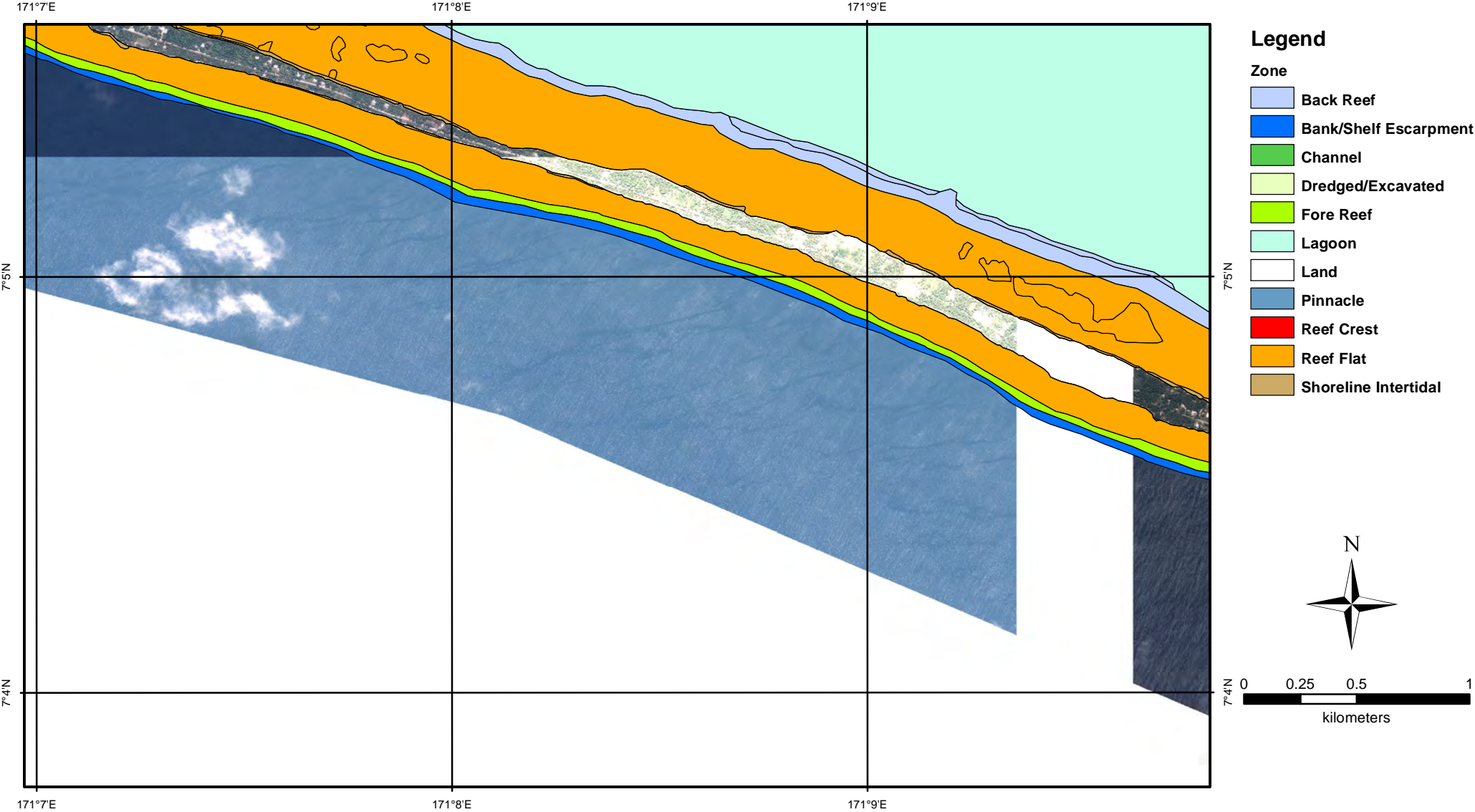
Frame 14 - Zonation



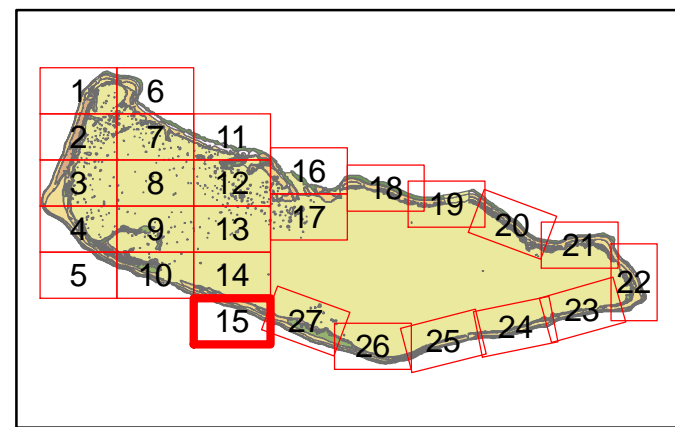


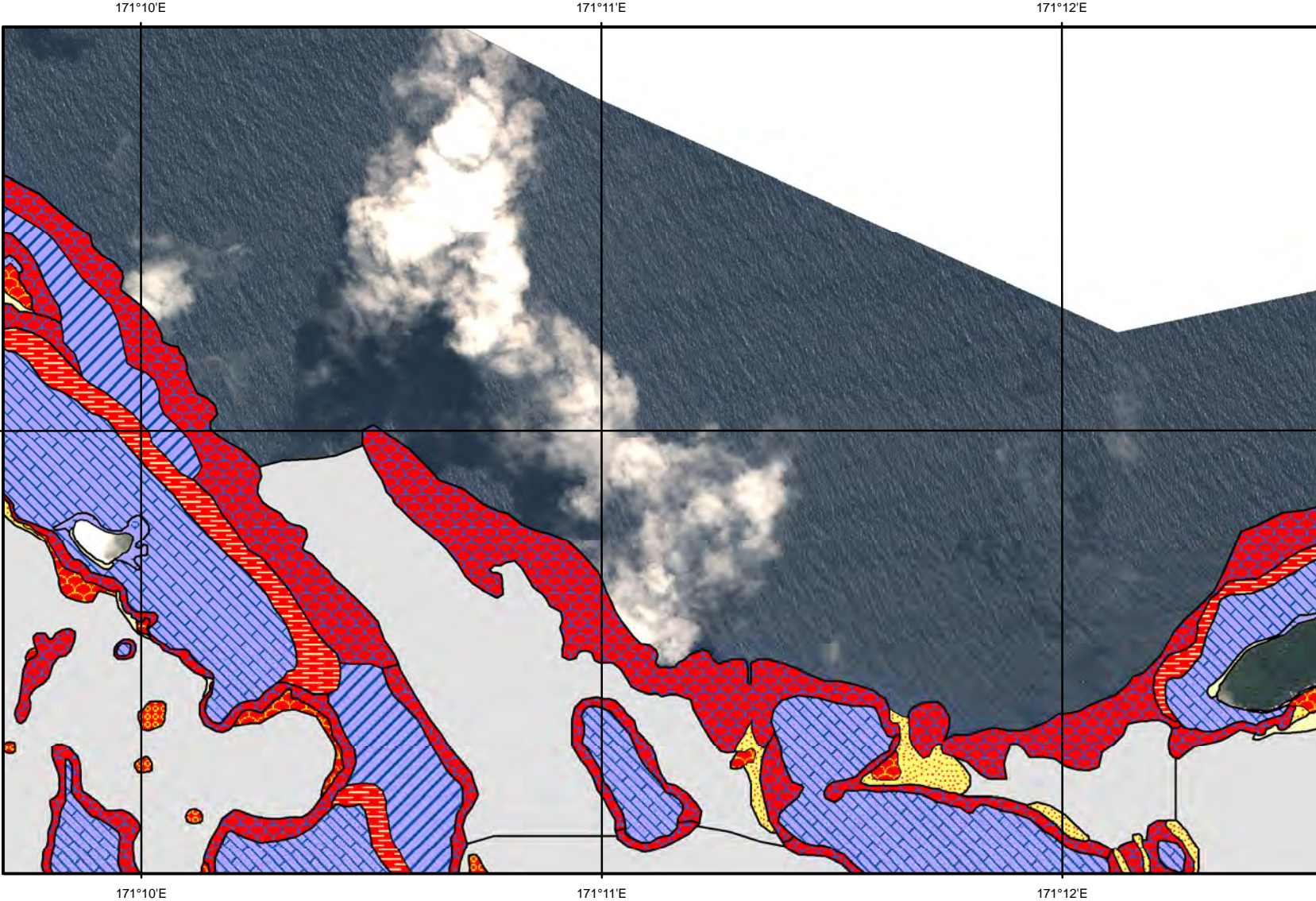
Frame 15 - Detailed Structure



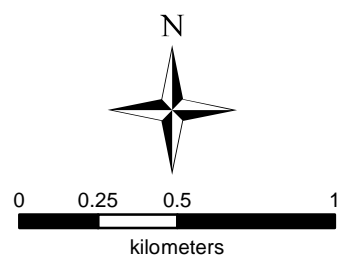


Frame 15 - Zonation





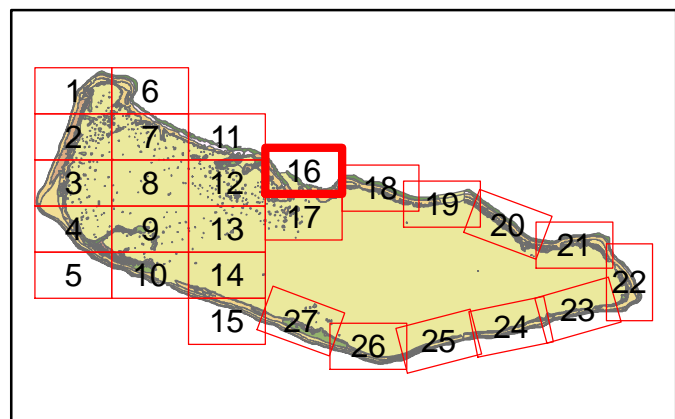
- ### Legend
- Detailed Structure**
- Aggregate Reef
 - Aggregated Patch Reefs
 - Artificial
 - Individual Patch Reef
 - Land
 - Pavement
 - Pavement w/Sand Channels
 - Reef Rubble
 - Rock/Boulder
 - Sand
 - Sand with Scattered C/R
 - Seagrass
 - Spur and Groove
 - Unknown



171°10'E 171°11'E 171°12'E



Frame 16 - Detailed Structure



171°10'E

171°11'E

171°12'E

7°10'N

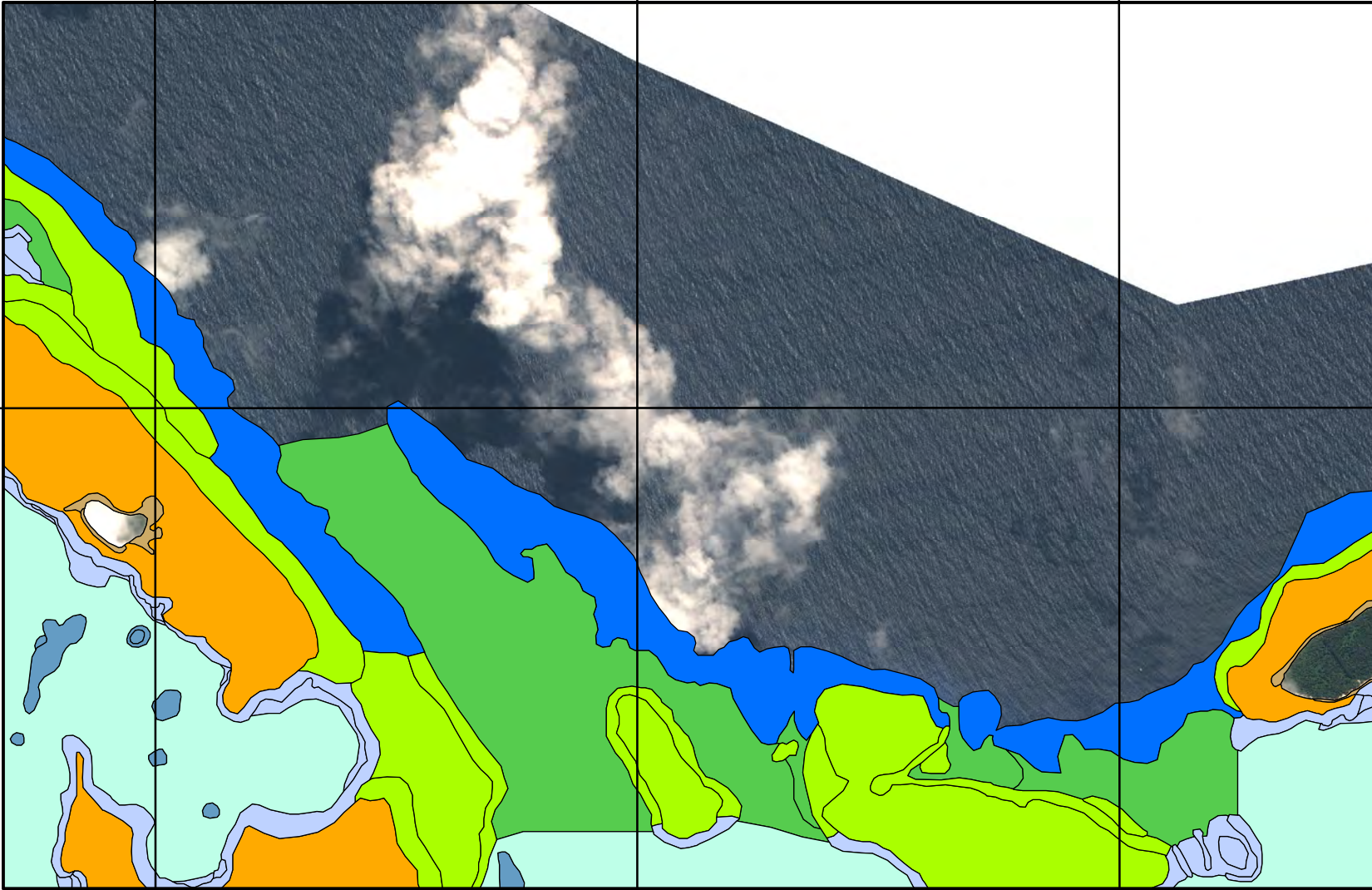
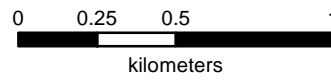
7°10'N

