

AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION



BY: BASANT MOHAMED AHMED





BY :BASANT MOHAMED
AHMED

BANHA FACULTY OF
ENGINEERING

ARCHITECTURE DEPARTMENT

GRADUATION YEAR 2025-2026

01

AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

PROJECT NAME

INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

ABOUT PROJECT

An integrated research and production center for developing the Skin care products from algae and Egyptian pearls

LOCATION

HURGHADA CITY, HURGHADA

AREA

12 FEDDAN

TARGET PEOPLE

Researchers and university students, Companies and investors in the field of cosmetics and organic products, Local community through employment opportunities in aquaculture and small industries, Entrepreneurs interested in innovation in sustainable industries

SUPERVISORS

Prof: Zainab fiesl

prof: Mona Yahia

Ass. prof: Elmoataz Bellah Gamal

Dr: Esraa Hany

Eng: Abdullah saied – Esraa Aidy – Mohamed Hazem – Zaynb Atef _ Sara Ahmed



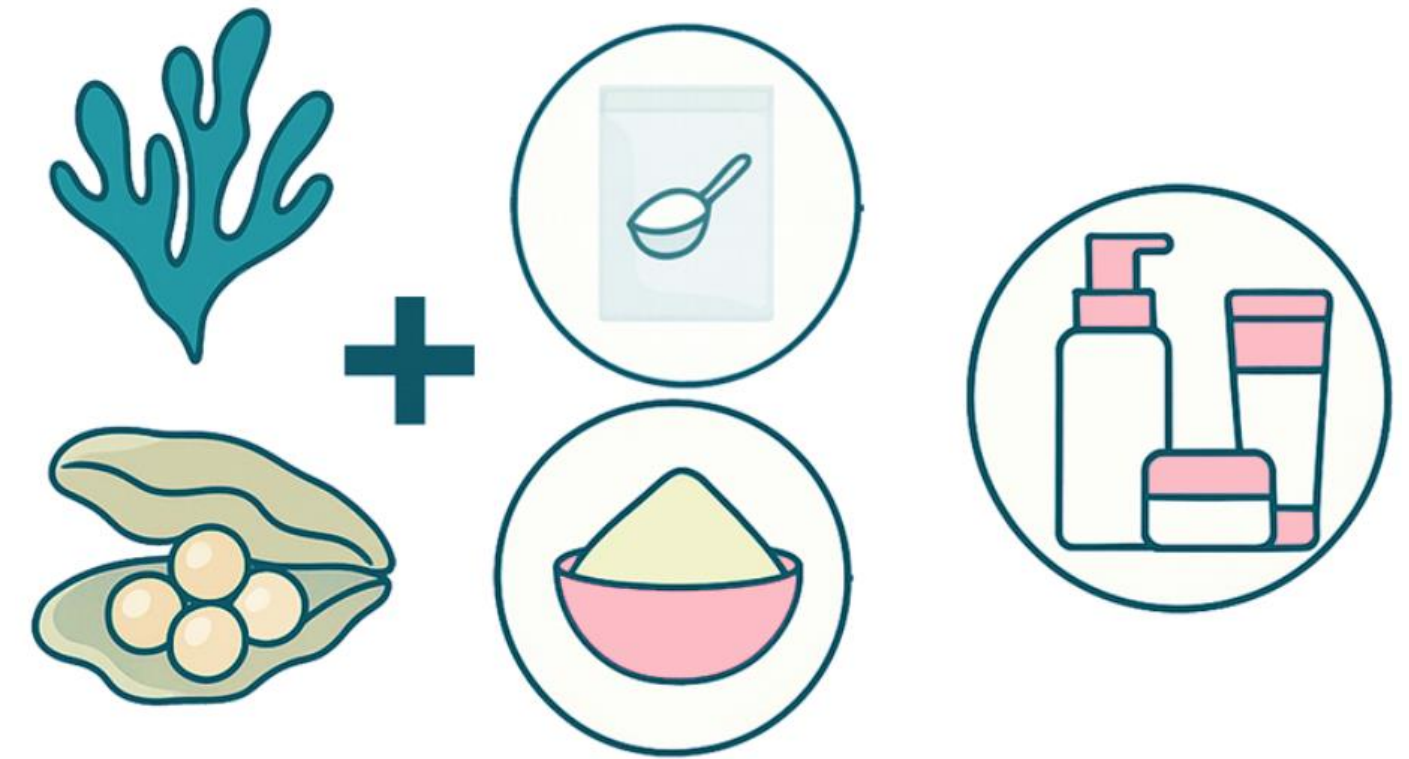
AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

Project Overview

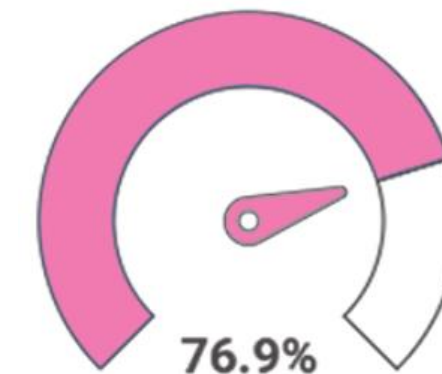
AUREA is an integrated marine research and innovation center located in the coastal city of Hurgada, Egypt. The project aims to explore the potential of marine resources, particularly algae and Egyptian pearl oysters, in developing sustainable and high-value skincare products.

