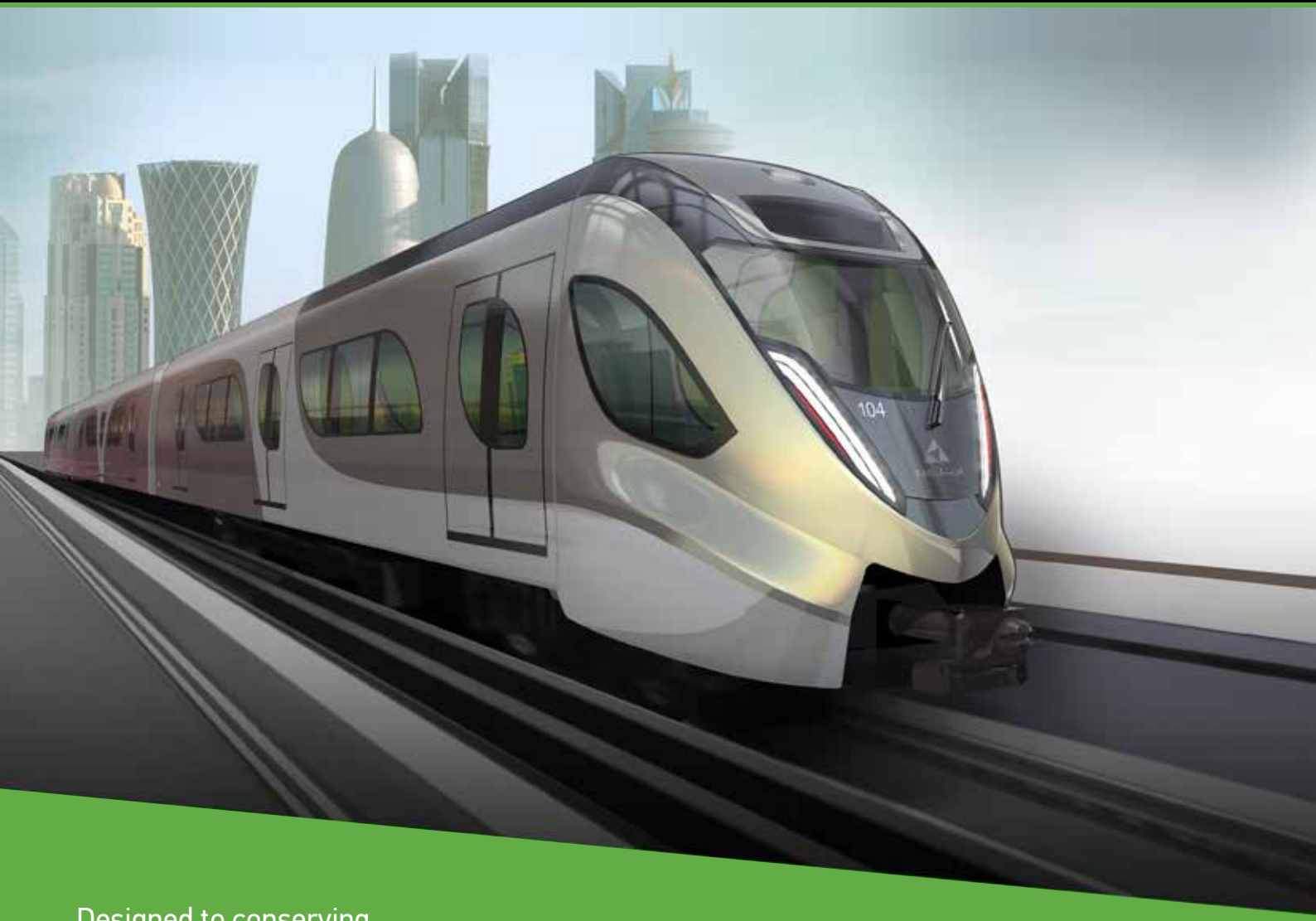
GSAS RAILWAYS

STATIONS - 4 STARS

Qatar Rail

GLOBAL SUSTAINABILITY ASSESSMENT SYSTEM
GSAS
★★★★
DESIGN & BUILD

Crafting a Green Legacy



Designed to conserving

Precious resources such as water and energy

Designed to improving

Passengers and staff satisfaction

RAIL الرّيـــل

GORD
المنظمـــة الخليجيـــة للبحـــث والتطويـــر
Gulf Organisation for Research & Development

