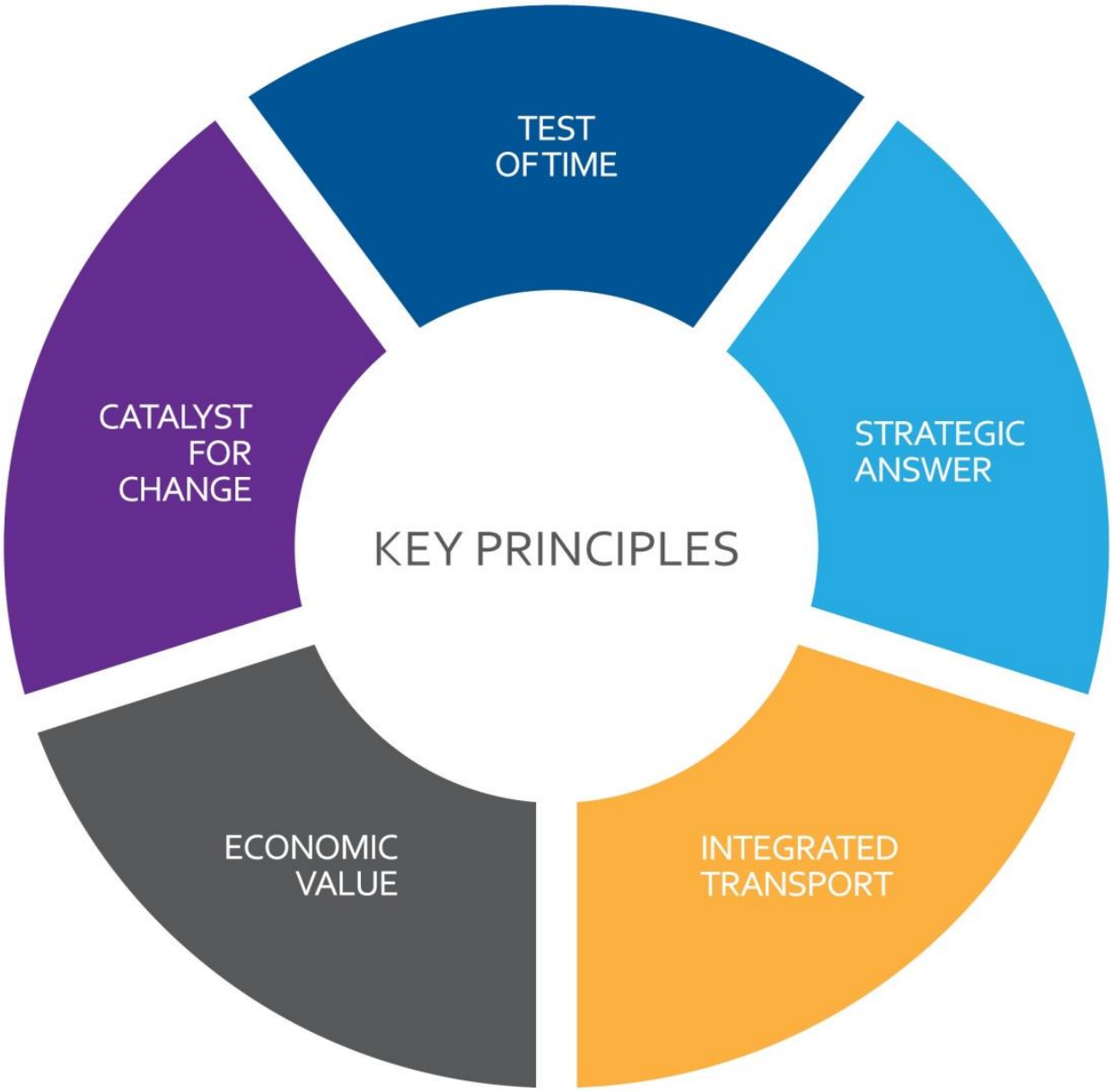
# HS2 – Headhouses and Portals Design Approach