171°10'E

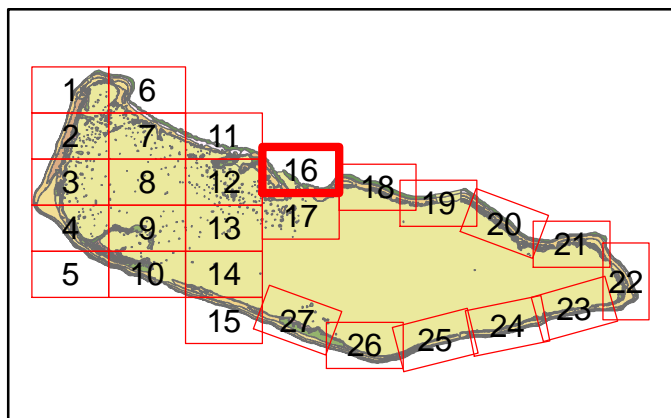
171°11'E

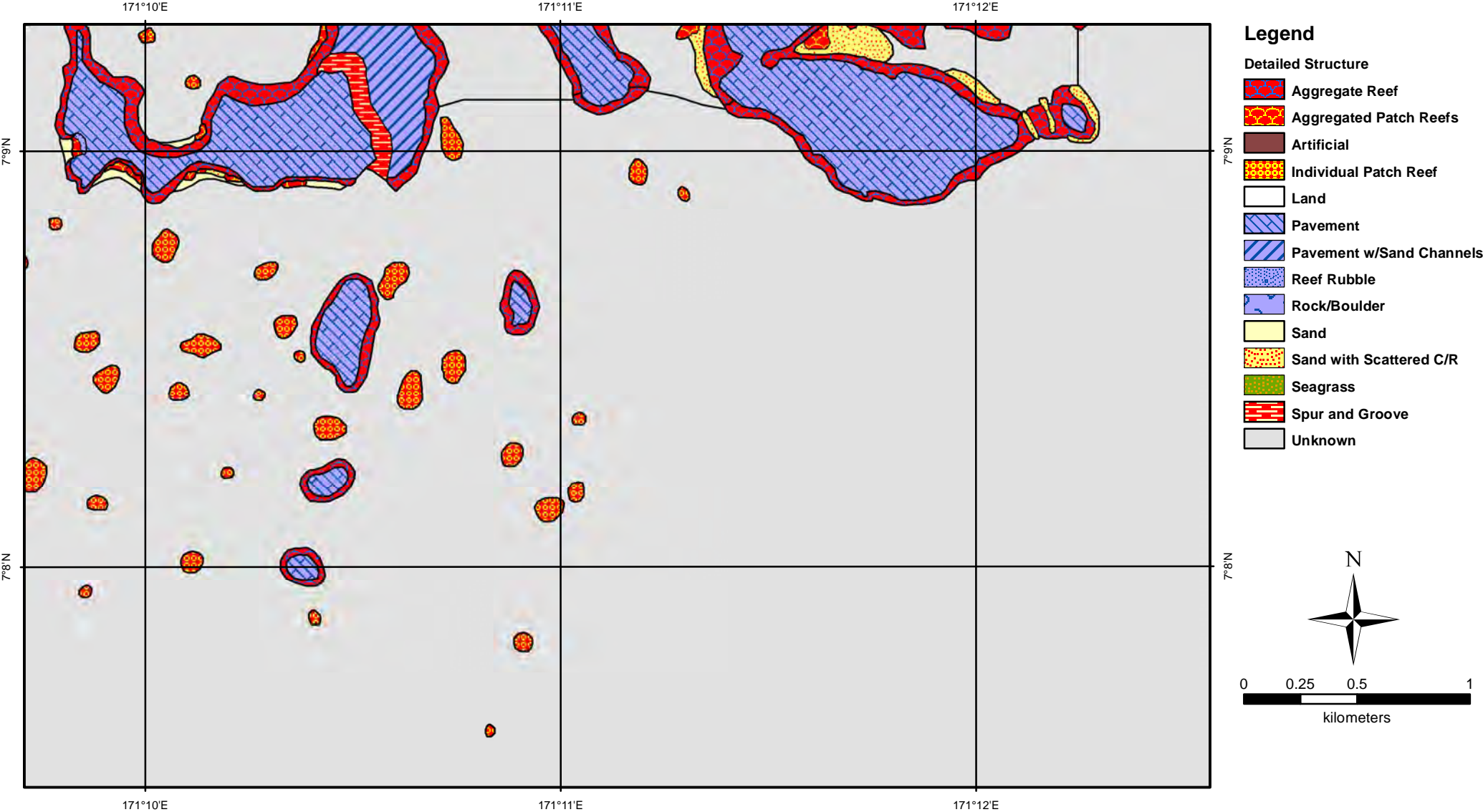
171°12'E

- Legend**
- Zone**
- Back Reef
 - Bank/Shelf Escarpment
 - Channel
 - Dredged/Excavated
 - Fore Reef
 - Lagoon
 - Land
 - Pinnacle
 - Reef Crest
 - Reef Flat
 - Shoreline Intertidal

