KAREN LOVEDORIAL BSCE

Civil Design Engineer

Location

Quezon City, Philippines

Experience

6 years

Qualifications/accreditation

— PRC Licensed Civil Engineer, 2018
— Bachelor of Science in Civil Engineering, 2018

Key technical skills

— Civil works design and modelling using Autodesk Suites
— BIM collaboration using Common Data Environments (CDE)
— Geographic Information Systems (GIS) data processing and visualization

Relevant experience summary

Karen is a young professional with growing industry experience in civil works design engineering & quantity surveying. These experiences encompass the basic land development of residential and mixed-used developments, water treatment plants, airport design, and reclamation works. Her latest experience mostly involves Civil 3D modelling of buried pipework for water treatment plants, land-use determination and detail design of airport drainage. All these projects utilized various engineering and collaboration tools such BIM360, Navisworks, and Revizto. On top of this, he also has integrated her affinity for data analysis and visualization in these projects mostly using GIS and BI applications.

Portfolio of works summary

Land Development & Pipe works

— Advanced water recycling center (Sydney, Australia)
— Sewage treatment plant upgrade (Hobart, Australia)
— Stream flood control upgrade (Gisborne, New Zealand)
— Road crossing rising main (Wellington, New Zealand)
— Falling main modelling (Rangitikei District of the North Island, New Zealand)
— Watermain relocation detailed engineering design (Victoria, Australia)
— Reservoir pipeline (Numeira, Jordan)
— International airport drainage design (Philippines & El Salvador)
— Basic land development of subdivisions – earthworks, roadworks, drainage, water supply (All over Philippines)

Coastal Protection & Reclamation Works

— Flood Protection Strategy (Central Luzon, Philippines)
— Disaster Risk Reduction (Catanduanes, Philippines)
— Reclamation projects (Philippines)

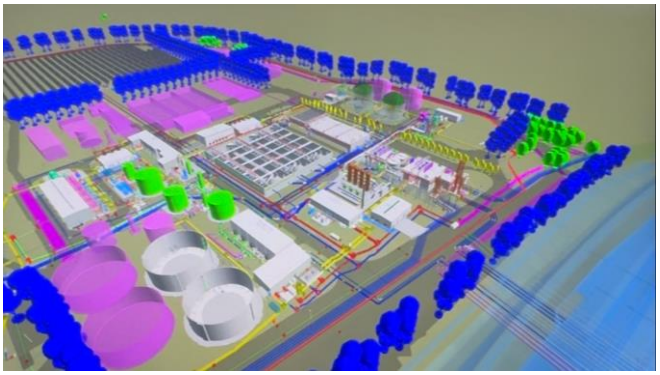
Digital Services

— Automated construction management of reclamation project (Philippines)
— Plastic waste collection technologies in Southeast Asia (ASEAN countries)
— Philippines offshore wind – Environmental & Social Due Diligence red flag assessment & road map (Philippines)

LAND DEVELOPMENT & PIPE WORKS

Advanced water recycling center

GHD | Sydney, Australia
September 2023 – October 2024



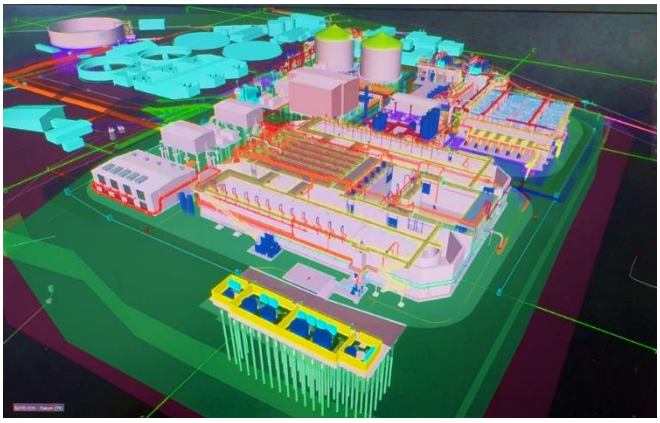
To meet the increasing water demands in Sydney, the water provider built an AWRC (advanced water recycling center) with an estimated value of $1-Billion. There are various underground pipe works to facilitate the treatment processes. As one of the major civil modelers in this project, Karen has successfully delivered outputs from the projects from 50% design submission up to the IFC (issued for construction) phase. These outputs include but are not limited to