Introduction

The GSAS Railways Scheme is aimed to create train stations that are at the leading edge of sustainable design with the holistic application of methods that protect the environment, energy and climate.

This is first-of-a-kind sustainability assessment scheme in the world, developed specifically for railway projects. It is used for rating the sustainability and ecological impacts of new station buildings including spaces that serve various functions of a railway station such as, but not necessarily limited to, platform/concourse, offices, station control room, ticketing, retail, food/beverage areas, and ancillary areas.

In order to make a railway project completely sustainable, it needs to be approached with sustainability guidelines right from the design stage through construction process and also through its operations. The GSAS Railway scheme involves various stages of design, construction and operations performance assessments and audits to attain the certification.

Project Highlights

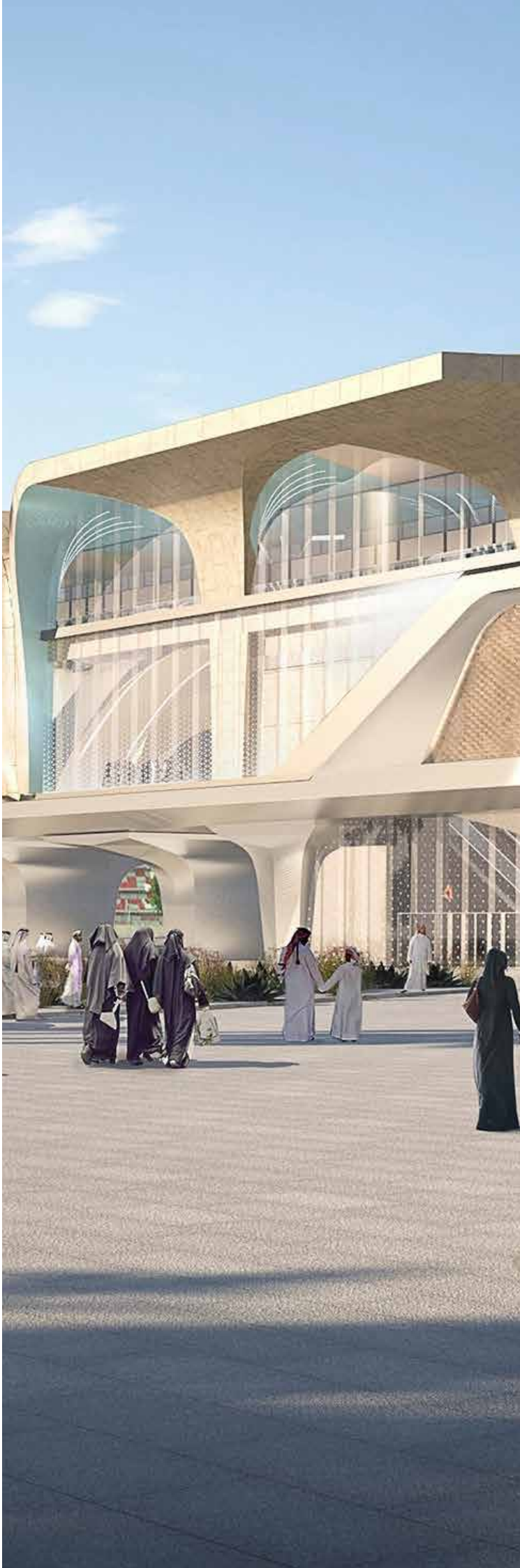
In accordance with the highest sustainability practices, all Qatar Rail stations in Qatar were designed and built to achieve a minimum of **GSAS 4 STARS** Rating.