Martin Short RIBA
Technical Lead
HS2 Ltd

March 2016

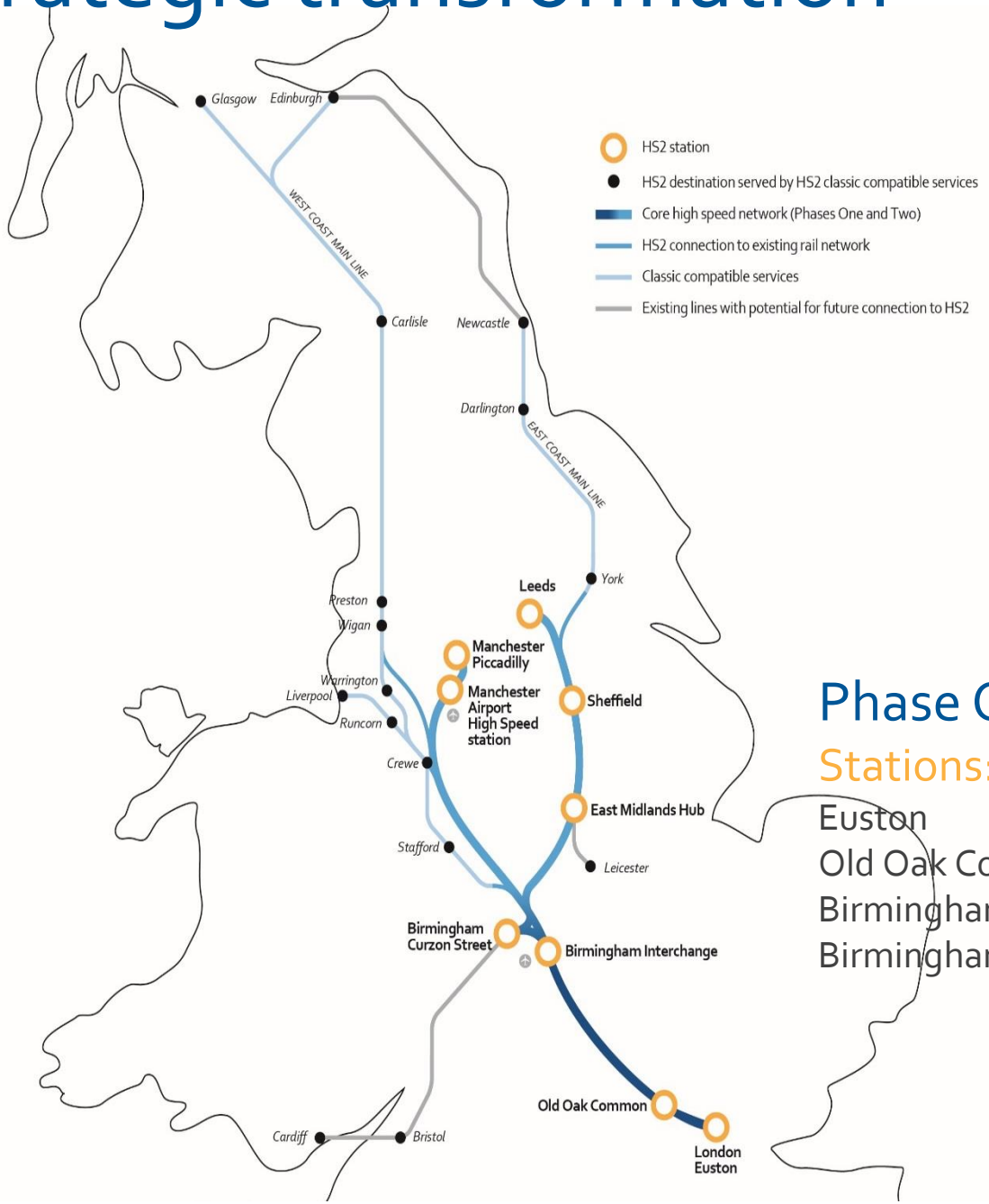

TEST OF TIME
STRATEGIC ANSWER
INTEGRATED TRANSPORT
ECONOMIC VALUE
CATALYST FOR CHANGE
KEY PRINCIPLES

# HS2: a strategic transformation

## Phase Two

### Stations:

East Midlands Hub
Sheffield
Leeds
Manchester Piccadilly
Manchester Airport

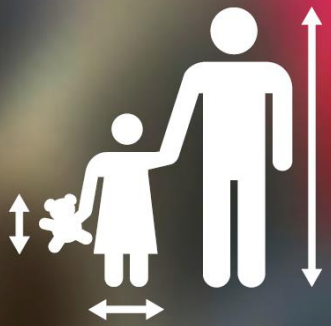



## Phase One

### Stations:

Euston
Old Oak Common
Birmingham Interchange
Birmingham Curzon Street

**People**
Design for everyone to benefit and enjoy



**Place**
Design to create a sense of place

**Time**
Design to stand the test of time

People centred design

Contextual design response

Timeless design

# HS2 Design Vision

*"HS2's principal objective is to deliver an inspired design, the best in worldwide design. The system will be delivered through all the designed elements coming together. Every design task is critical."*