- model of parallel pipes within the same trench (potable water, recycled water, fire water, reverse osmosis water)
- model of gravity drains (storm and sewer)
- detailed drawings for the site services and storm drainage making sure it is coordinated with other disciplines such as structural team

All outputs are reviewed to ensure compliance to the standards of the utility provider (e.g., Water Services Association of Australia standards)

Sewage treatment plant upgrade

GHD | Tasmania, Australia
June 2024 – November 2024



In this project, the existing sewage treatment plant will be decommissioned after the construction of a newer and STP with more capacity. Like the advanced water recycling project, her role involved using Civil 3D to design and model intricate pipe networks required for the upgrade.

A challenge for this project is it is reclaimed, and so despite the ground improvement, the site is still expected to settle. This has to be considered in locating high points for inline hydrants.

A top her usual work, she was also tasked with continuing the outfall works that was handed over from the previous team. In this package, a 1-kilometer-long pipe runs from the STP to the nearby body of water.

Since the outfall shoots about a hundred meters away from the land, there was also geotechnical interventions required. Karen has supported them by overlaying borehole log profiles to the outfall alignment with the help of OpenGround.

LAND DEVELOPMENT & PIPE WORKS

Road crossing rising main
GHD | Wellington, New Zealand
October 2023 – February 2024

Minor Civil3D pipe network update was done for the sewer utilities under a busy road crossing. Coordinated pipe model is one of the basis of the detailed pit design. Some drafting works like long section and detailed design drawings are delivered in this project.

Stream flood control upgrade
GHD | Wellington, New Zealand
February 2024 – April 2024

Corridor modelling was utilized to produce surface grading of the realigned channels in the project site/ The channels were realigned back to the channels' original location and a new pipe was modelled. In addition to the corridor surface, longitudinal section of the channels together with its cross section was also produced.

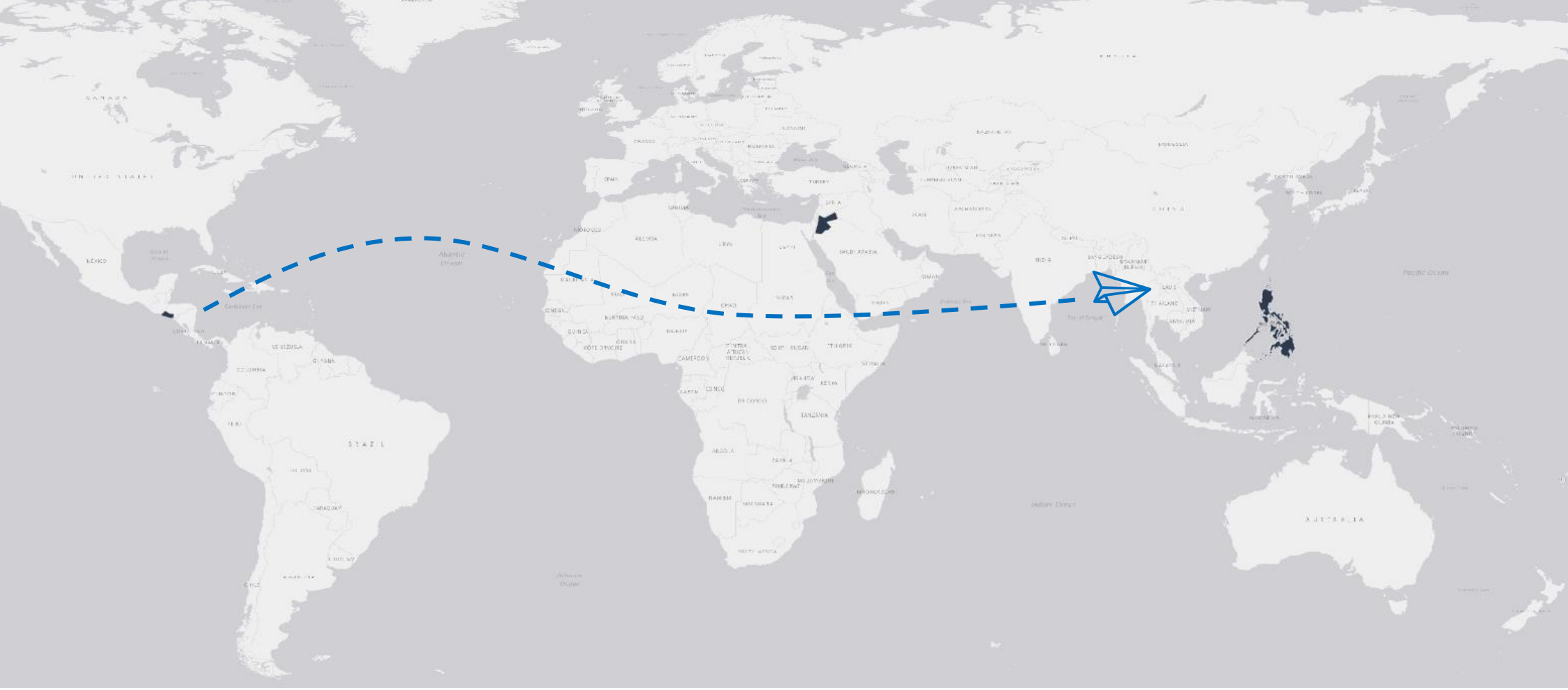
Close coordination with the structural team via the NX counterpart was also maintained to align the model to the structural elements (headwall).