The center combines scientific research, product development, education, and public engagement within a single facility. It provides advanced laboratories for biotechnology, marine biology, cosmetic research, and material testing, alongside educational

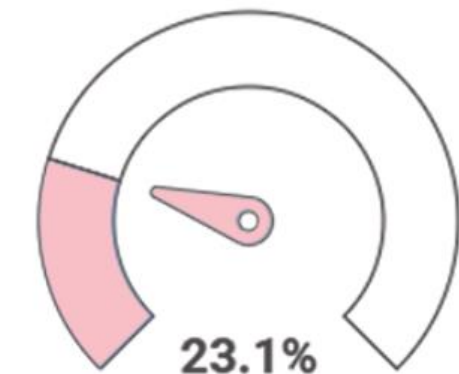
Studies published in the journal **BMC Ecology and Evolution** indicate that there is a rich diversity of marine algae in the Egyptian Red Sea, including green, red and brown species of high economic value. However, these natural resources remain under-exploited economically, highlighting a significant opportunity for the development of new algae- and pearl-based industries, such as skin care products and natural cosmetics, which the country relies heavily on importing from abroad, with Egypt importing **76.9%** of these products and exporting **23.1%**.



Imports and Exports of Egypt



Egypt's Imports



Egypt's Exports



AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

VISION

TO UTILIZE AVAILABLE NATURAL RESOURCES AND MANUFACTURE ENVIRONMENTALLY FRIENDLY PRODUCTS THAT ARE IN DEMAND IN THE LOCAL AND GLOBAL MARKETS.

MISION

TO DEVELOP ECO-FRIENDLY SKINCARE PRODUCTS THROUGH ADVANCED CULTIVATION AND PROCESSING SYSTEMS, WHILE OFFERING AN IMMERSIVE USER EXPERIENCE THAT CONNECTS PEOPLE WITH NATURAL BEAUTY

VALUE

THE PROJECT IS DRIVEN BY VALUES OF SUSTAINABILITY, INNOVATION, AND WELLNESS, AIMING TO CREATE A HOLISTIC SKINCARE EXPERIENCE THAT BLENDS NATURE, SCIENCE, AND ARCHITECTURE.

Project Overview

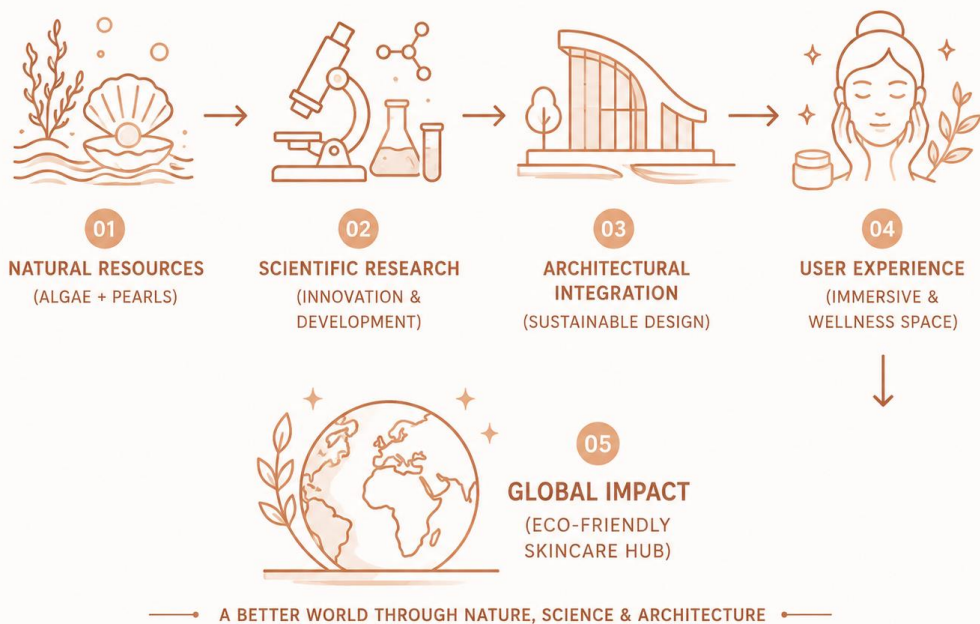
AUREA is an integrated marine research and innovation center located in the coastal city of Hurghada, Egypt. The project aims to explore the potential of marine resources, particularly algae and Egyptian pearl oysters, in developing sustainable and high-value skincare products.