Simon Kirby - CEO, High Speed Two (HS2) Ltd

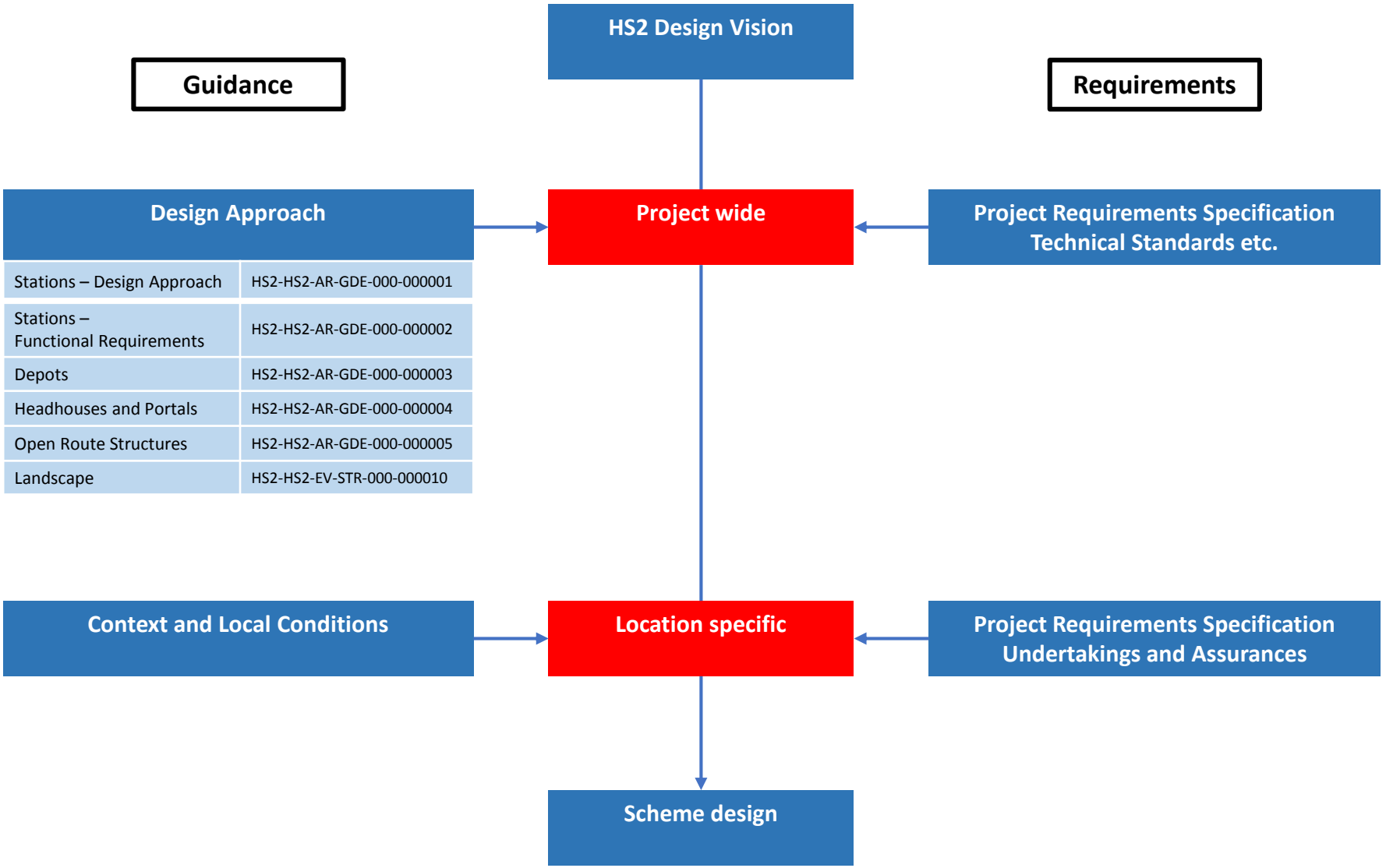
*"It's not just about the architecture of stations, but the land in between. We must think about everything we do in terms of design and quality, because we will be leaving it for others to inherit."*