Watermain relocation
GHD | Victoria, Australia
August 2023 – September 2023

To accommodate the new pipes for the area, existing pipes must be relocated. Using Civil 3D, clashes with the existing utilities are checked while maintaining assigned distance from private property boundaries. The longitudinal section produced reflects correct clearances (according to MRWA standards) of the realigned potable water pipe with other existing pipes such as lines for communication, gas, sewer, and drainage.

Falling main utility
GHD | Wellington, New Zealand
September 2023

As a support for the New Zealand workshare. Surface and existing utility modelling was performed. Data from different sources are collected and reflected in the model with the help of the counterpart team.



International airport drainage design

Royal HaskoningDHV | Philippines & El Salvador
May 2022 – January 2023 & December 2022 – August 2023

NACO (Netherlands Airport Consultant) worked side by side for the drainage detailed design engineering of these international projects. Among the deliverables of the projects that Karen helped deliver are:

- Maps of flood inundation (result from flood modeler) and land-use maps for Infoworks ICM input
- Engineering drawings (typical sections, detailed drawings of structures, longitudinal sections)
- Federated model

Karen has also assisted with the visualization of the Airport elements such as pavement types, building, drainage, catchments, etc. using ArcGIS Online.

Reservoir pipeline

Royal HaskoningDHV | Numeira, Jordan
March 2023 – August 2023

In collaboration with the RHDHV Amersfoort team, Karen has been assigned to lead the 4-km pressure pipe network modelling (Civil 3D) that conveys saltwater from a source reservoir to two separate detention reservoirs. The Numeira reservoir pipeline is the first pressure pipeline project that was awarded to the Philippines team and its success has gained two more projects for the same client in Jordan.

The next awarded project is 1.5-kilometer-long. The legwork is mostly done by the graduate engineer while Karen actively mentors and shares her acquired knowledge on the first project—previously developed templates and styles, workflow, coordination, person to talk to, concepts, etc.