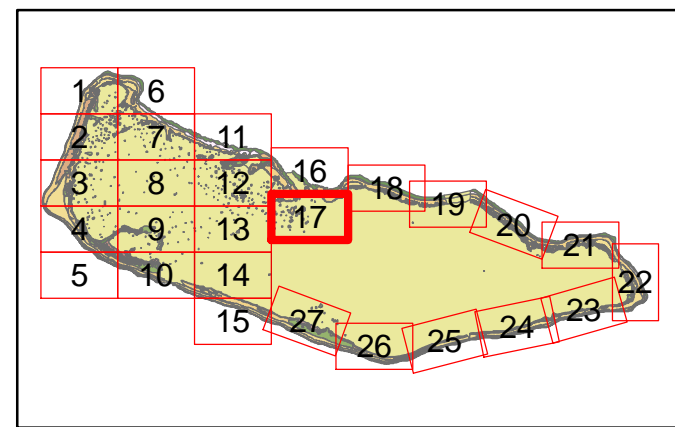


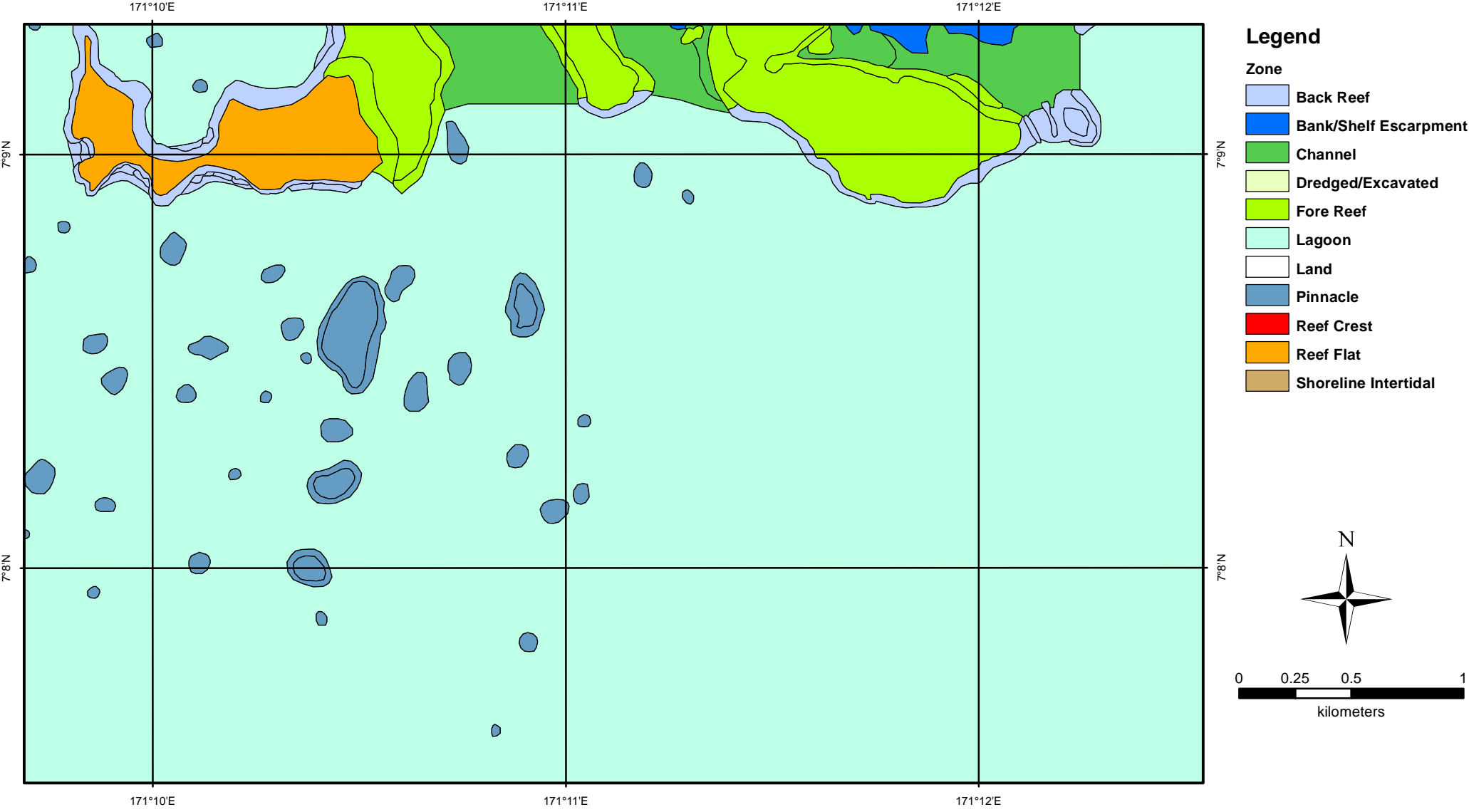
Frame 16 - Zonation



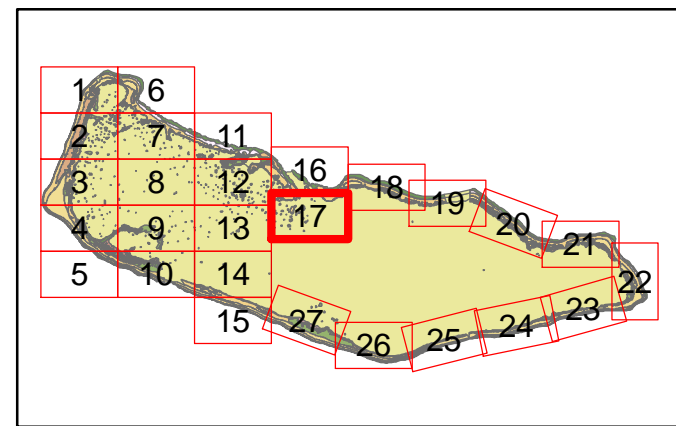


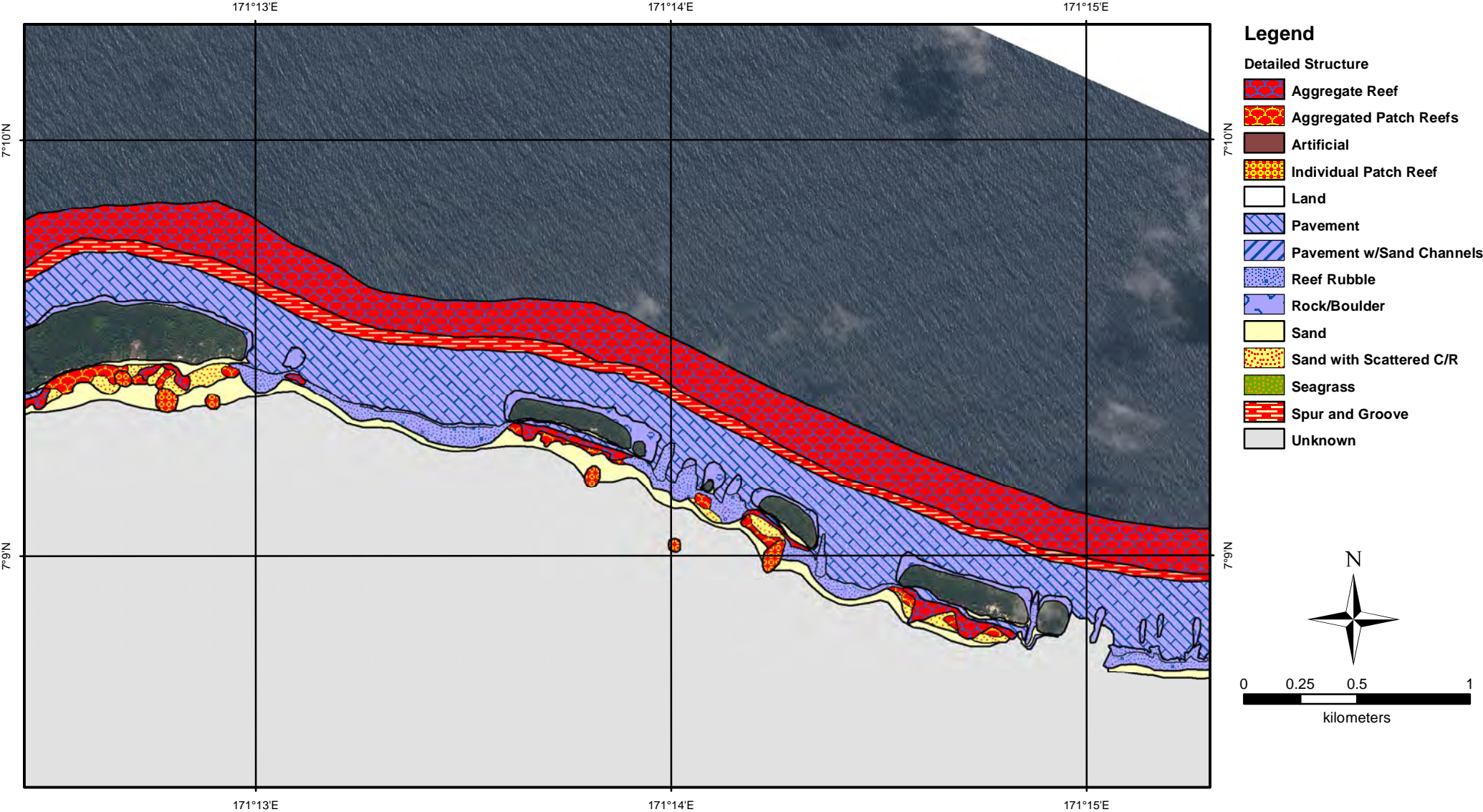
Frame 17 - Detailed Structure



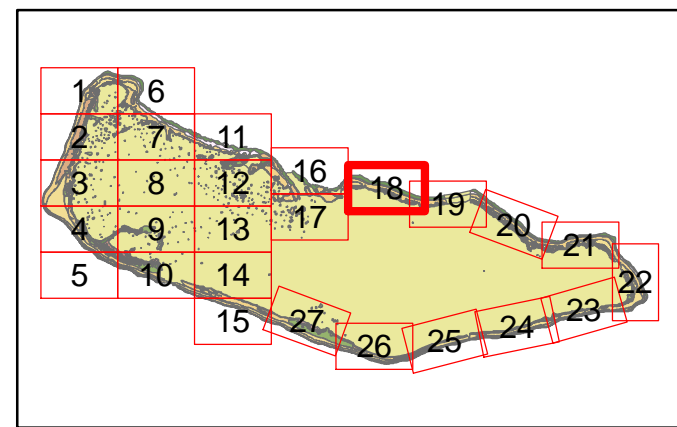


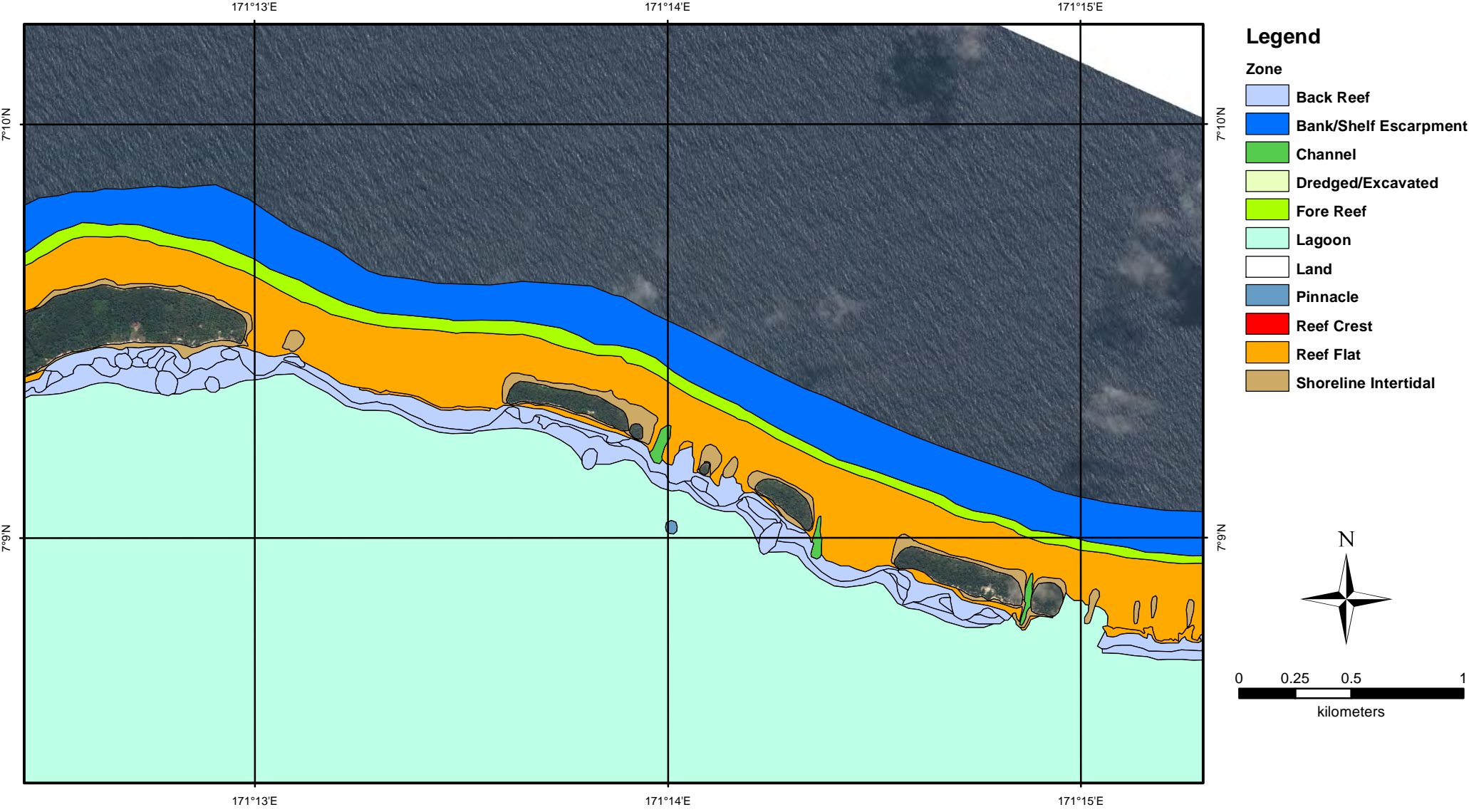
Frame 17 - Zonation



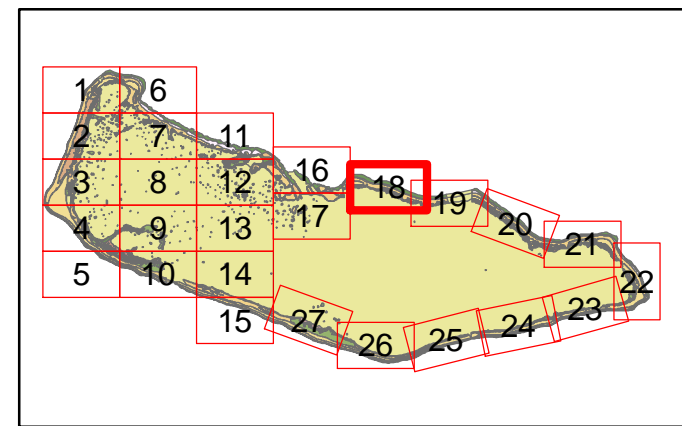


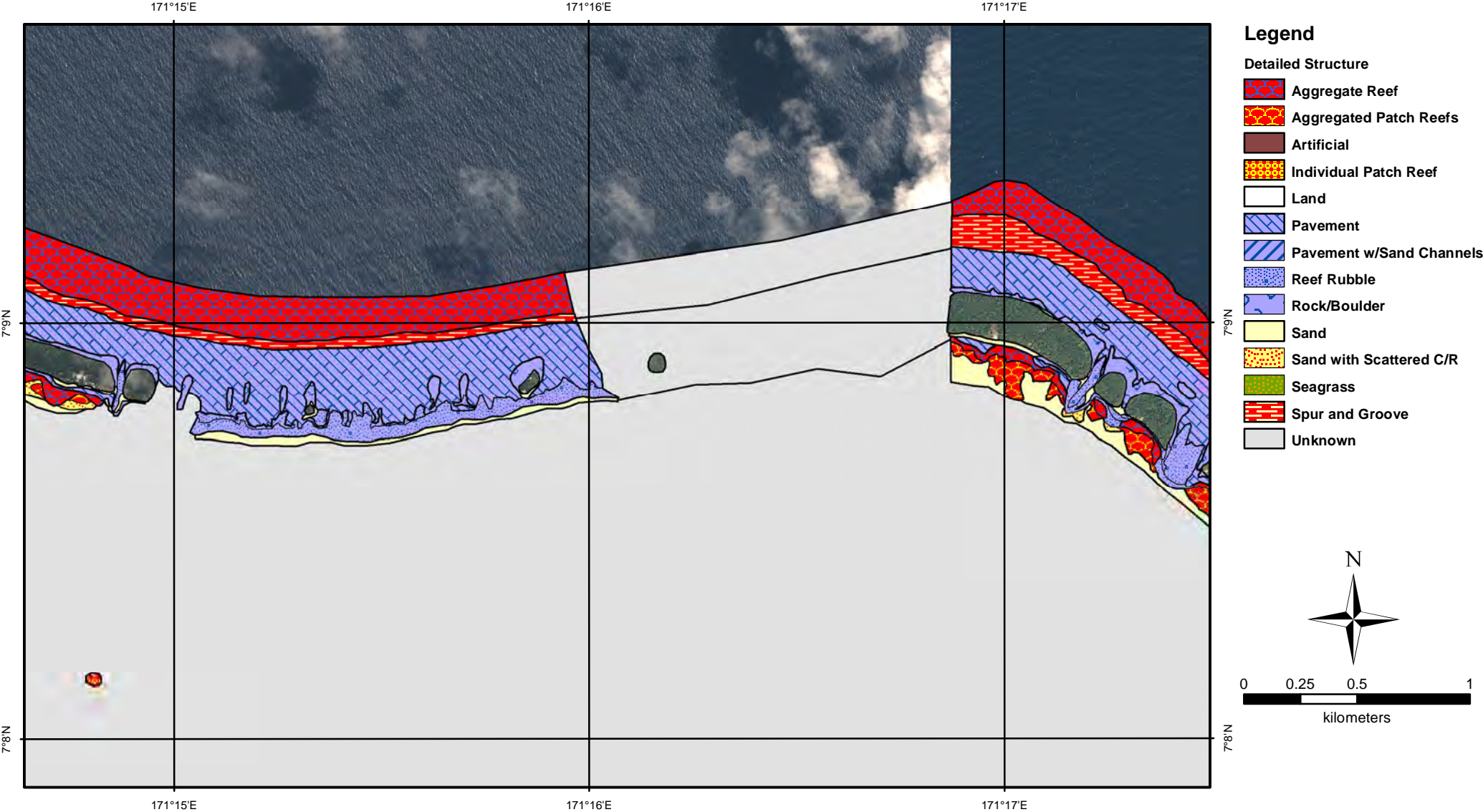