The center combines scientific research, product development, education, and public engagement within a single facility. It provides advanced laboratories for biotechnology, marine biology, cosmetic research, and material testing, alongside educational

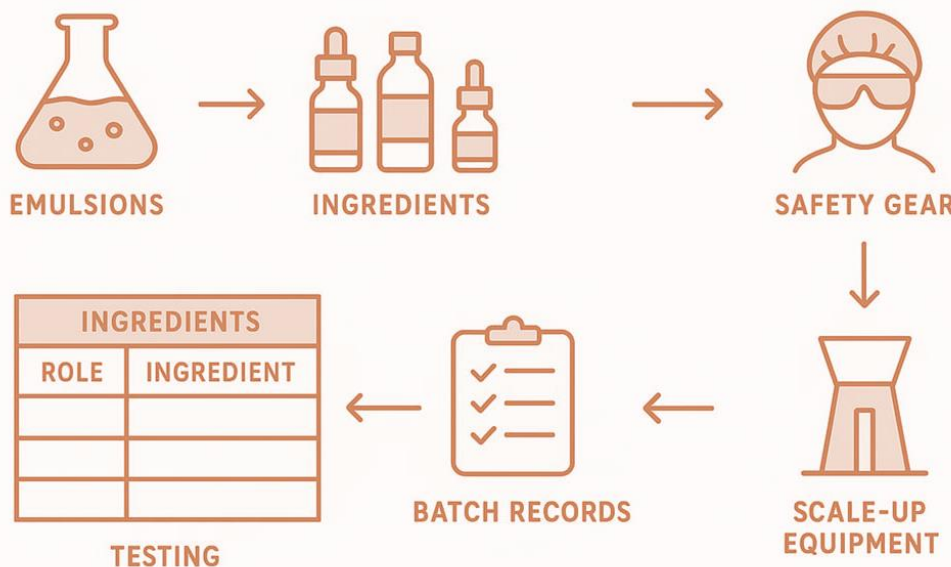
03

VISION DEVELOPMENT PROCESS

— SHAPING THE FUTURE OF SUSTAINABLE SKINCARE —



DEVELOPING A COSMETIC PRODUCT IN A COSMETICS LAB





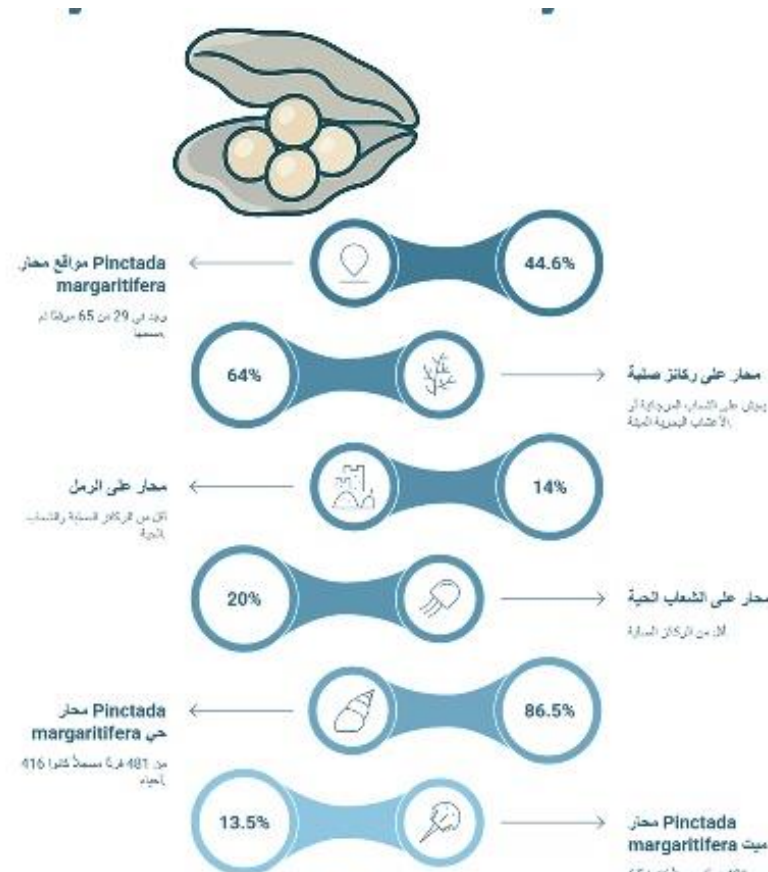
AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

Project studies and objectives

Project Overview

AUREA is an integrated marine research and innovation center located in the coastal city of Hurghada, Egypt. The project aims to explore the potential of marine resources, particularly algae and Egyptian pearl oysters, in developing sustainable and high-value skincare products.

The center combines scientific research, product development, education, and public engagement within a single facility. It provides advanced laboratories for biotechnology, marine biology, cosmetic research, and material testing, alongside educational

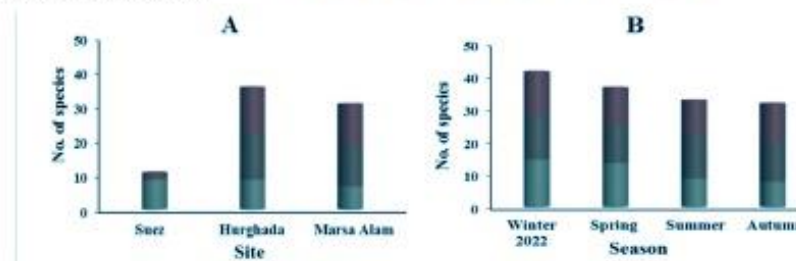


On the website **OEC**, it appears that Egypt's pearl exports in 2023 were worth approximately \$2,150, while imports were worth \$15,500.

https://bmcecolevol.biomedcentral.com/articles/10.1186/s12862-025-02389-5?utm_source=sharelink&utm_medium=share&utm_campaign=share

Studies have shown that the Egyptian Red Sea coastline contains high proportions of marine algae, with green algae covering 35.7% of the area, followed by red algae at 34.3%.