Subdivision basic land development

Vista Land & Lifescapes, Inc. | Various Provinces, Philippines
January 2019 – October 2021

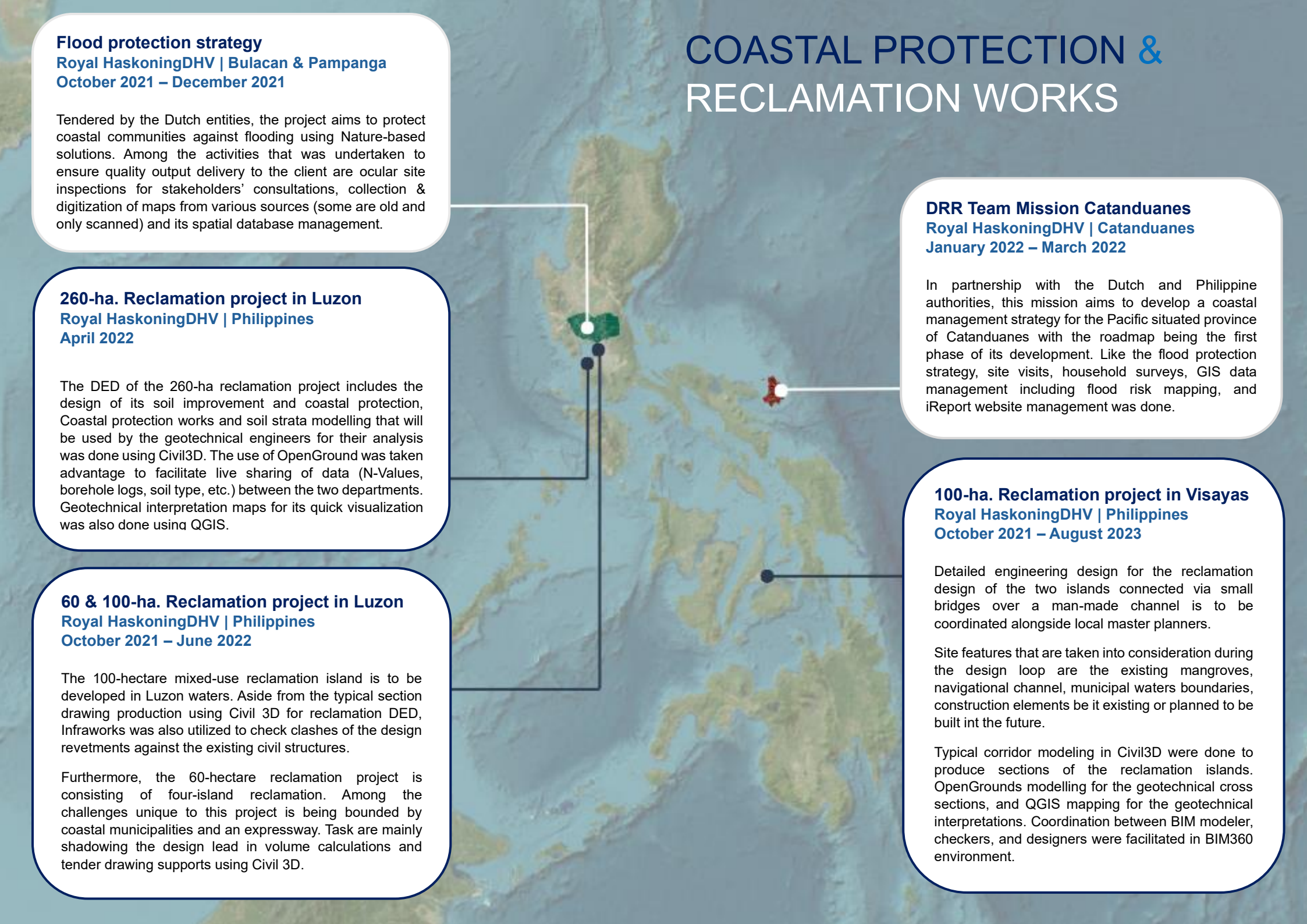
As the largest developer in the Philippines, the following are undertaken to ensure high quality of both horizontal and vertical project's life cycle (pre- to post-construction). Majority of the works involves the civil works design, quantity surveys for the tender, and the contract award itself.

The civil works design development scope are the following:

- general requirements (equipment, site expenses, etc.)
- earthworks (cut, fill-borrow/local, haul-out, etc.)
- storm drainage system (concrete pipes, manholes, etc.)
- water distribution system (waterline, fittings, etc.)
- internet cable pipe system
- slope protection works (concrete retaining walls, riprap, etc.)
- miscellaneous items (wastewater treatment facility, channels, culverts, fence, etc.)