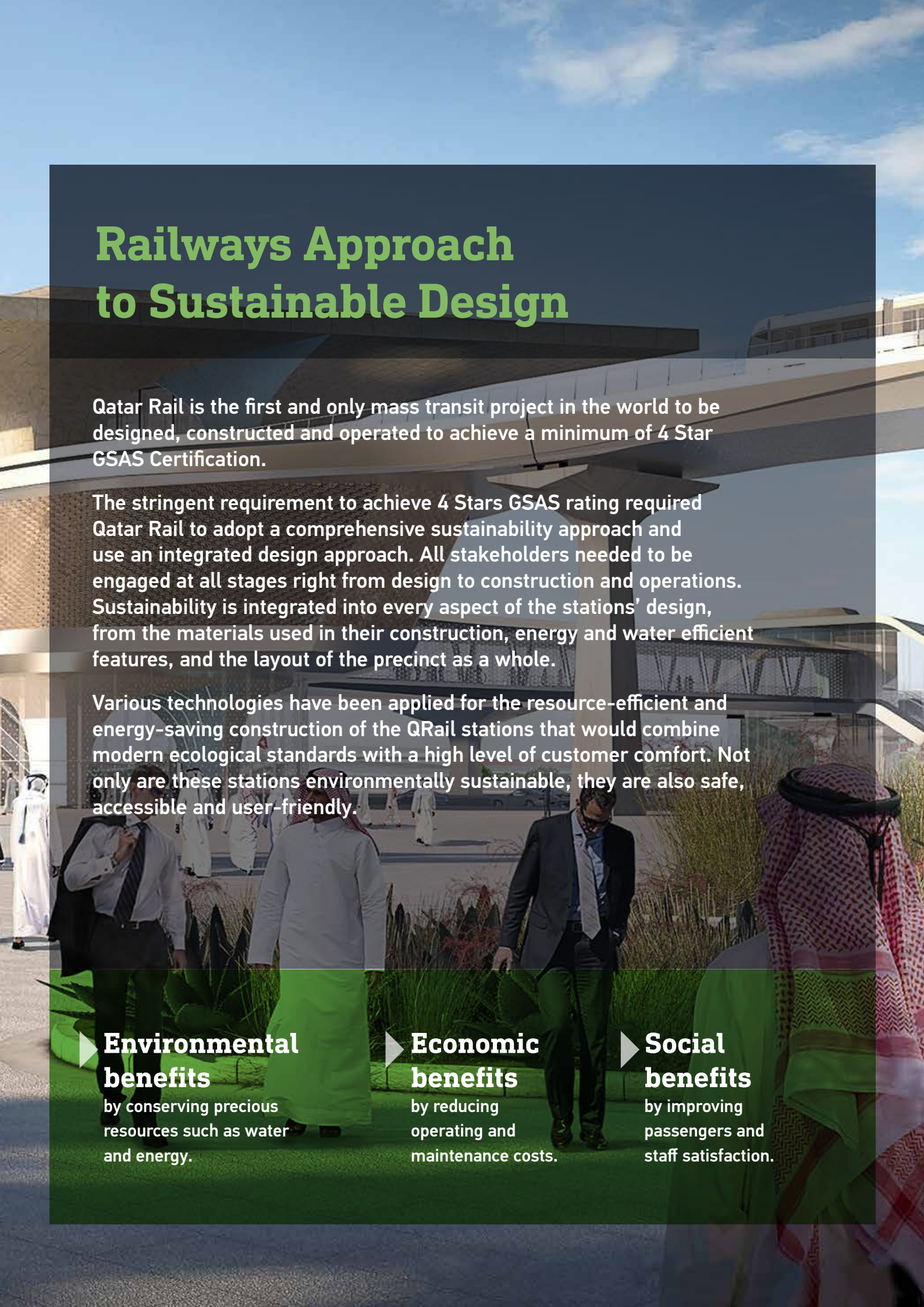
Typical metro station includes a platform/concourse, offices, station control room, ticketing, retail, food/ beverage areas, and ancillary areas.