■ Chlorophyta ■ Phaeophyta ■ Rhodophyta



Egypt imported algae worth approximately \$568,440 in 2021, amounting to approximately 39,349 kg.

<https://wits.worldbank.org/Default.aspx?lang=en>



Marine Nutritional Supplement

Active ingredients:
Pearl powder + algae extract (Chlorella or Spirulina)
Benefits: Supports skin, hair and immunity



After-Sun Gel

Active ingredients:
Pearl extract + Fucoidan (from algae) + Vitamin
Benefits: Evens out skin tone + Anti-oxidant + Reduces wrinkles



Anti-Aging Serum

Active ingredients:
Pearl protein + Phlorotannins
Benefits: Stimulates collagen + Reduces wrinkles + Tightens skin



(Day/Night Cream)

Active ingredients:
Pearl extract + Fucoidan (from algae) + Vitamin
Benefits: Evens out skin tone + Anti-oxidant + Reduces wrinkles



Spa Mask

Active ingredients:
Pearl extract + Fucoid (from algae) + Vitamin
Benefits: Evens out skin tone + Anti-oxidant + Reduces wrinkles

IMTA system

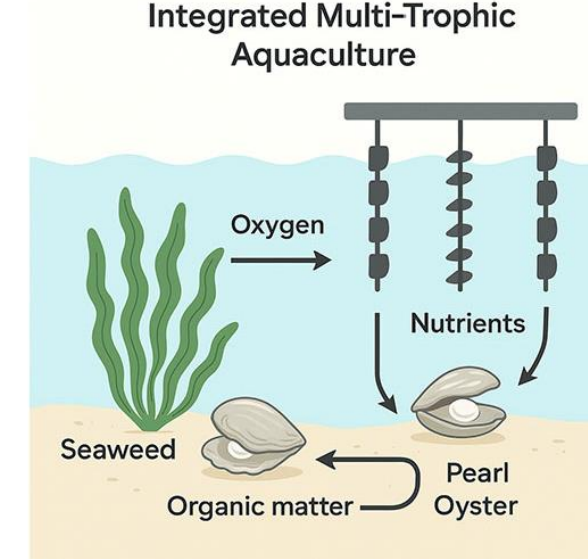
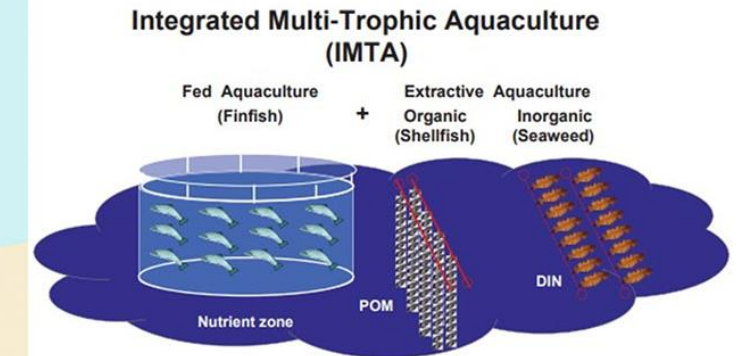
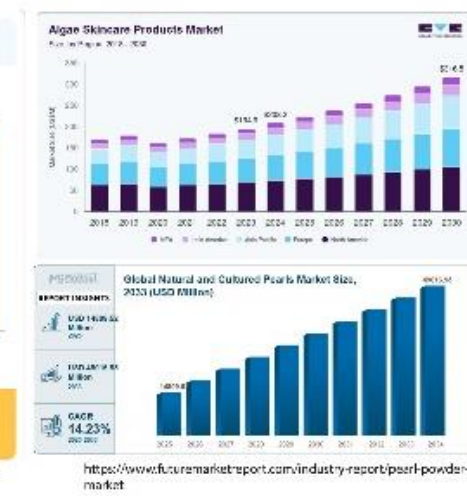
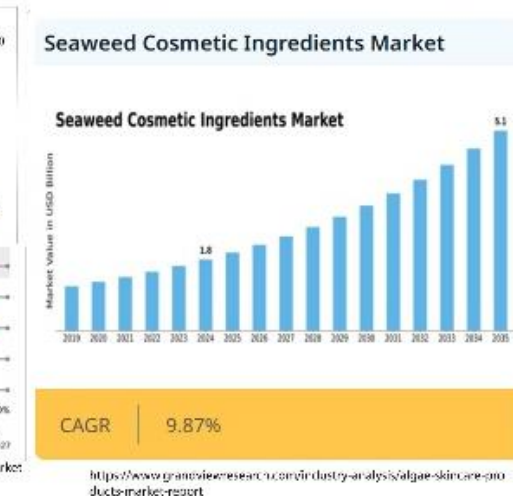
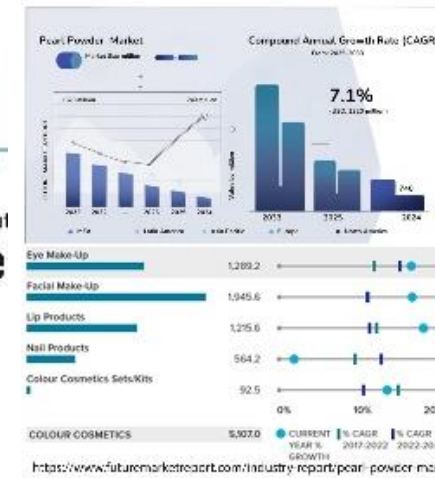