Frame 18 - Detailed Structure



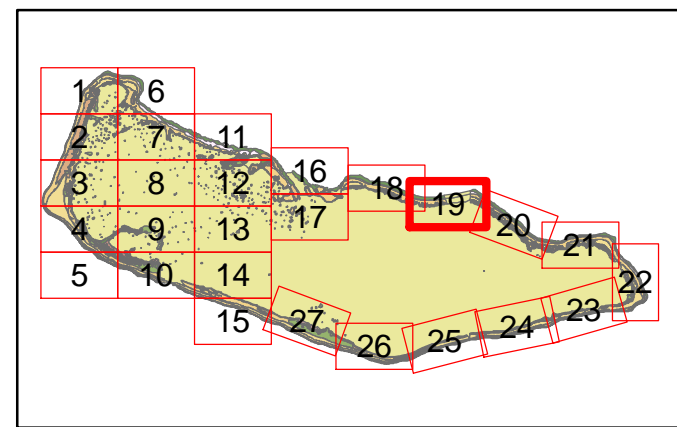


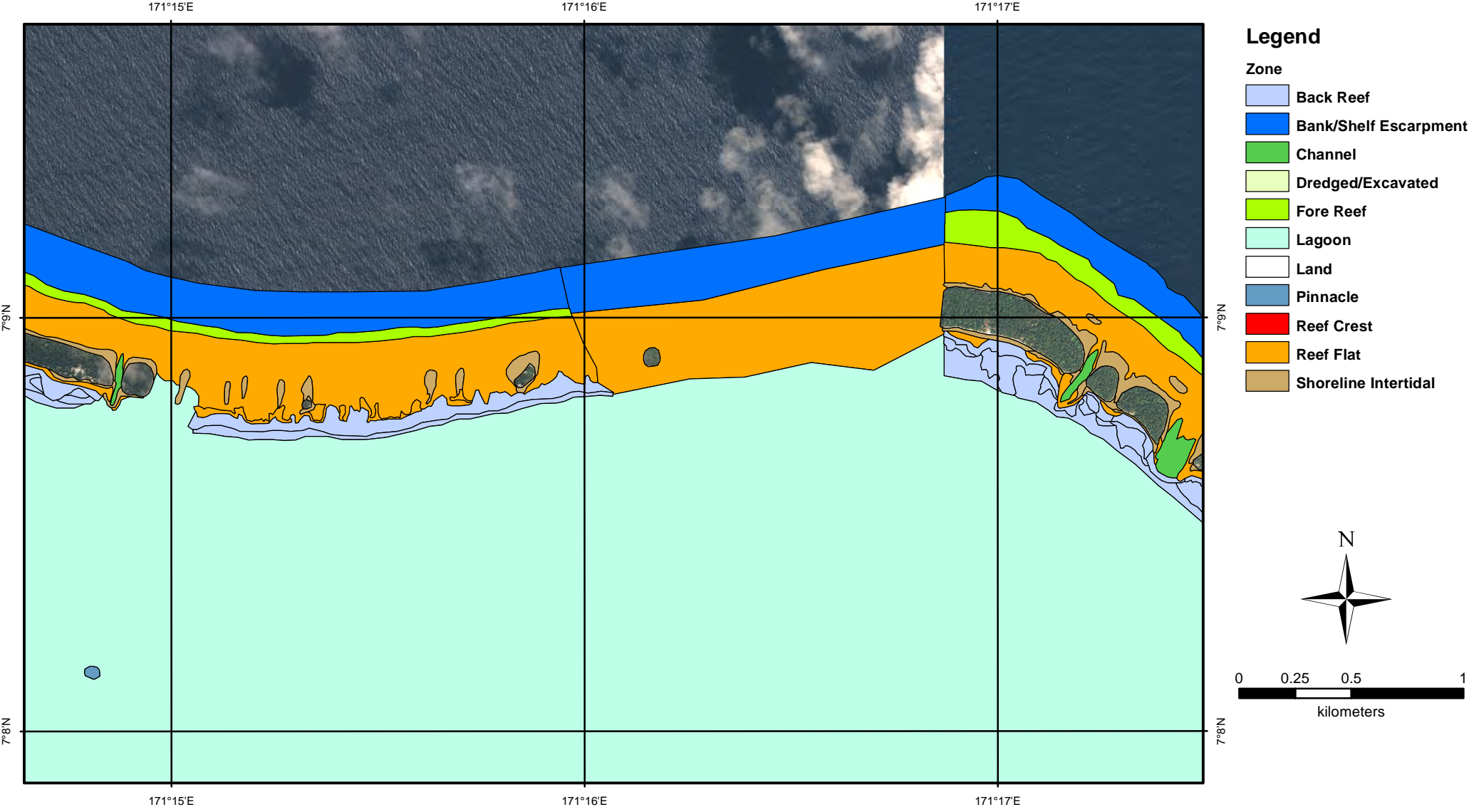
Frame 18 - Zonation



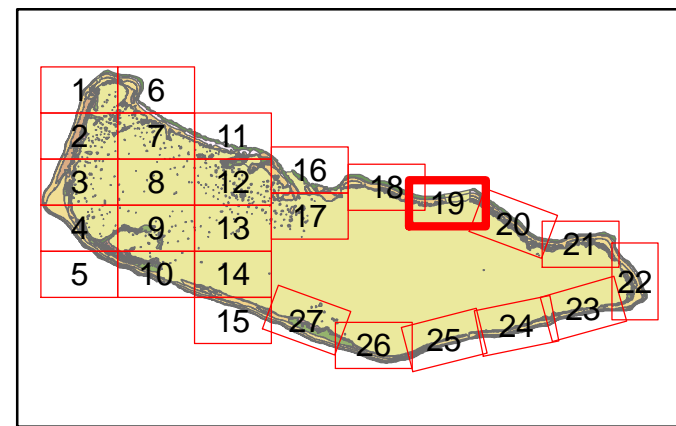


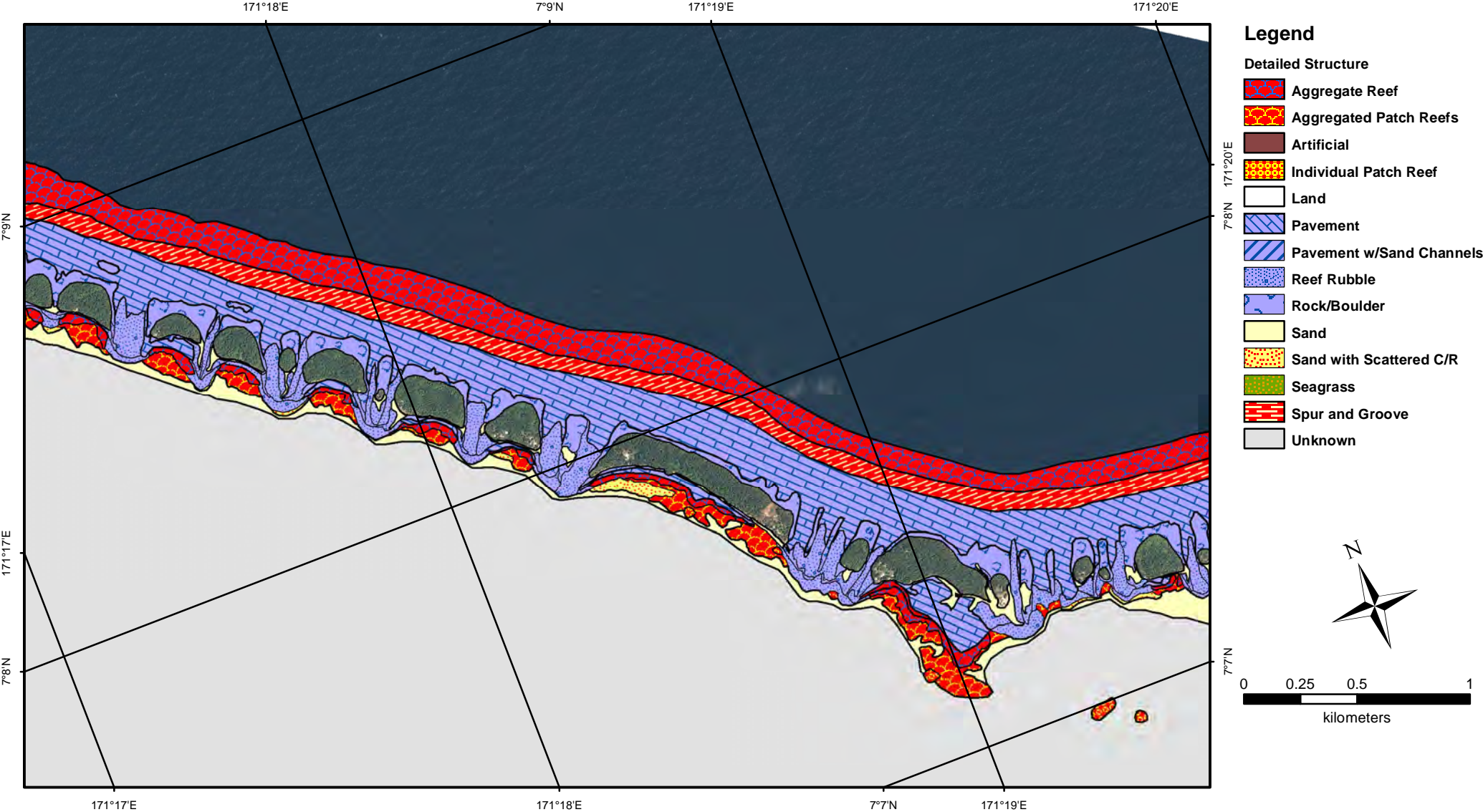
Frame 19 - Detailed Structure



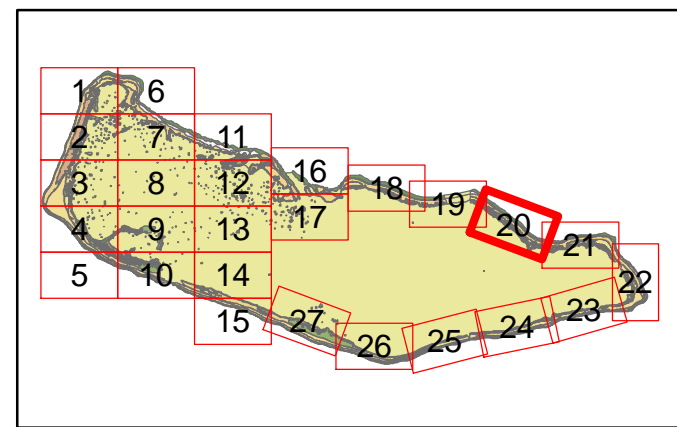


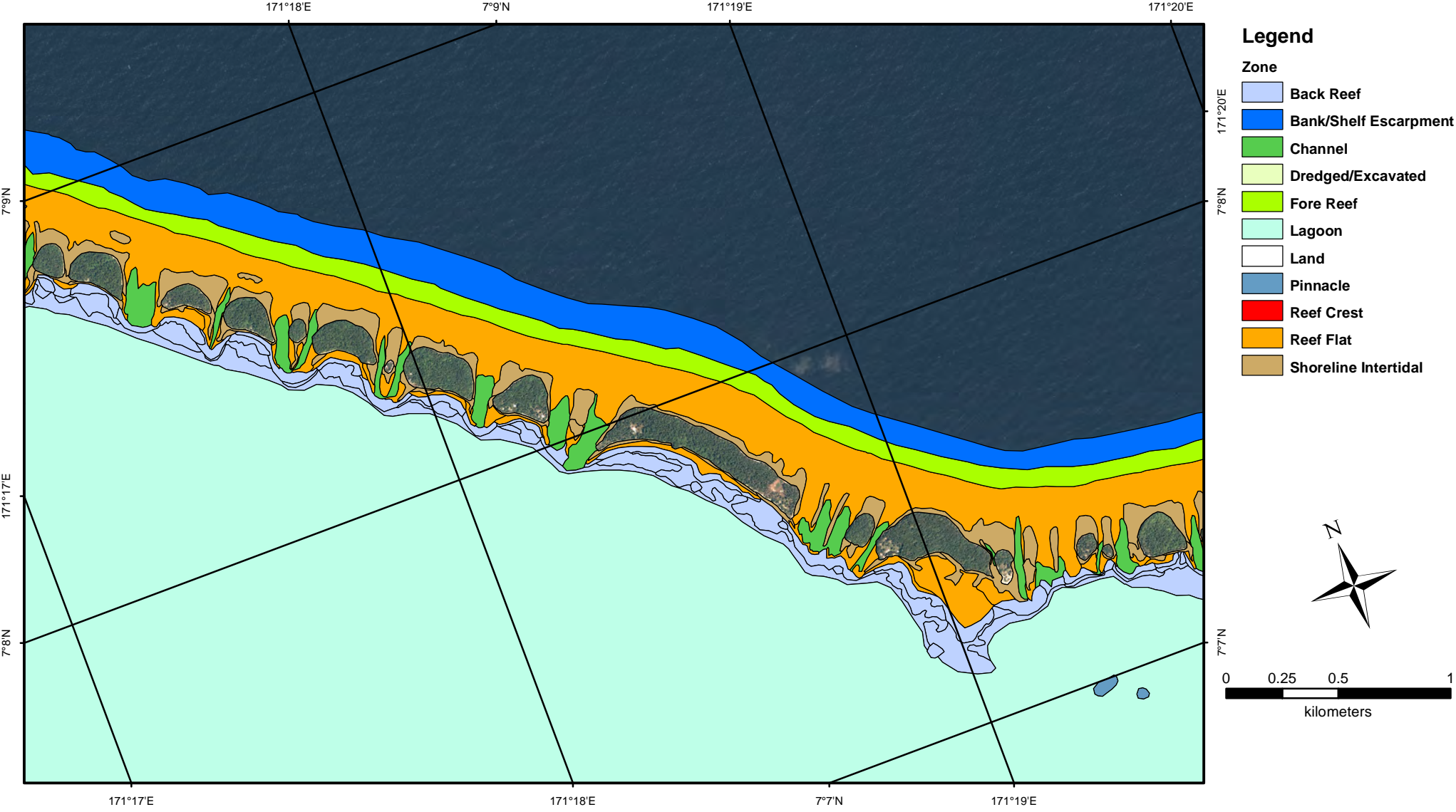
Frame 19 - Zonation



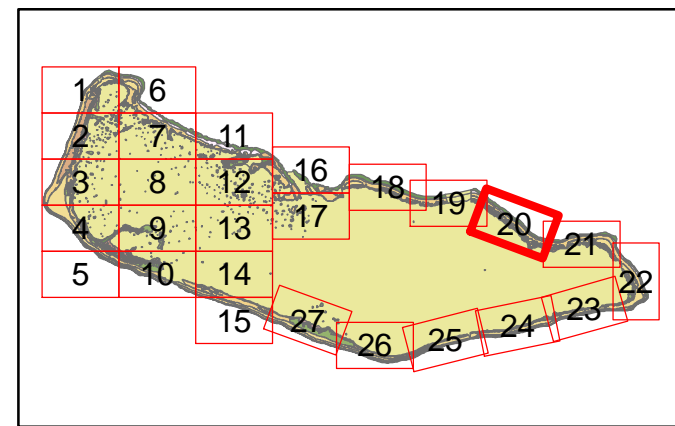