GSAS Railways Categories

GSAS Railways scheme consists of eight categories and fifty criteria. The following chart summarizes the categories and their associated weights.

Energy - (E)	**25%**
Indoor Environment - (IE)	**17%**
Cultural & Economics - (CE)	**14%**
Site - (S)	**12%**
Urban Connectivity - (UC)	**11%**
Water - (W)	**10%**
Materials - (M)	**8%**
Management & Operations - (MO)	**7%**





Railways Approach to Sustainable Design

Qatar Rail is the first and only mass transit project in the world to be designed, constructed and operated to achieve a minimum of 4 Star GSAS Certification.

The stringent requirement to achieve 4 Stars GSAS rating required Qatar Rail to adopt a comprehensive sustainability approach and use an integrated design approach. All stakeholders needed to be engaged at all stages right from design to construction and operations. Sustainability is integrated into every aspect of the stations' design, from the materials used in their construction, energy and water efficient features, and the layout of the precinct as a whole.

Various technologies have been applied for the resource-efficient and energy-saving construction of the QRail stations that would combine modern ecological standards with a high level of customer comfort. Not only are these stations environmentally sustainable, they are also safe, accessible and user-friendly.

Environmental benefits
by conserving precious resources such as water and energy.

Economic benefits
by reducing operating and maintenance costs.

Social benefits
by improving passengers and staff satisfaction.