As a pioneering member of the quantity surveyor team, Karen has helped develop a standard tool (macro-enabled spreadsheet containing fields for quantity take offs and corresponding cost (material, equipment, and labor). This allows swift computation of expected budget that will have to be coordinated across departments — accounting., marketing, planning, and engineering. A standard process for contract creation & SAP purchase requisition and purchase order that is directly related to the civil works design was also developed in this timeline.

COASTAL PROTECTION & RECLAMATION WORKS



Flood protection strategy
Royal HaskoningDHV | Bulacan & Pampanga
October 2021 – December 2021

Tendered by the Dutch entities, the project aims to protect coastal communities against flooding using Nature-based solutions. Among the activities that was undertaken to ensure quality output delivery to the client are ocular site inspections for stakeholders' consultations, collection & digitization of maps from various sources (some are old and only scanned) and its spatial database management.

260-ha. Reclamation project in Luzon
Royal HaskoningDHV | Philippines
April 2022

The DED of the 260-ha reclamation project includes the design of its soil improvement and coastal protection, Coastal protection works and soil strata modelling that will be used by the geotechnical engineers for their analysis was done using Civil3D. The use of OpenGround was taken advantage to facilitate live sharing of data (N-Values, borehole logs, soil type, etc.) between the two departments. Geotechnical interpretation maps for its quick visualization was also done using QGIS.

60 & 100-ha. Reclamation project in Luzon
Royal HaskoningDHV | Philippines
October 2021 – June 2022

The 100-hectare mixed-use reclamation island is to be developed in Luzon waters. Aside from the typical section drawing production using Civil 3D for reclamation DED, Infraworks was also utilized to check clashes of the design revetments against the existing civil structures.

Furthermore, the 60-hectare reclamation project is consisting of four-island reclamation. Among the challenges unique to this project is being bounded by coastal municipalities and an expressway. Task are mainly shadowing the design lead in volume calculations and tender drawing supports using Civil 3D.

DRR Team Mission Catanduanes
Royal HaskoningDHV | Catanduanes
January 2022 – March 2022

In partnership with the Dutch and Philippine authorities, this mission aims to develop a coastal management strategy for the Pacific situated province of Catanduanes with the roadmap being the first phase of its development. Like the flood protection strategy, site visits, household surveys, GIS data management including flood risk mapping, and iReport website management was done.