FIGURE 2
Conceptual diagram of an integrated multi-trophic aquaculture (IMTA) operation combining fed aquaculture (finfish) with organic extractive aquaculture (shellfish), taking advantage of the enrichment in particulate organic matter (POM), and inorganic extractive aquaculture (seaweeds), taking advantage of the enrichment in dissolved inorganic nutrients (DIN)



The future of the materials





AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

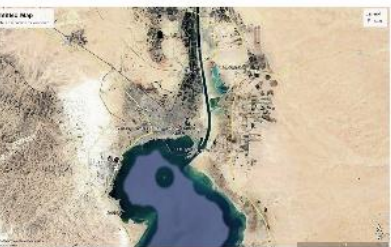
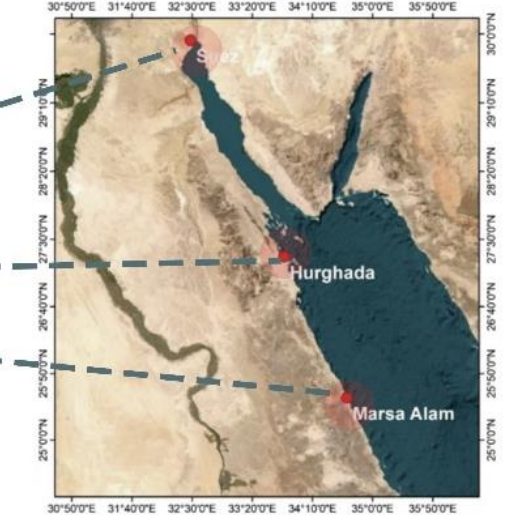
Project Overview

AUREA is an integrated marine research and innovation center located in the coastal city of Hurghada, Egypt. The project aims to explore the potential of marine resources, particularly algae and Egyptian pearl oysters, in developing sustainable and high-value skincare products.

The center combines scientific research, product development, education, and public engagement within a single facility. It provides advanced laboratories for biotechnology, marine biology, cosmetic research, and material testing, alongside educational

05

MACRO SITE



Suez

The highest coverage was recorded for the brown algae (Phaeophyceae) section, at around 50%.



Hurghad

The highest average coverage was recorded for the green algae (Chlorophyta) section, at approximately 97%.



Marsa Alam

The highest coverage was recorded for the red algae (Rhodophyta) section, at around 38%.

CHOOSING THE BEST LOCATION

Criterion	Marsa Alam	Hurghada	Suez
Accessibility	Very good arrival by air; less accessible by land compared to major cities.	Excellent arrival via an international airport; good coastal roads.	Best connection by land and sea; close to Cairo; major ports.
Infrastructure	Tourism infrastructure, but less industrially developed.	Advanced tourism and services infrastructure; support for research activities.	Very strong industrial and logistical infrastructure.
Import and Export	Suitable capabilities for air freight, but in small/medium quantities; limited maritime capabilities.	Export capabilities are limited; relies more on air freight.	The best due to the ports of Suez and the Suez Canal.
Suitability of Soil for Construction	Rocky natural soil, with commitment to protected areas.	Some coastal areas require additional civil support (piles/foundations).	Relatively stable soil in industrial areas; requires site-specific study.
Availability and Quality of Water	Cleaner and higher quality water, such as for marine resources like algae and pearls.	Good water quality, but affected by tourism activity in certain areas.	Industrially affected in some areas; less suitable for sensitive marine materials/life.
Proximity of Services and Roads	Basic services are available but on a limited scale and at greater distances.	Extensive services due to tourism activity.	Close to urban and industrial services and housing for workers.

The project requires a balance between infrastructure, research and development, and proximity to services: Hurghada is a moderate option that can be implemented quickly.

Wellness Hierarchy Pyramid





AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

Project Overview

AUREA is an integrated marine research and innovation center located in the coastal city of Hurghada, Egypt. The project aims to explore the potential of marine resources, particularly algae and Egyptian pearl oysters, in developing sustainable and high-value skincare products.

The center combines scientific research, product development, education, and public engagement within a single facility. It provides advanced laboratories for biotechnology, marine biology, cosmetic research, and material testing, alongside educational