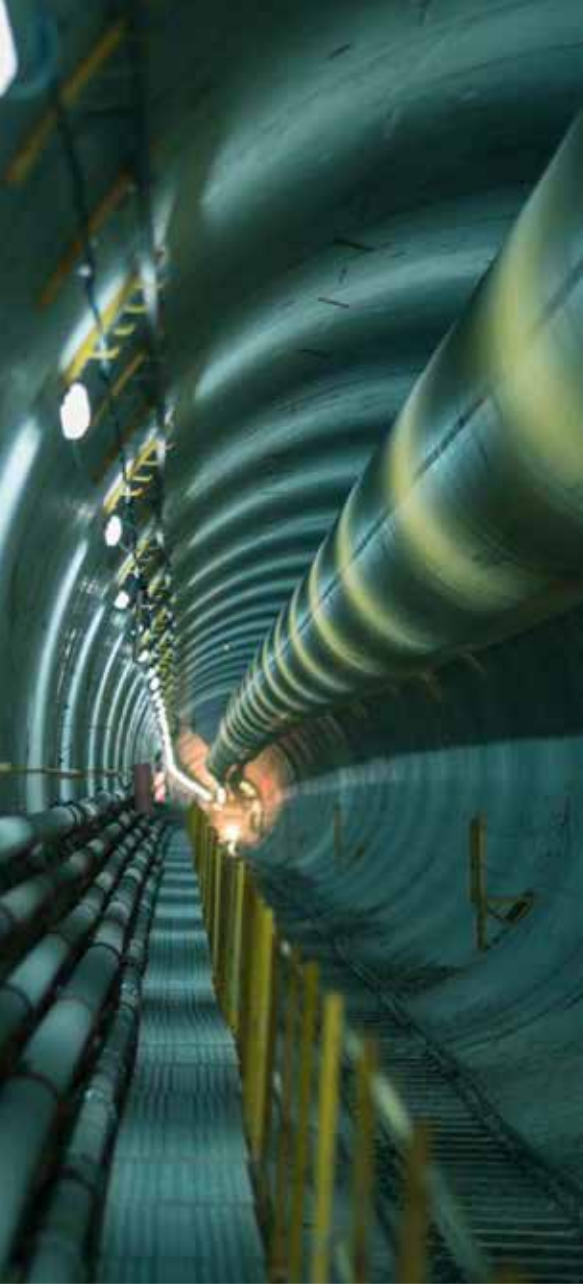
Energy

- Minimization of station's envelope thermal conductivity and Improvement to the superstructure elements by optimization of U values and glazing solar transmittance.
- Use of energy efficient LED lighting and advanced lighting controls system to ensure maximum energy efficiency and user's visual comfort.
- Sizing of mechanical ventilation system by closely following relevant standards to maintain an adequate level of CO2 and ensure minimum energy wastage and maximum thermal comfort.
- Specification of heat recovery units (where feasible/cost effective).
- Specification of energy efficient cooling plant.