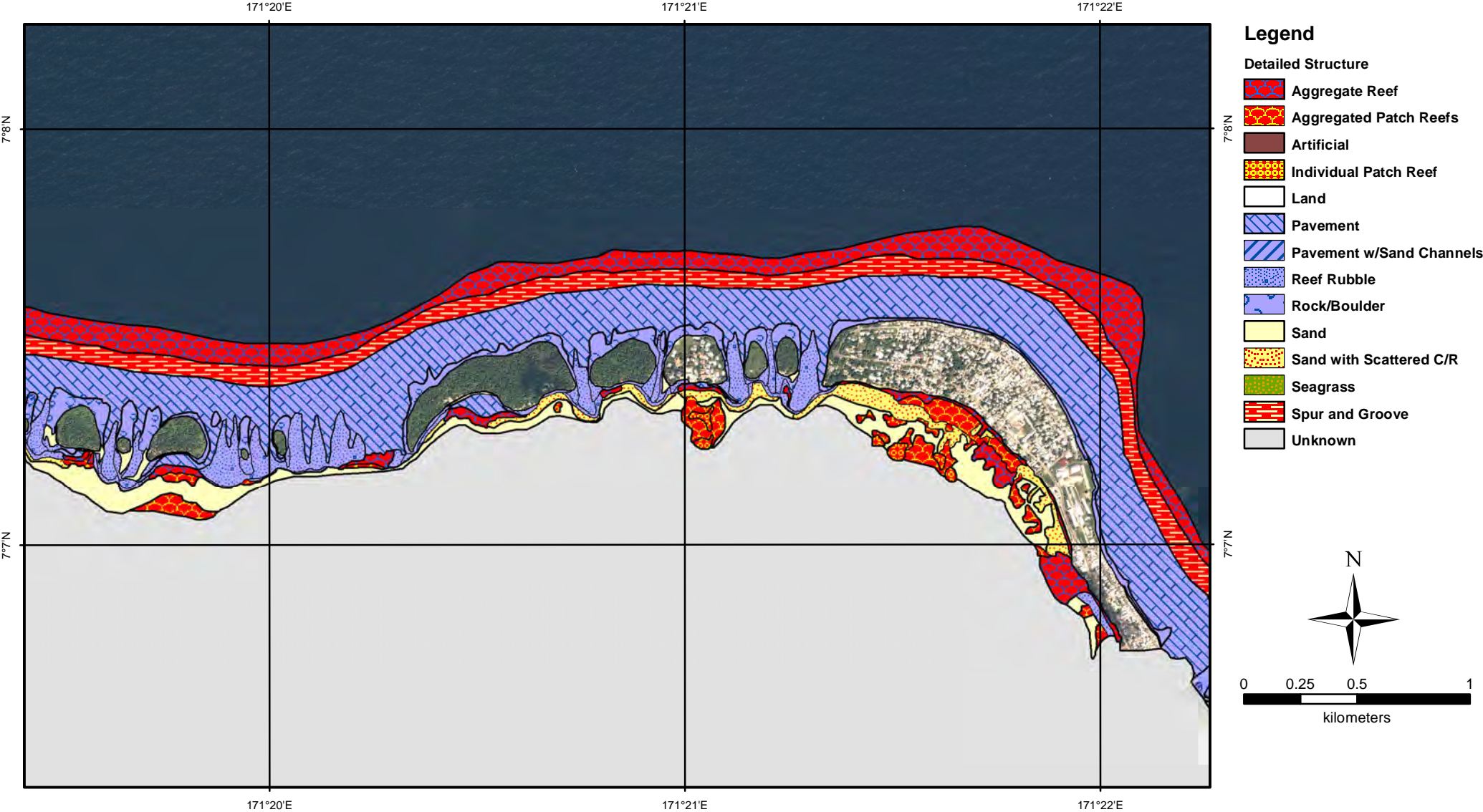
Frame 20 - Detailed Structure



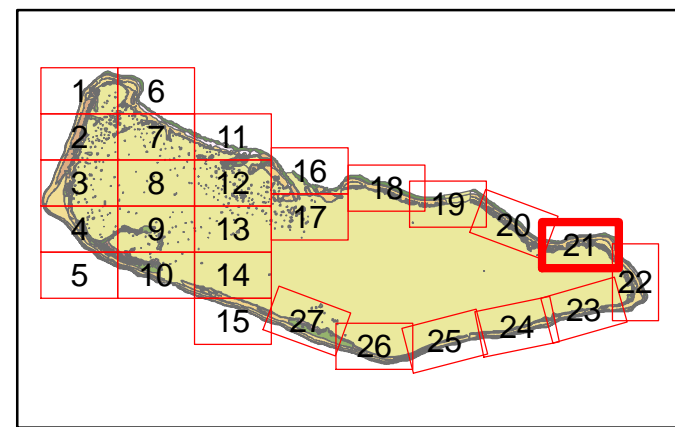


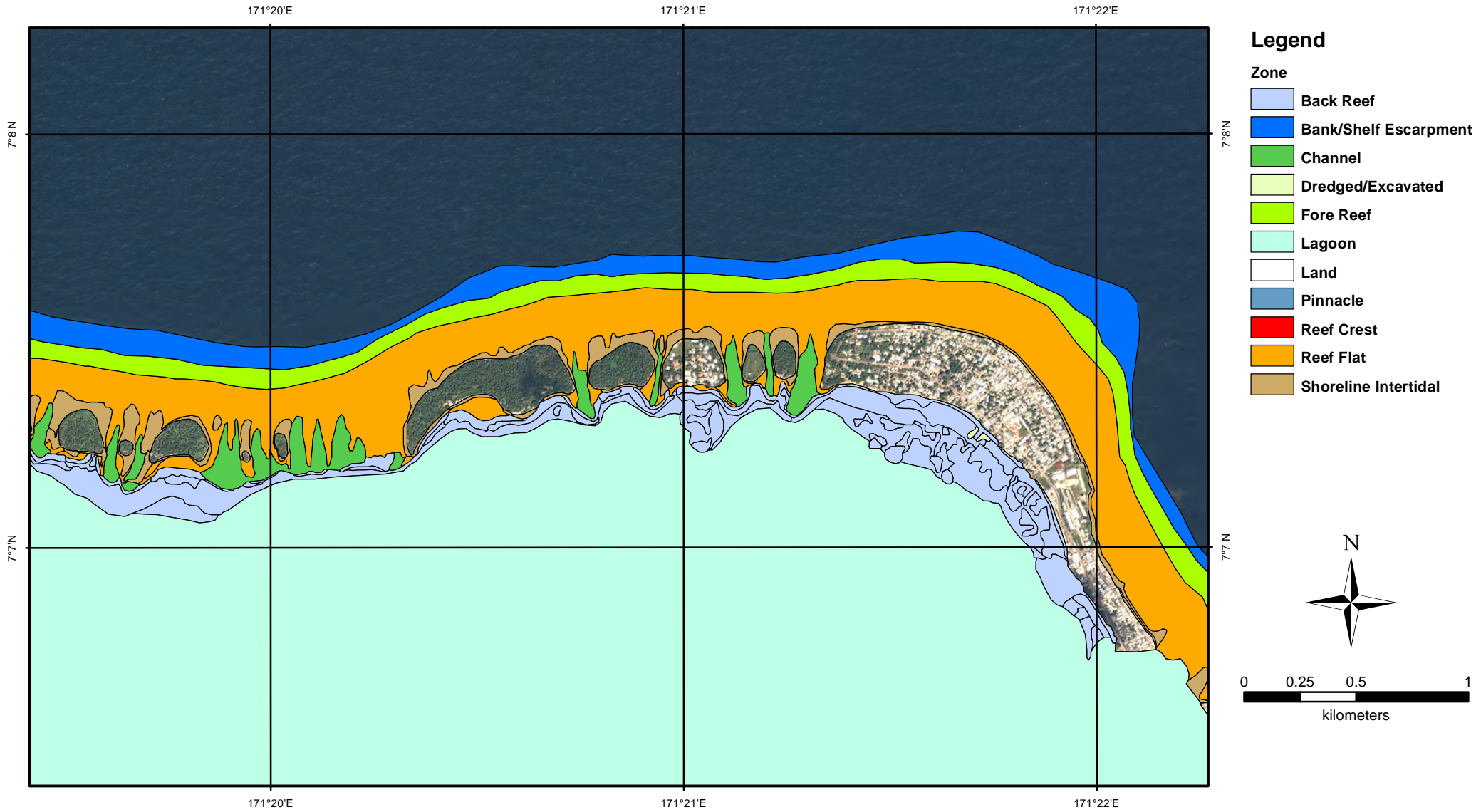
Frame 20 - Zonation



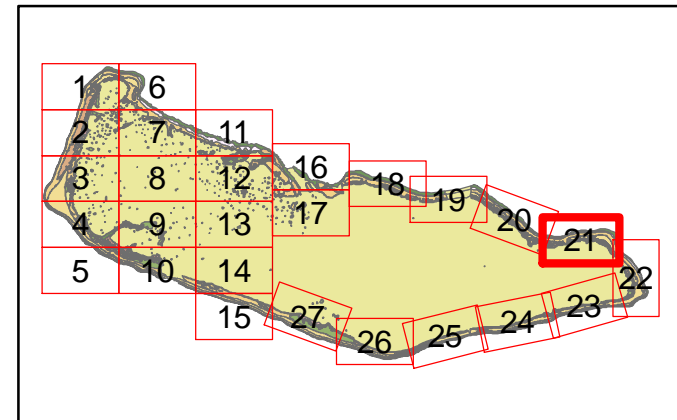


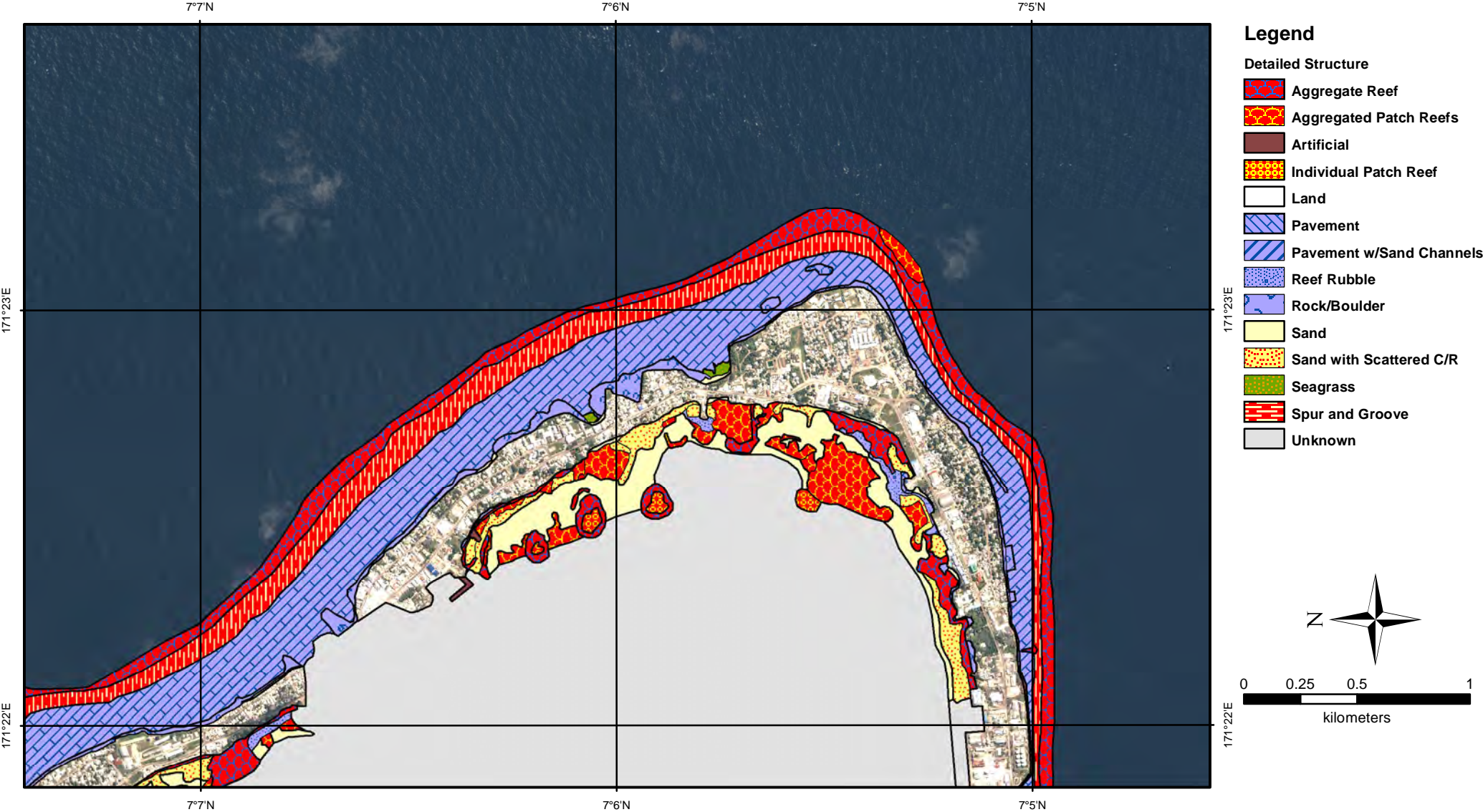
Frame 21 - Detailed Structure



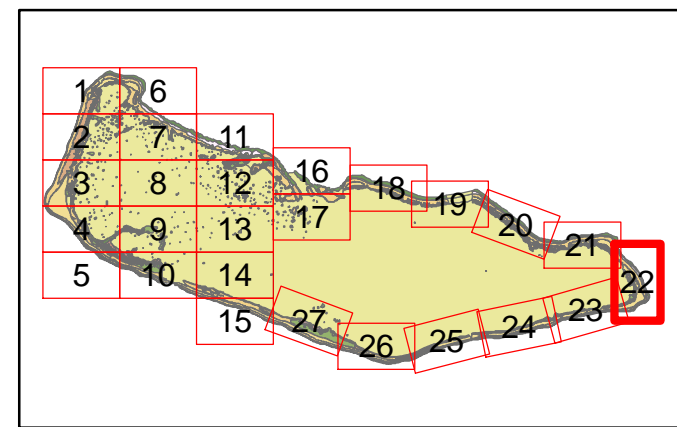


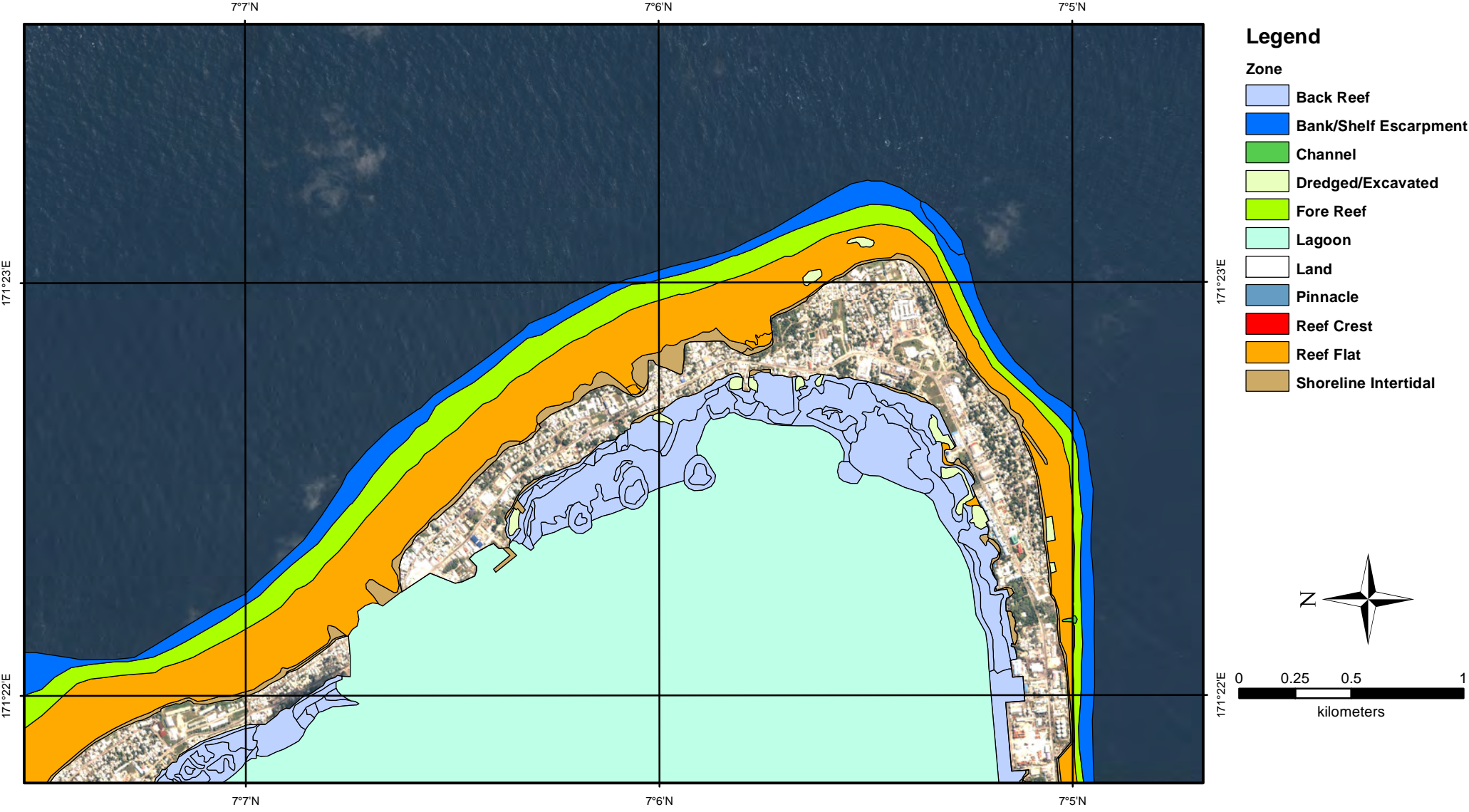