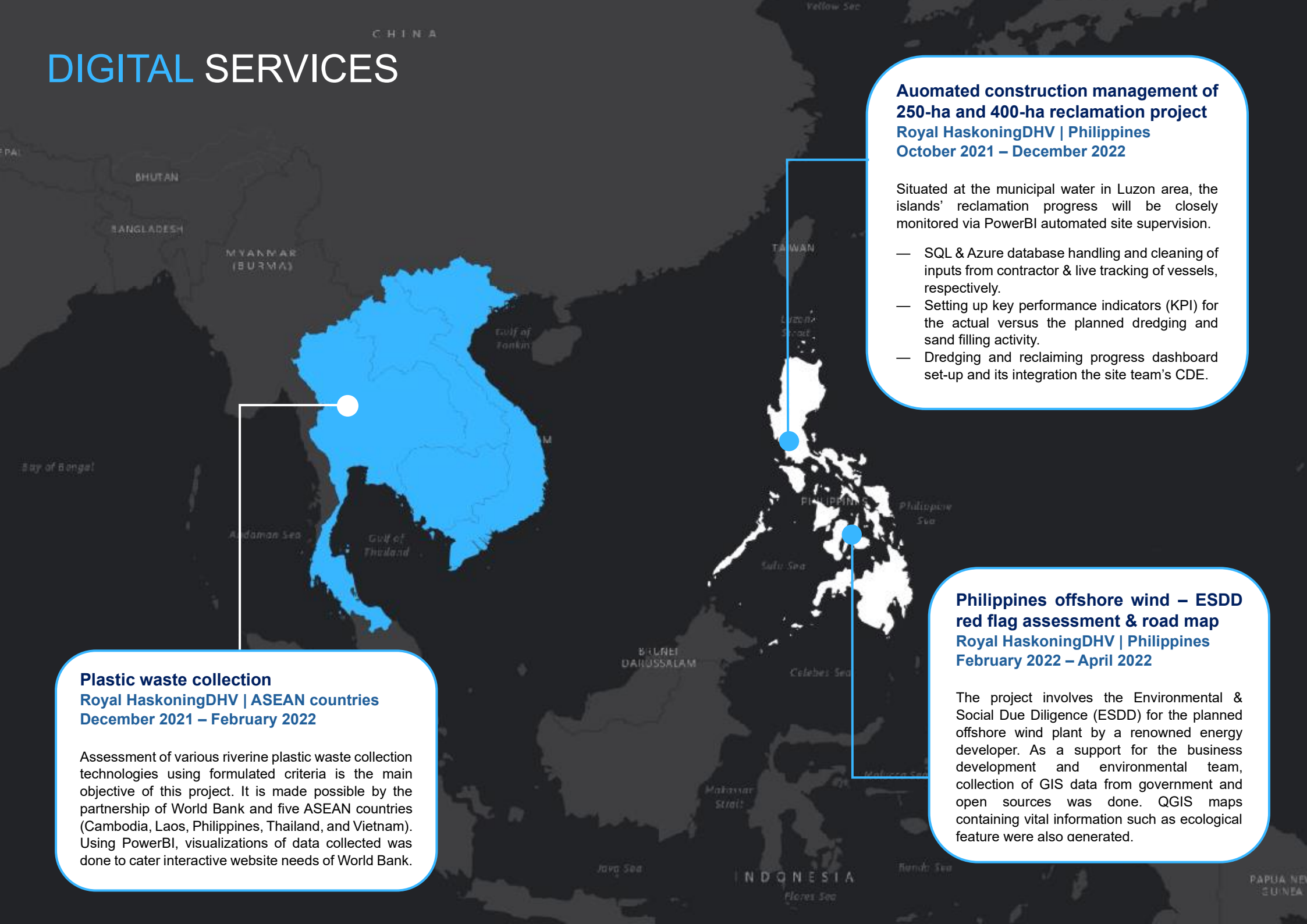
100-ha. Reclamation project in Visayas
Royal HaskoningDHV | Philippines
October 2021 – August 2023

Detailed engineering design for the reclamation design of the two islands connected via small bridges over a man-made channel is to be coordinated alongside local master planners.

Site features that are taken into consideration during the design loop are the existing mangroves, navigational channel, municipal waters boundaries, construction elements be it existing or planned to be built int the future.

Typical corridor modeling in Civil3D were done to produce sections of the reclamation islands. OpenGrounds modelling for the geotechnical cross sections, and QGIS mapping for the geotechnical interpretations. Coordination between BIM modeler, checkers, and designers were facilitated in BIM360 environment.

DIGITAL SERVICES



Auomated construction management of 250-ha and 400-ha reclamation project

Royal HaskoningDHV | Philippines
October 2021 – December 2022

Situated at the municipal water in Luzon area, the islands' reclamation progress will be closely monitored via PowerBI automated site supervision.

- SQL & Azure database handling and cleaning of inputs from contractor & live tracking of vessels, respectively.
- Setting up key performance indicators (KPI) for the actual versus the planned dredging and sand filling activity.
- Dredging and reclaiming progress dashboard set-up and its integration the site team's CDE.

Plastic waste collection

Royal HaskoningDHV | ASEAN countries
December 2021 – February 2022

Assessment of various riverine plastic waste collection technologies using formulated criteria is the main objective of this project. It is made possible by the partnership of World Bank and five ASEAN countries (Cambodia, Laos, Philippines, Thailand, and Vietnam). Using PowerBI, visualizations of data collected was done to cater interactive website needs of World Bank.

Philippines offshore wind – ESDD red flag assessment & road map

Royal HaskoningDHV | Philippines
February 2022 – April 2022

The project involves the Environmental & Social Due Diligence (ESDD) for the planned offshore wind plant by a renowned energy developer. As a support for the business development and environmental team, collection of GIS data from government and open sources was done. QGIS maps containing vital information such as ecological feature were also generated.