Sustainability Highlights

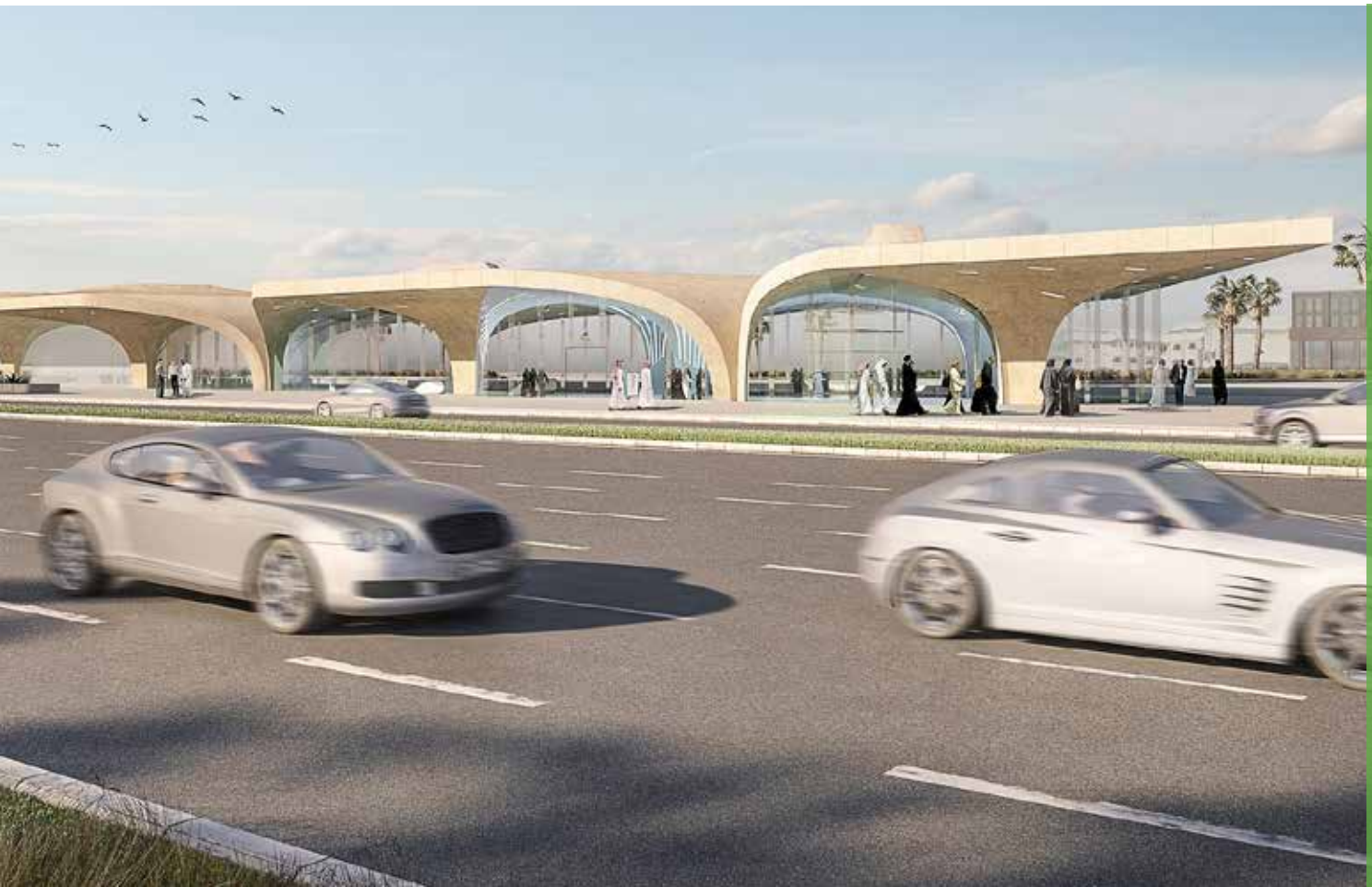
Water

- Specification of efficient plumbing fixture including sensor controlled and percussion taps, aerators and dual flush toilets.
- Specification of the condensate drain recovery system (at selected stations).
- Specification of the efficient (drip-type) irrigation system and use of native plants with low water demand.



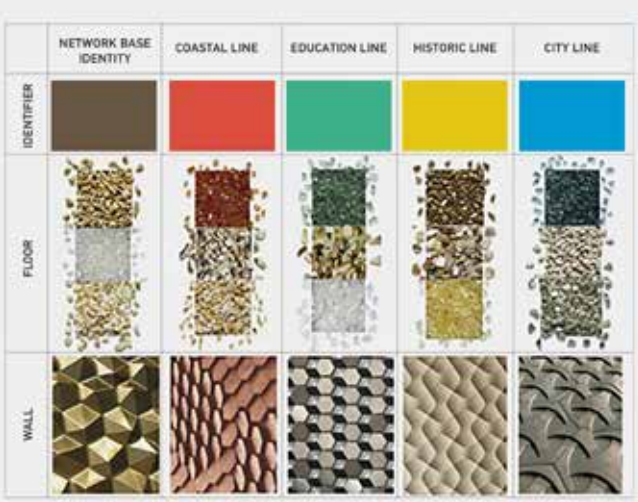
Urban Connectivity

- Enhancing transportation system by providing dedicated taxi pick/drop off points, additional bus stops, space planning for future shuttle bus service etc.
- Providing additional public amenities within the stations.
- Ensuring that both general and disabled accessibility is improved inside and outside of the stations and providing adequate pedestrian signage and wayfinding.
- Preservation of land, water bodies and habitat falling with station boundaries (and enhancing its value where reasonably possible).
- Specification of light colours for superstructure finishes to minimize the heat island effect.

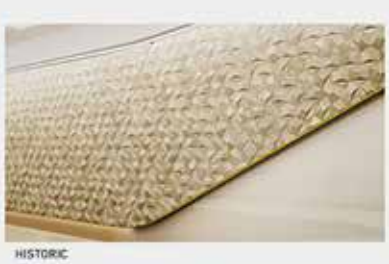


Materials

- Emphasis on procuring materials locally (whenever possible).
- Use of materials with recycled content.
- Maximize use of natural materials for hard landscaping.