MICRO SITE



First proposal

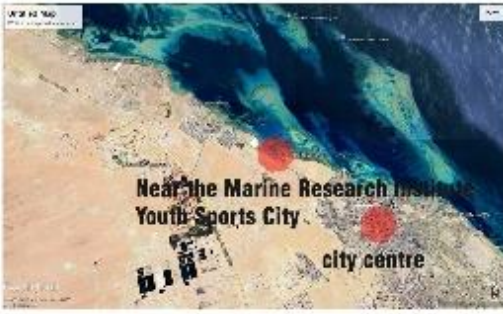


Near Hurghada Airport



Land area: 61,955 square

Second proposal

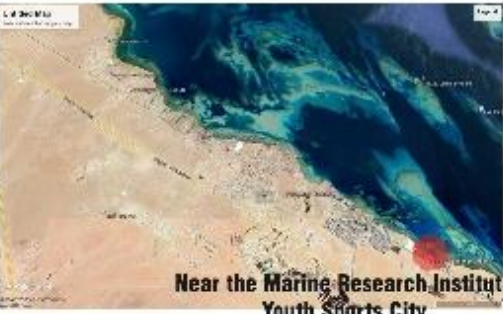


Near the Marine Research Institute
Youth Sports City



Land area: 47,400 square

Third proposal



Near the Marine Research Institute
Youth Sports City



Land area: 49,962 square

PROJECT LAND AREA