Frame 21 - Zonation



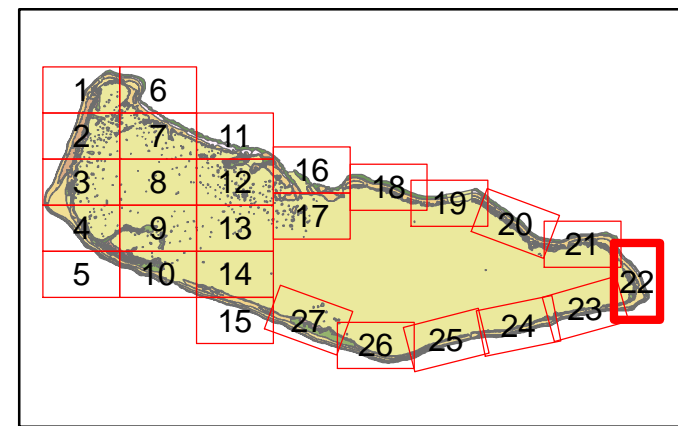


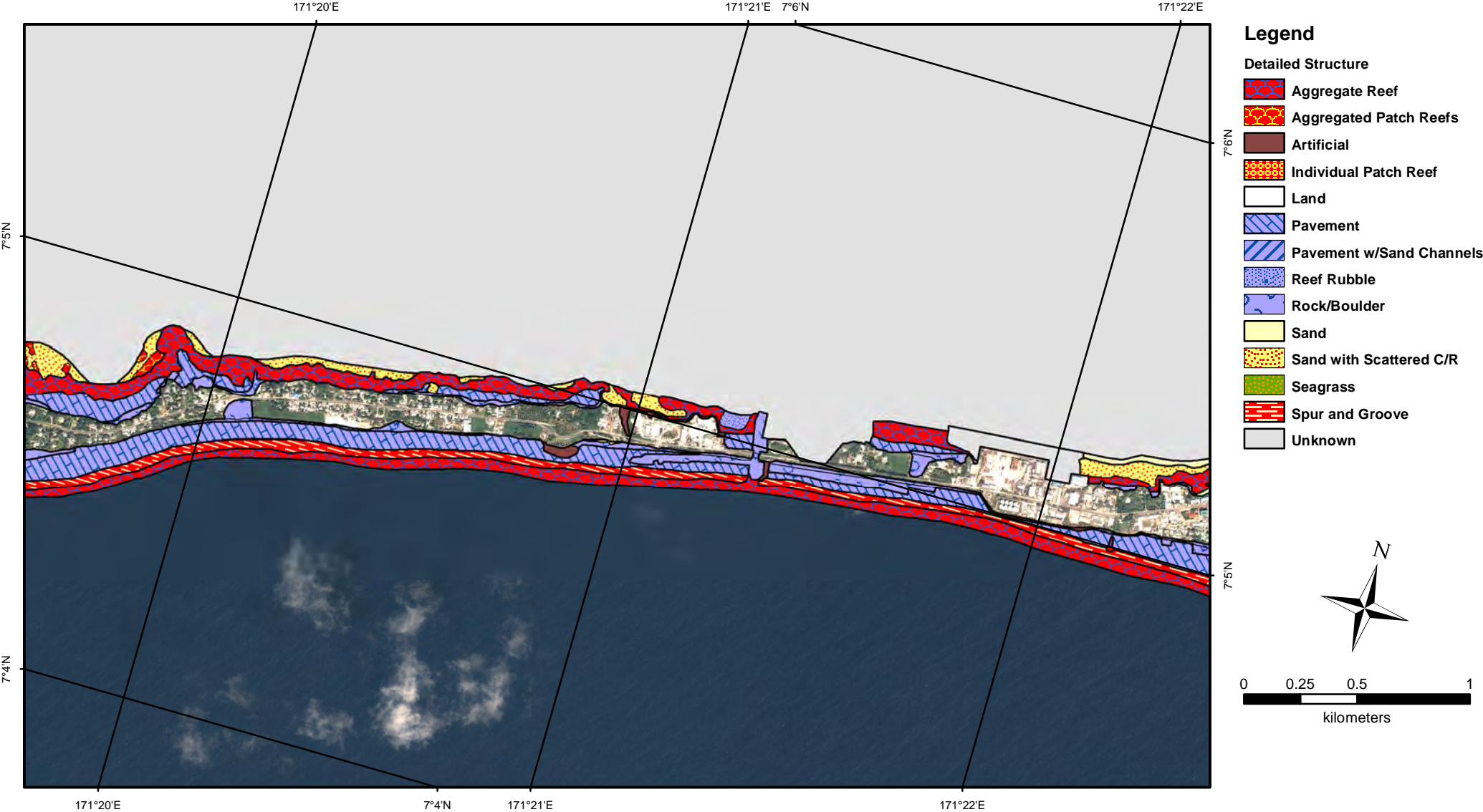
Frame 22 - Detailed Structure



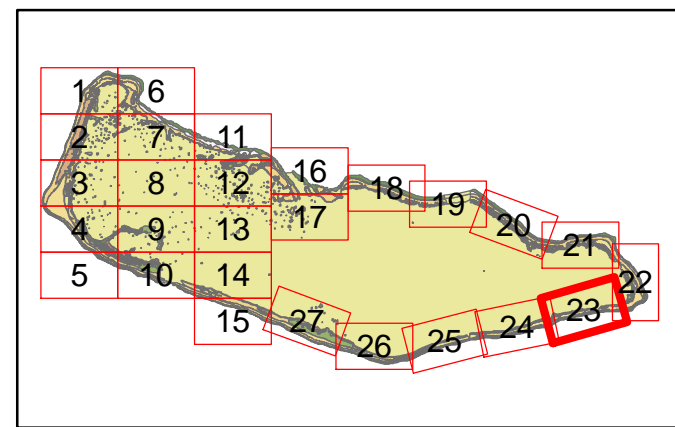


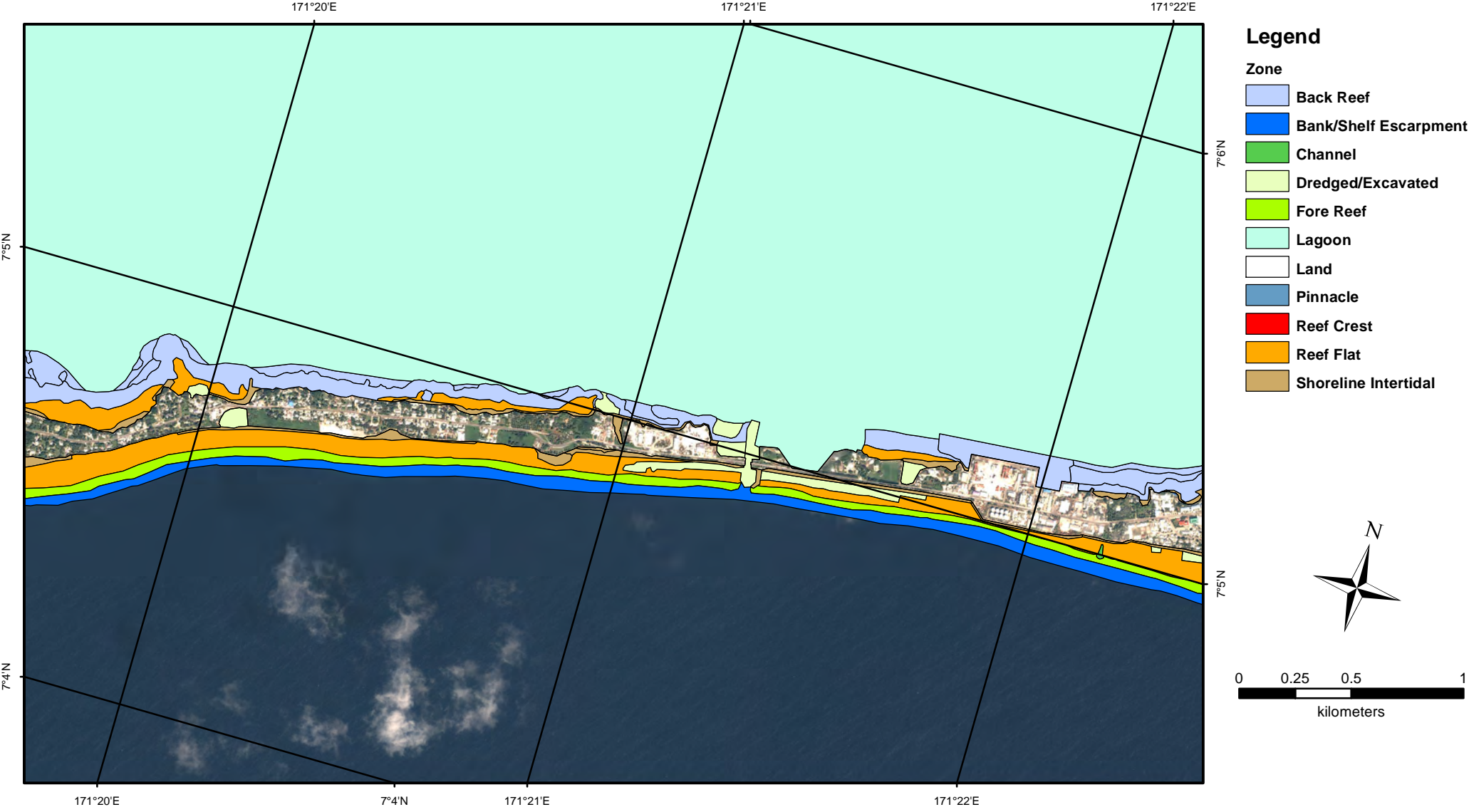
Frame 22 - Zonation



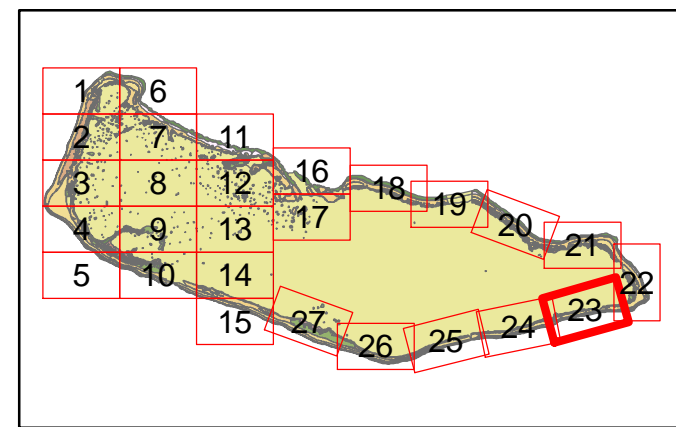


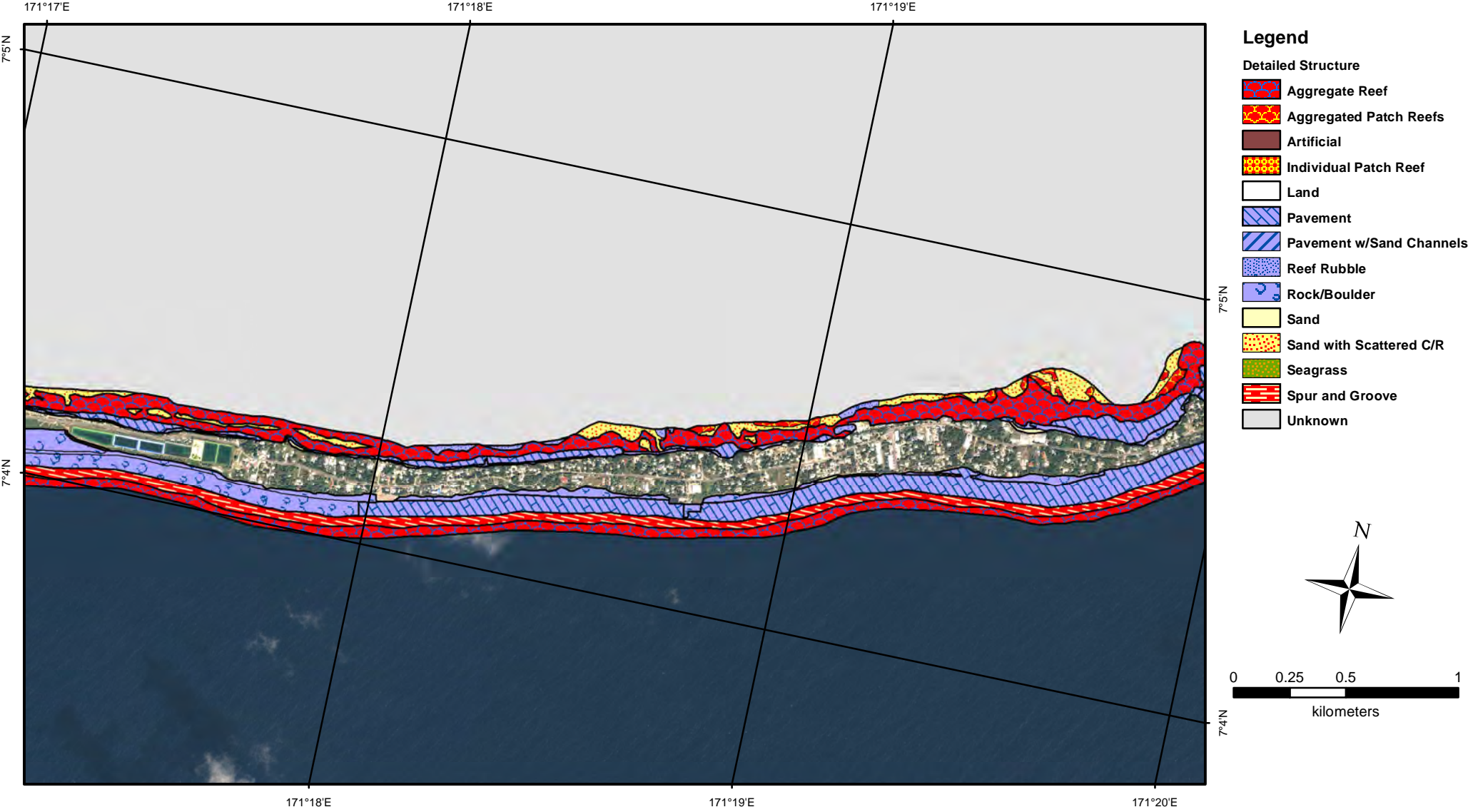
Frame 23 - Detailed Structure



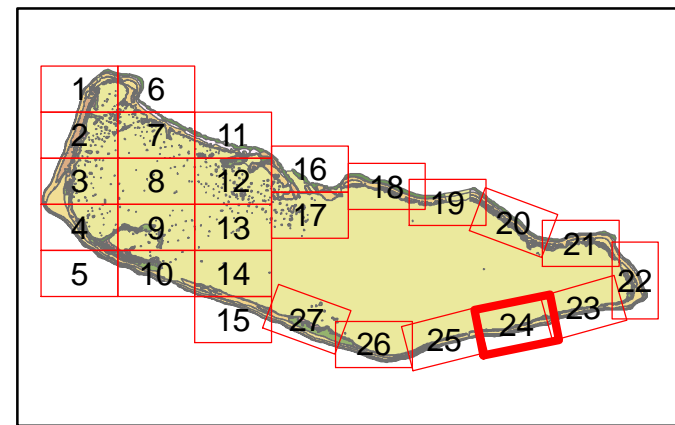