COASTAL


HISTORIC


EDUCATION


CITY

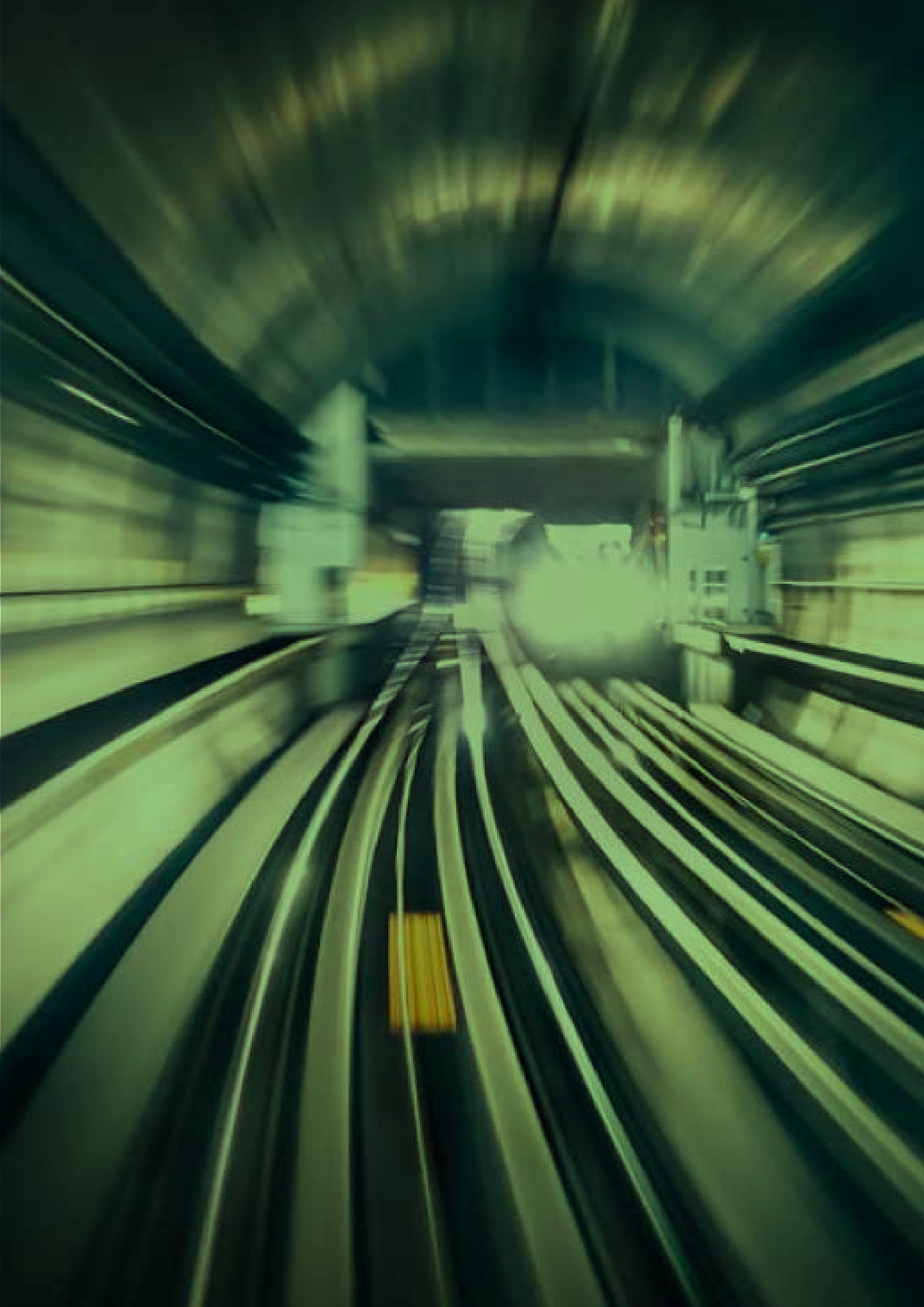
Indoor Environment

- Design to deliver required thermal comfort in terms of temperature and relative humidity based on internationally accepted standards.
- Mechanical ventilation fresh air rates and illumination levels to follow relevant international standards.
- Improved indoor acoustic quality for user's comfort .
- Avoidance and controlled use of materials with VOC content.
- Potential contaminant sources within the stations to be controlled by the use of physical separation and controlled ventilation system.

Management & Operation

Main priorities under this category are generally as follows:

- Provision of organic and recyclable waste management.
- Provision of energy and water submeters.
- Provision adequate building management system to ensure adequate operation of systems and equipment.
- Specification of the energy-efficient vertical transportation system.
- Provision on relevant preventive maintenance plan.



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