LAND AREA: 60000 M2
BUILT IN AREA : 17000 M2
NO. OF FLOORS :3 FLOORS +BASEMENT

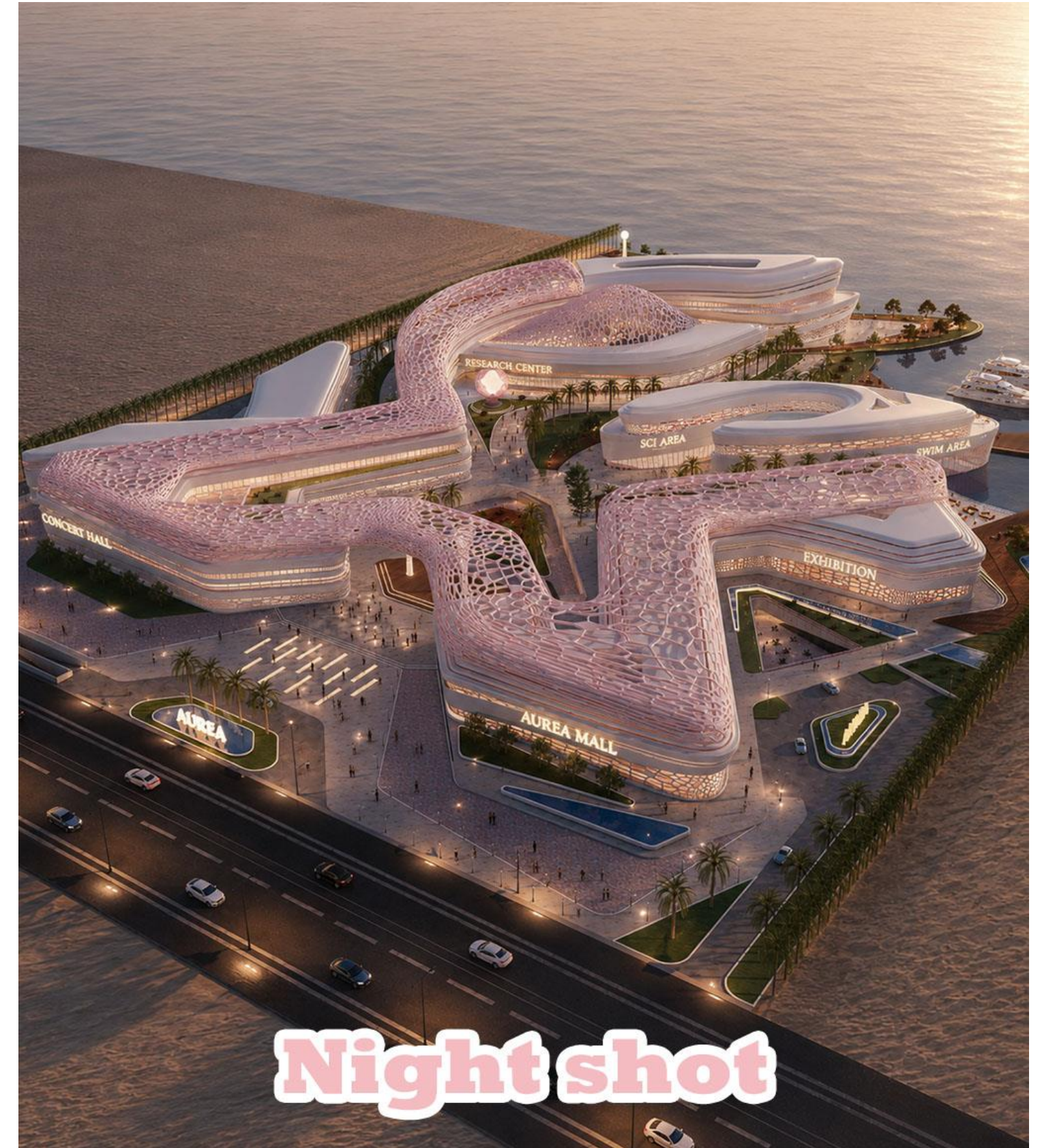


AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION





AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

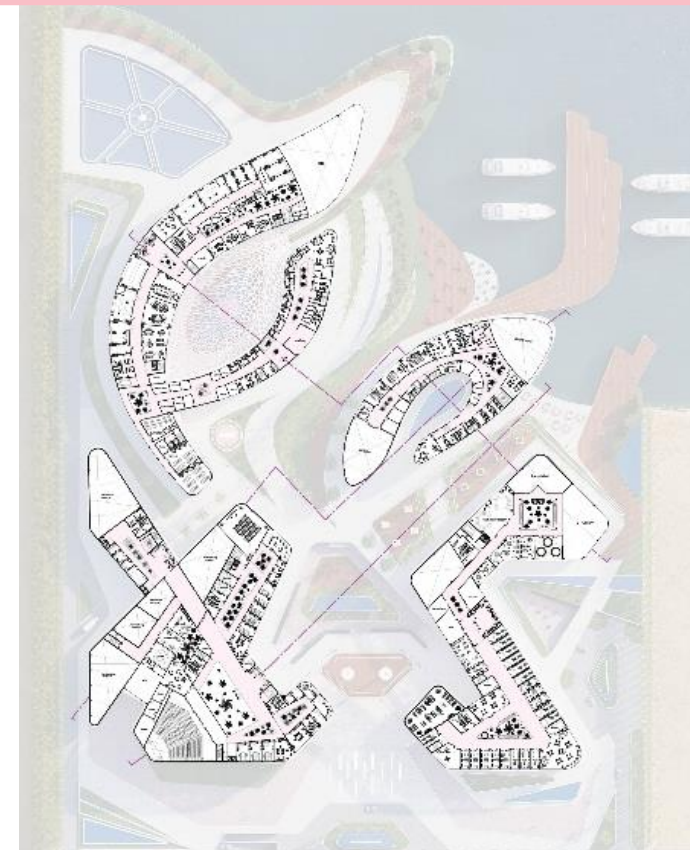




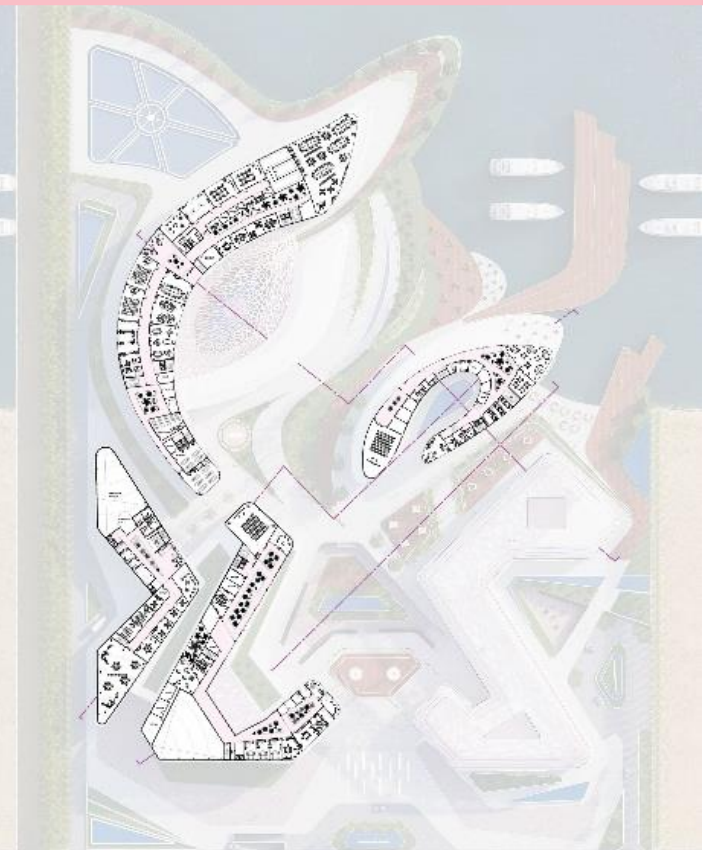
AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION



Master plan



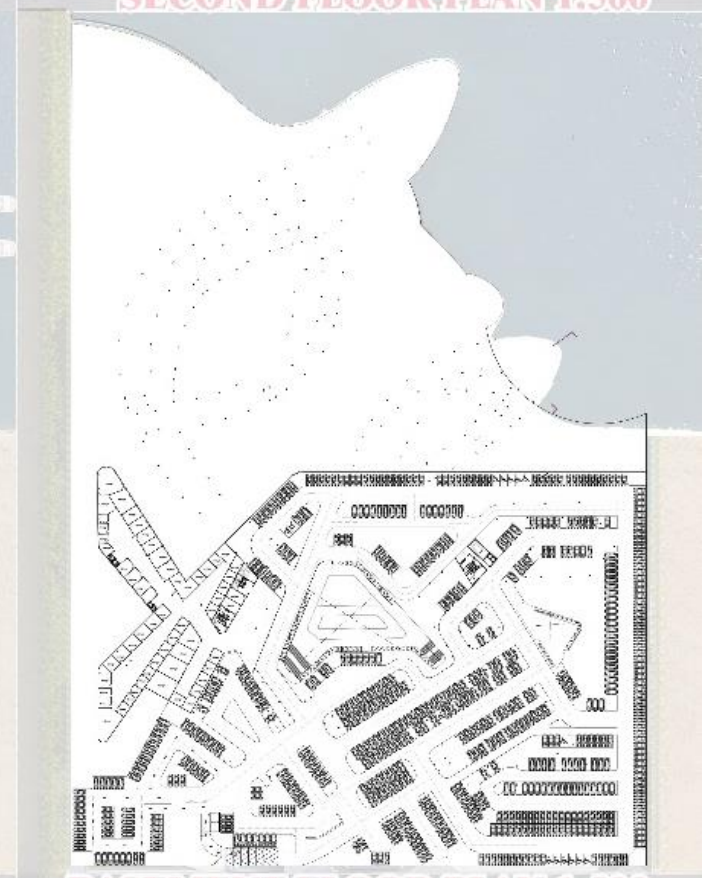
FIRST FLOOR PLAN 1:500



SECOND FLOOR PLAN 1:500



THIRD FLOOR PLAN 1:500



BASEMENT FLOOR PLAN 1:500



AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION



Main Elevation



Side Elevation



AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

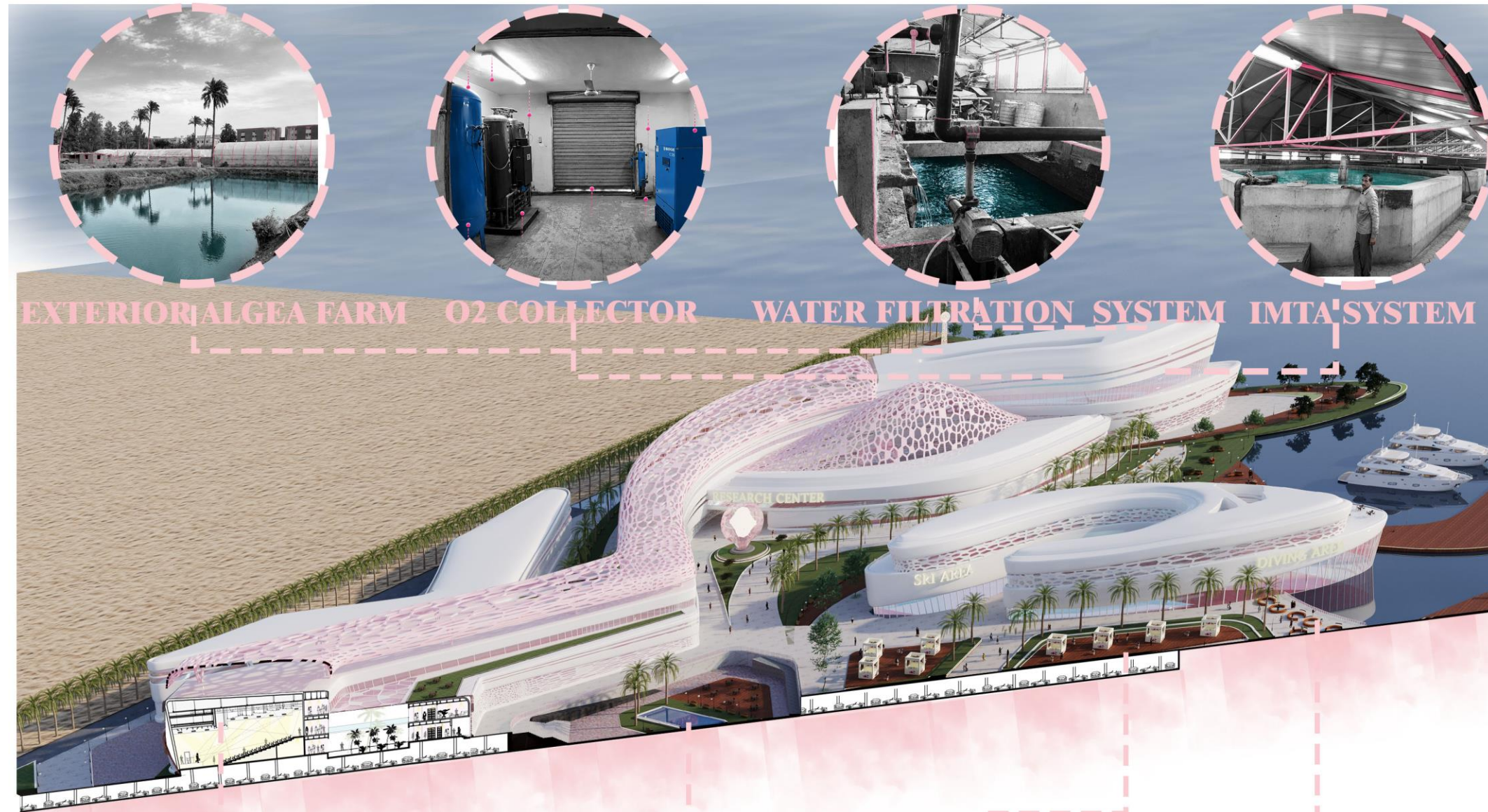


Section (A-A) 1.1





AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION



EXTERIOR ALGAE FARM

O2 COLLECTOR

WATER FILTRATION SYSTEM

IMTA SYSTEM

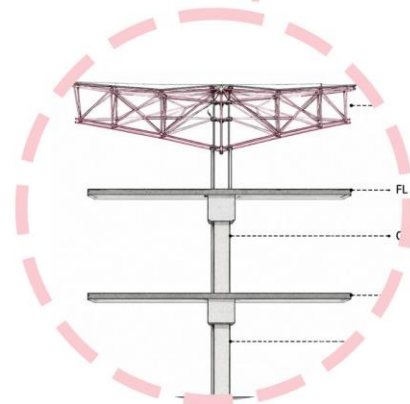
3D SECTION

SPACE TRUSS SYSTEM

MAIN PLAZA

SKIN CARE BOOTH

SEA VIEW SEATS





AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION





AUREA: INTEGRATED CENTER FOR MARINE SKINCARE INNOVATION