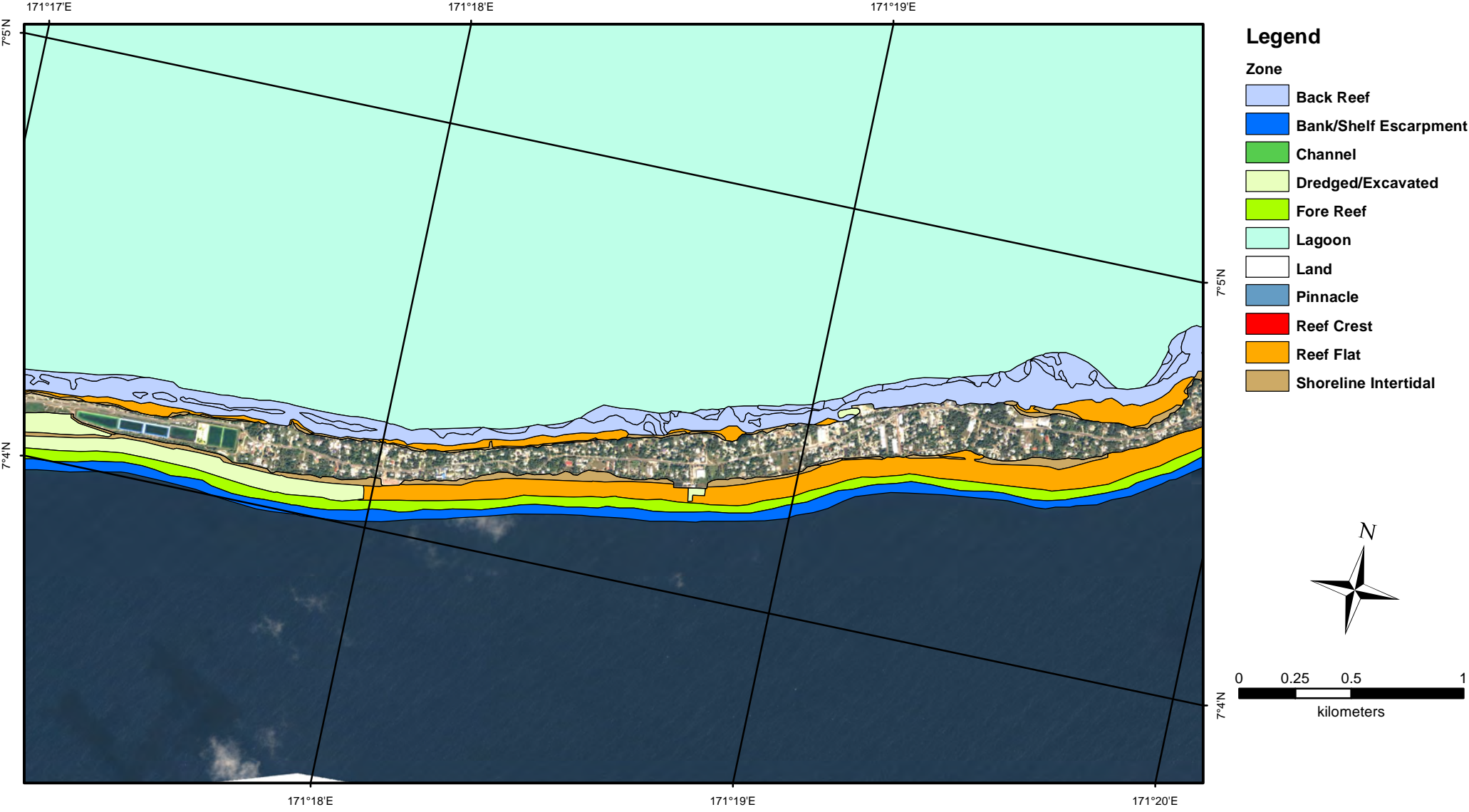
Frame 23 - Zonation



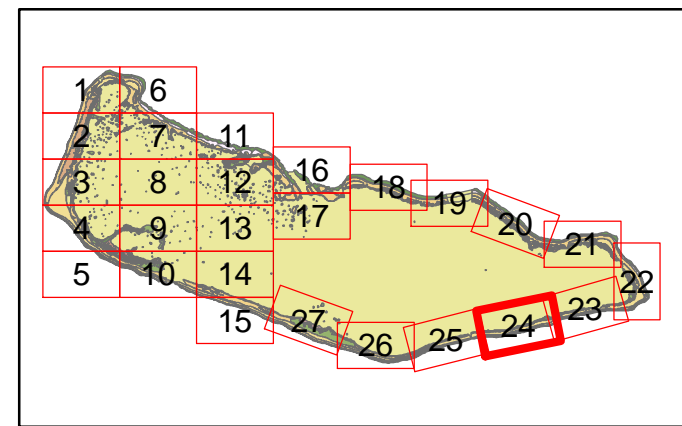


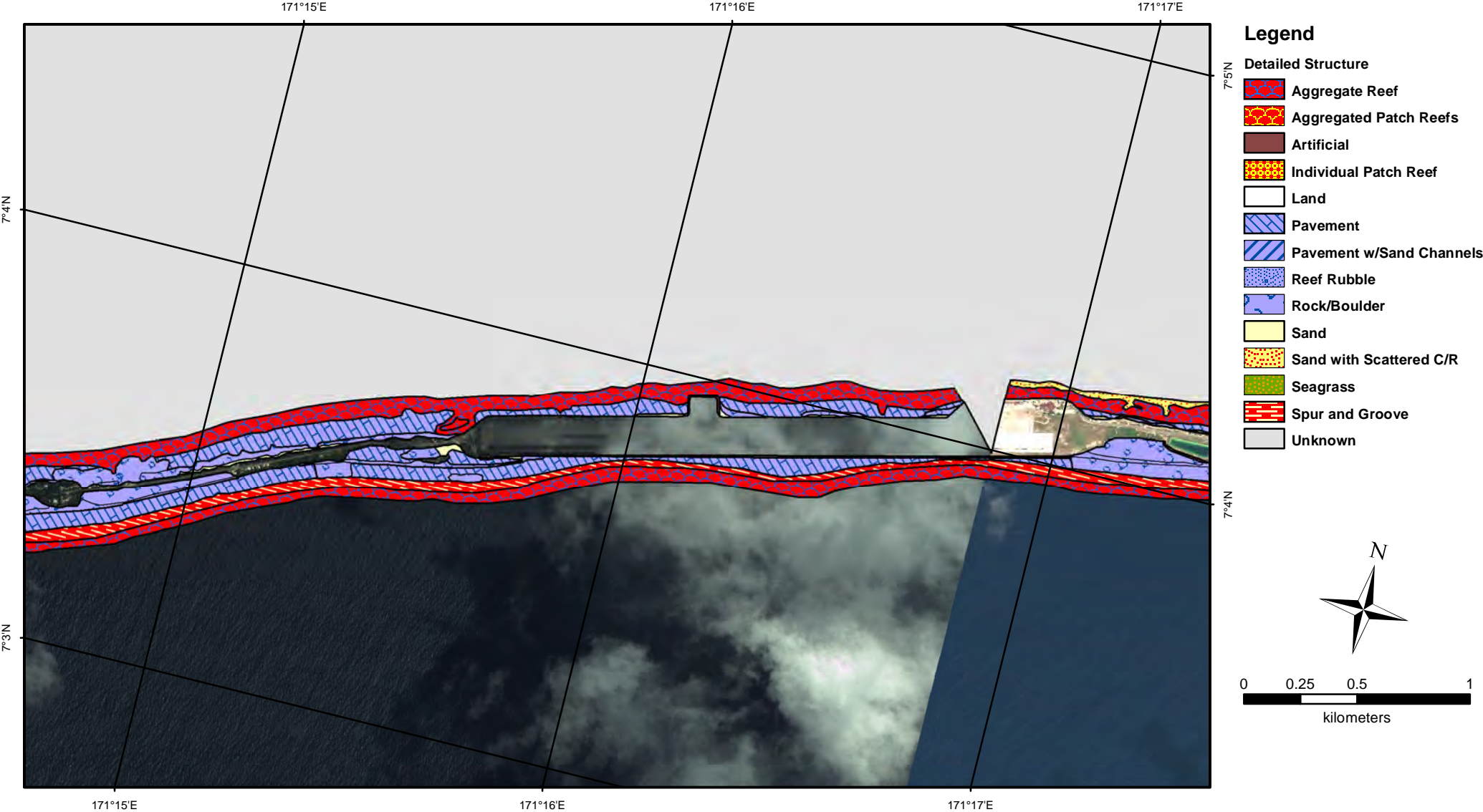
Frame 24 - Detailed Structure



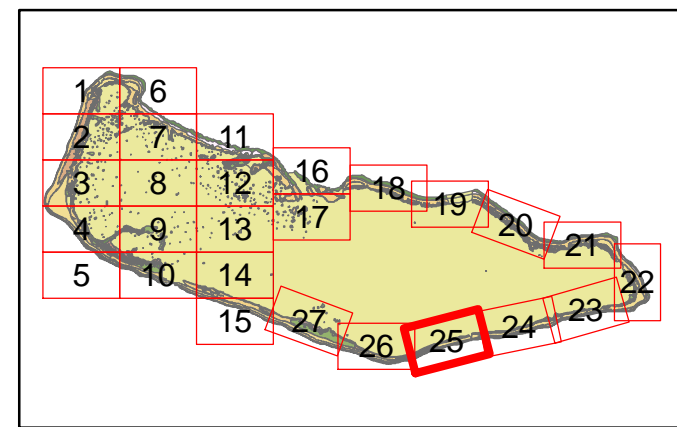


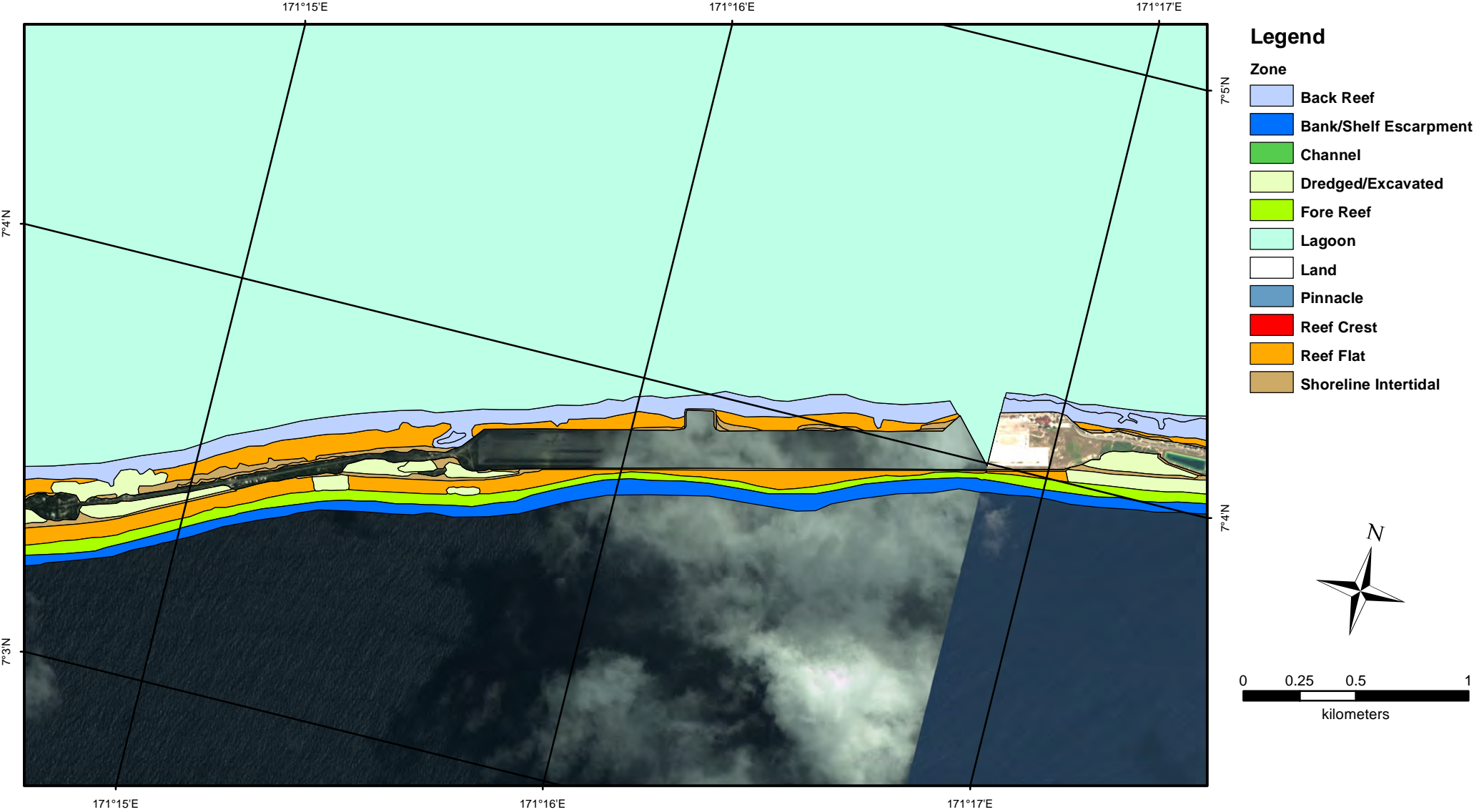
Frame 24 - Zonation



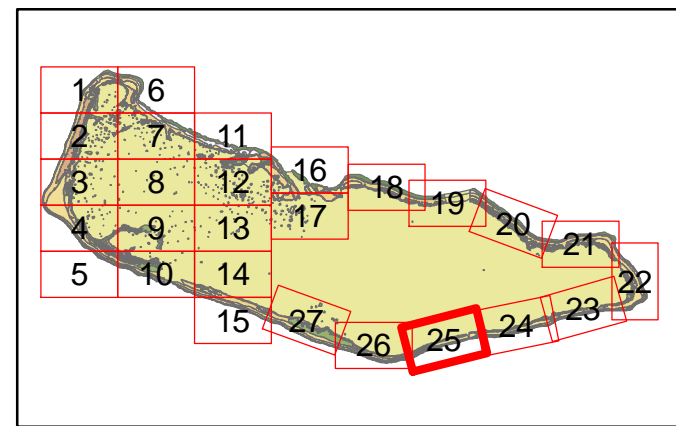


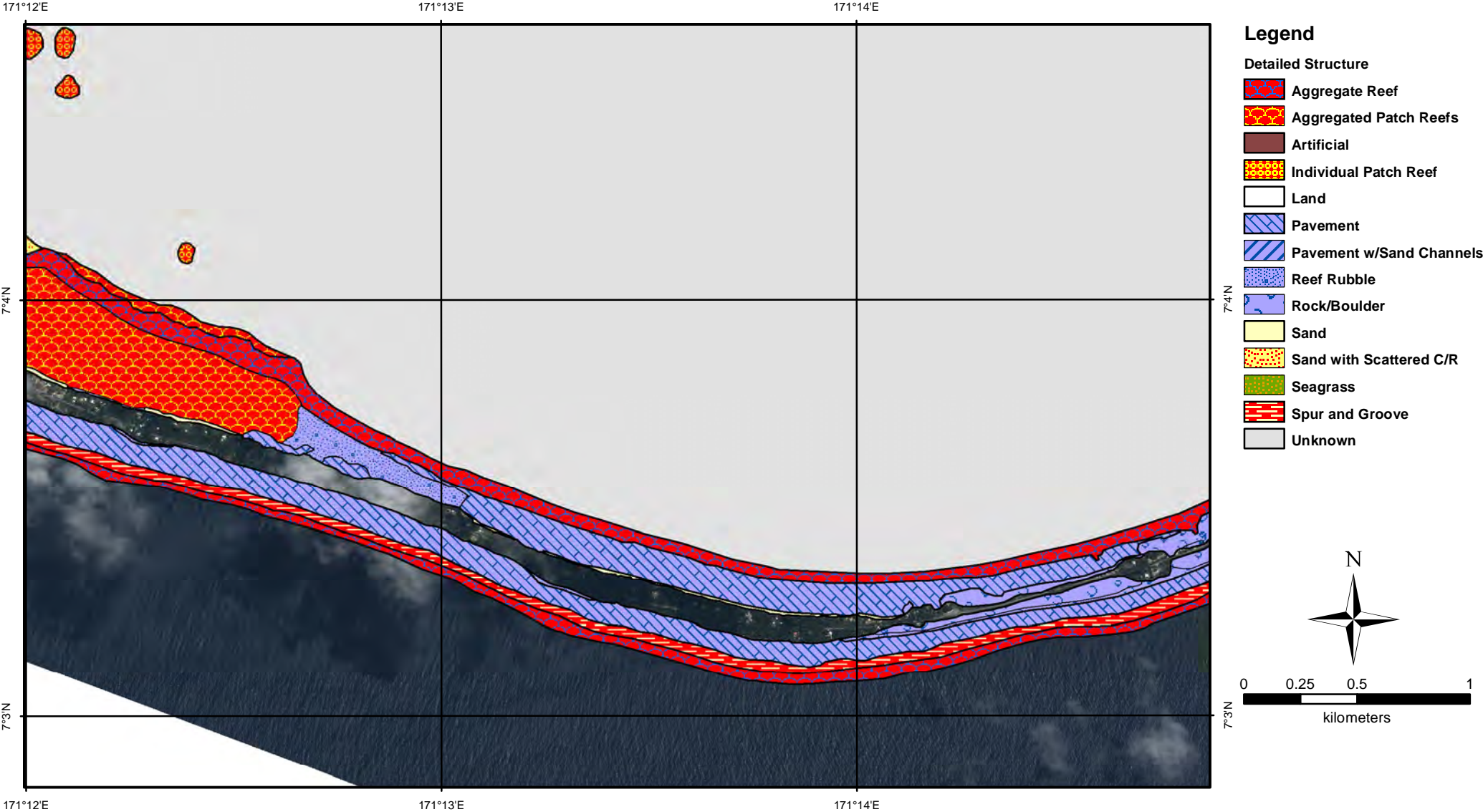
Frame 25 - Detailed Structure



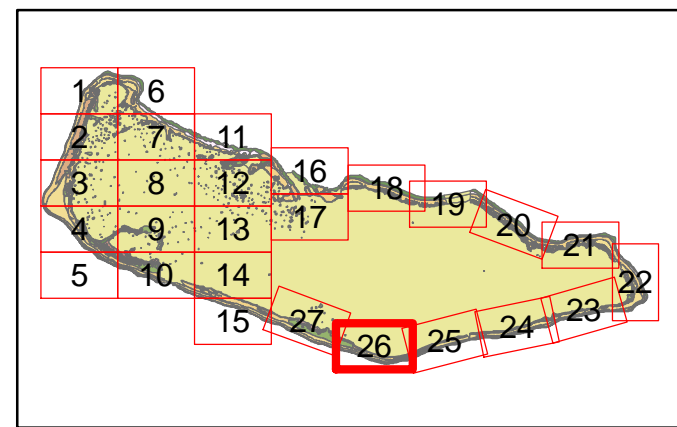


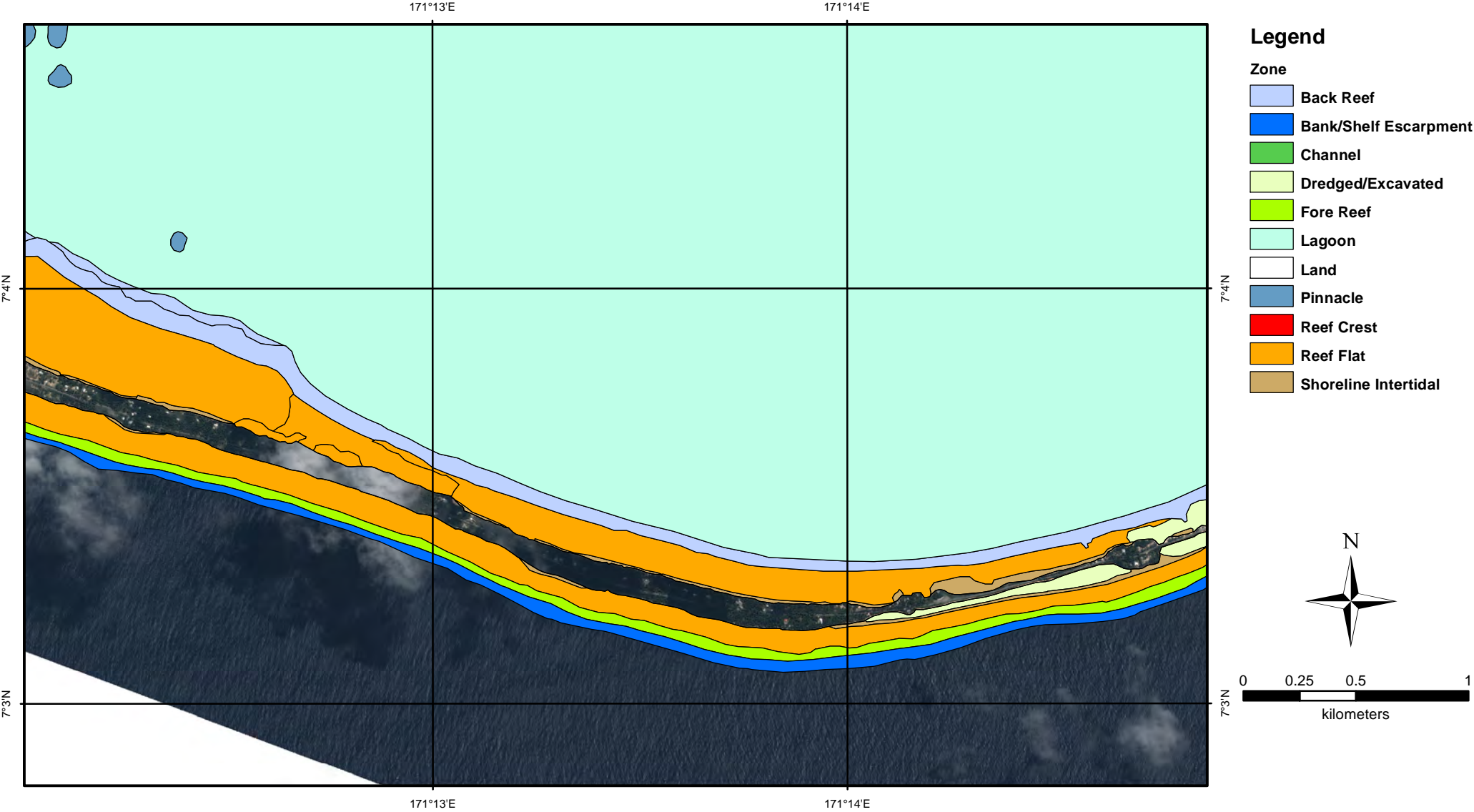
Frame 25 - Zonation



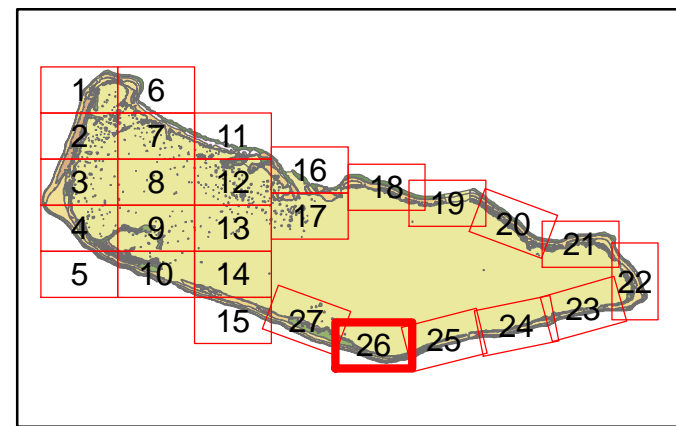


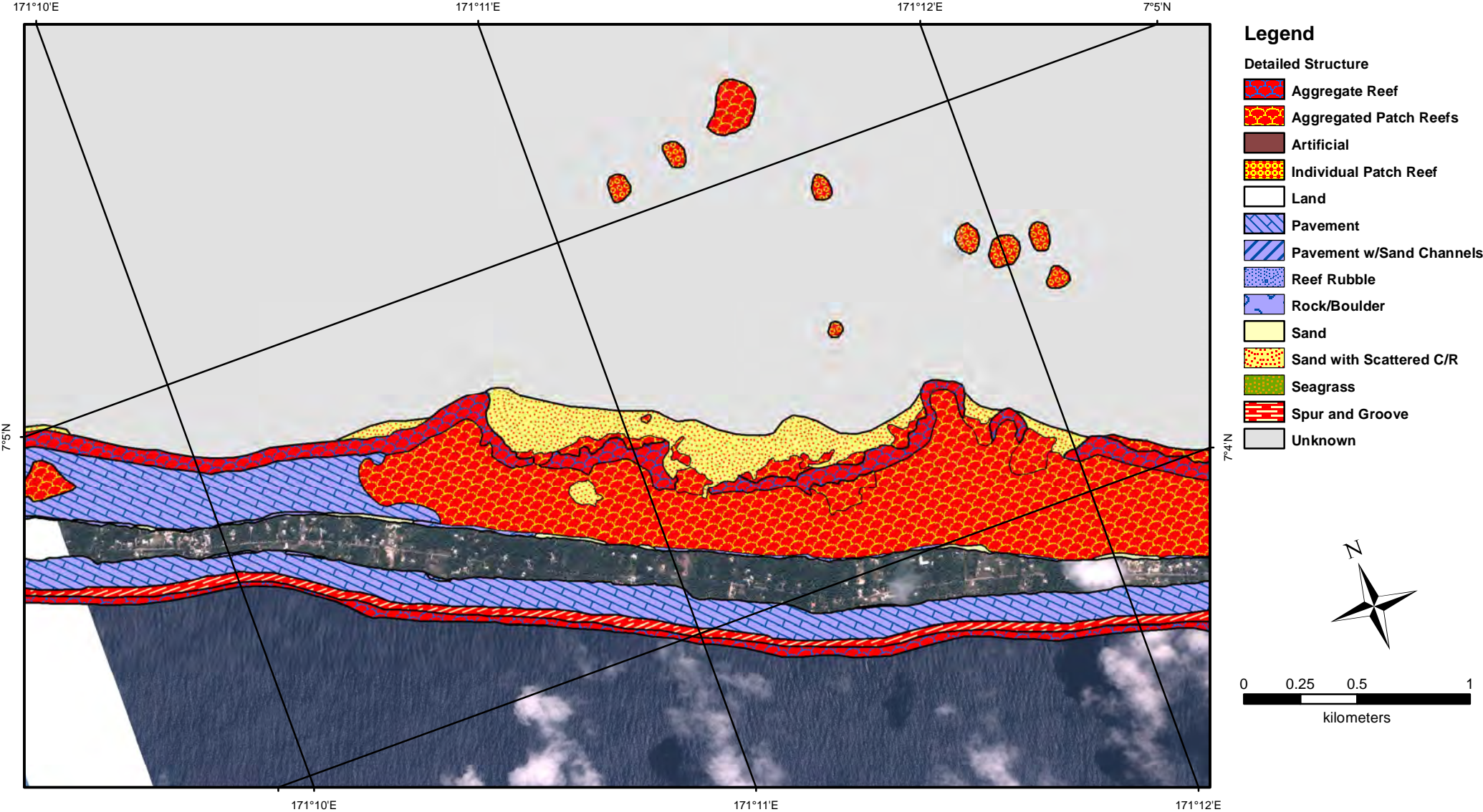
Frame 26 - Detailed Structure



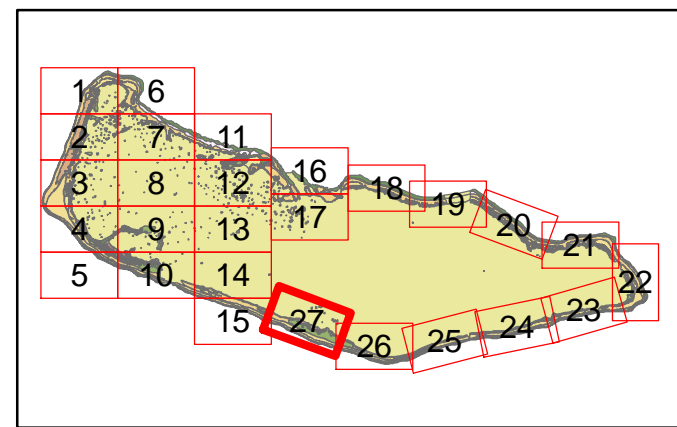


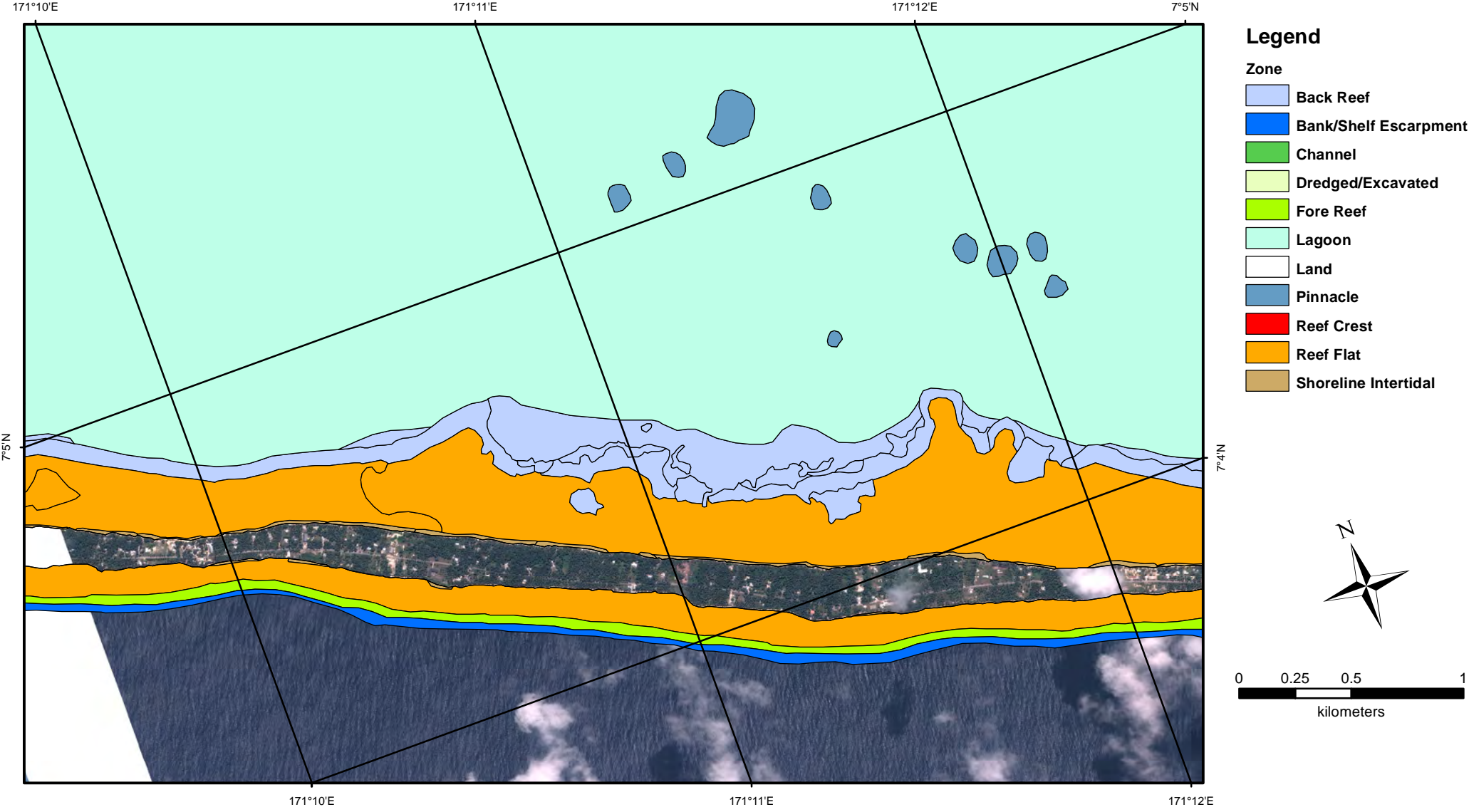
Frame 26 - Zonation





Frame 27 - Detailed Structure





Frame 27 - Zonation