David Higgins - Chairman, High Speed Two (HS2) Ltd

*"Great design is essential to HS2. This vital railway is a key part of our long-term economic plan. We want HS2 to make the country proud and show the world what great British design can do."*

Patrick McLoughlin - Transport Secretary

# Design Approach Matrix



# HS2

# HEADHOUSE BUILDINGS AND PORTALS DESIGN APPROACH

09 December 2015

# Purpose of the Design Approach Documents

The principal purpose of the design approach documents is to guide the design for HS2.

Suppliers and contractors will be required to deliver against these guidelines during the next design stages.

The HS2 Design Panel will judge the designs against these guidelines.

Mandatory requirements will be identified in the HS2 project requirements specification.

# Design principles

The Design Approach puts forward six design principles for headhouses and portals which stem directly from the HS2 Design Vision:

- Contextual Approach
- Functionality, Maintainability and Flexibility
- Safety and Security
- Sustainability
- Value for Money
- Buildability

# Integrated design concept

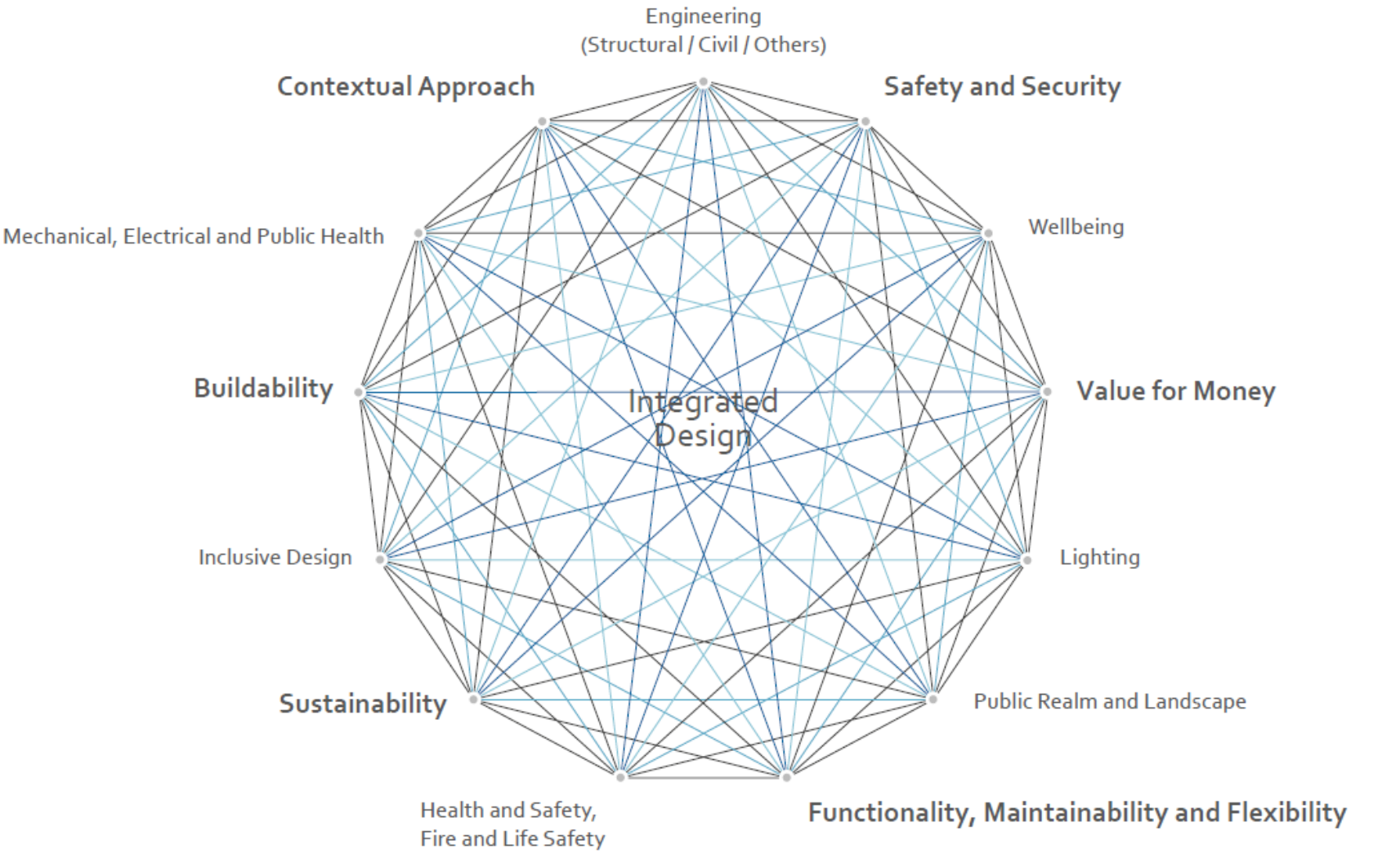



Diagram illustrating integrated design concept

Aerial Photo showing typical Rural Grain
Image ©2015 Google

Aerial Photo showing typical Urban Grain
Image ©2015 Google

# A typical headhouse

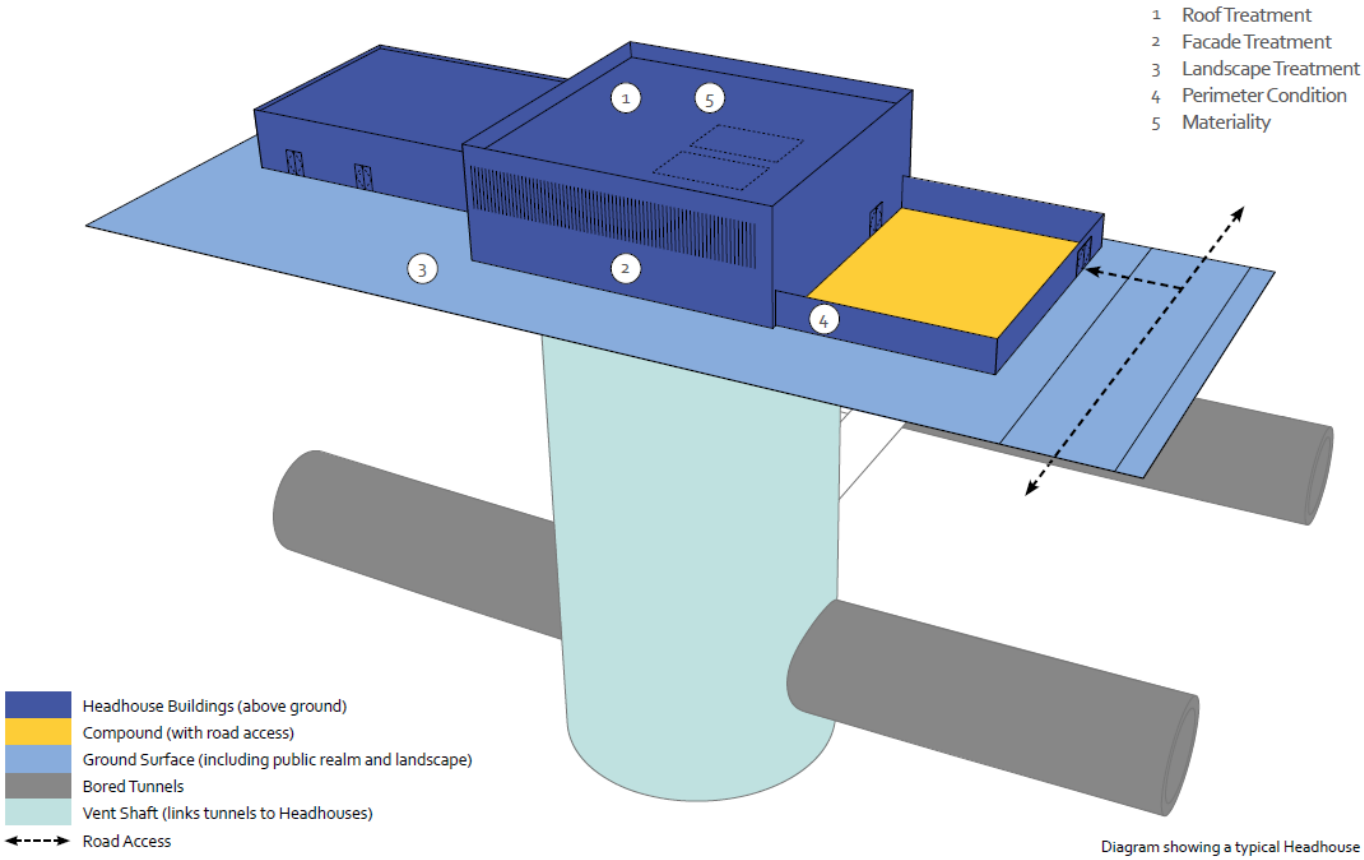
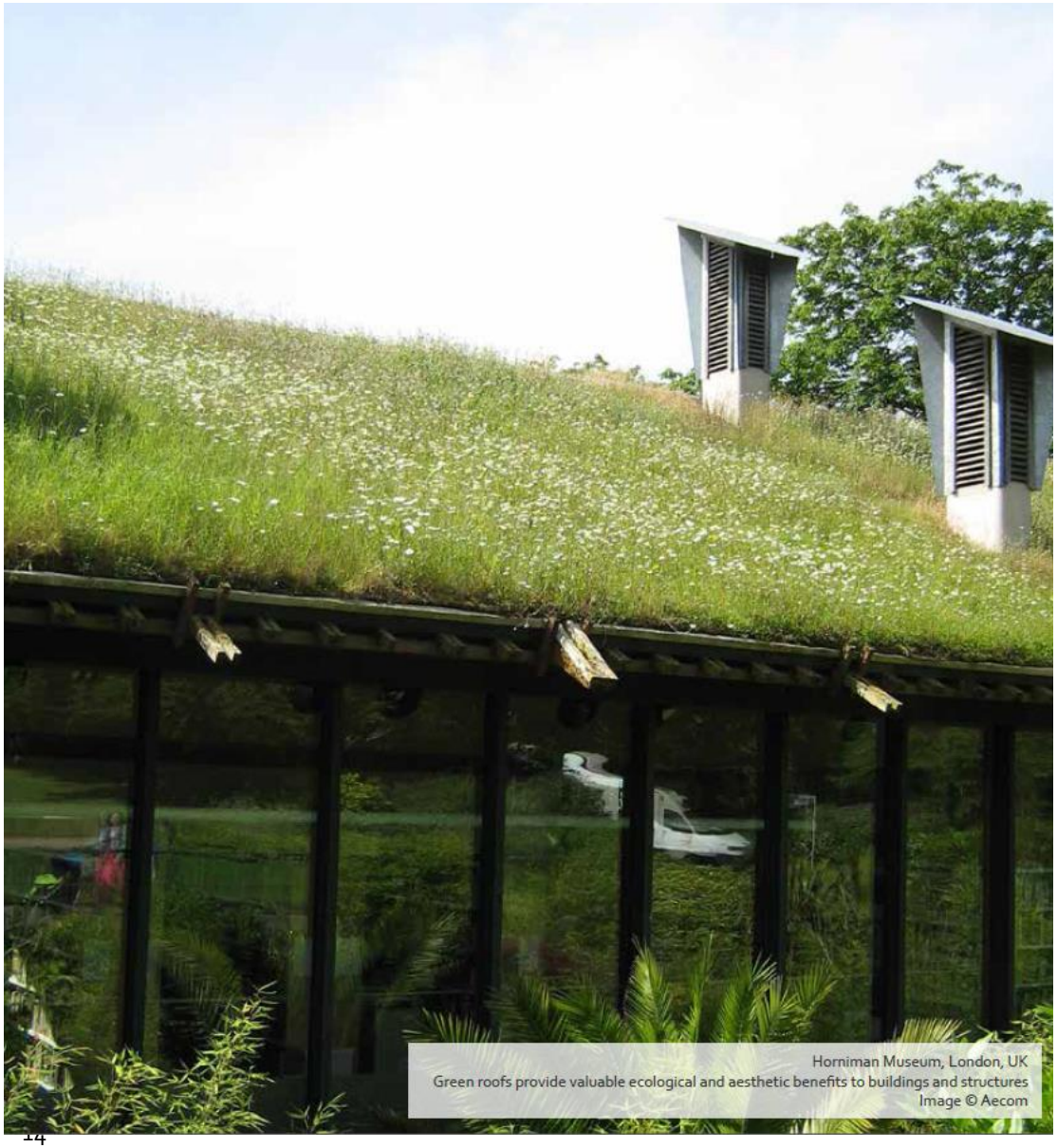



Diagram showing a typical Headhouse

# Headhouse design approach



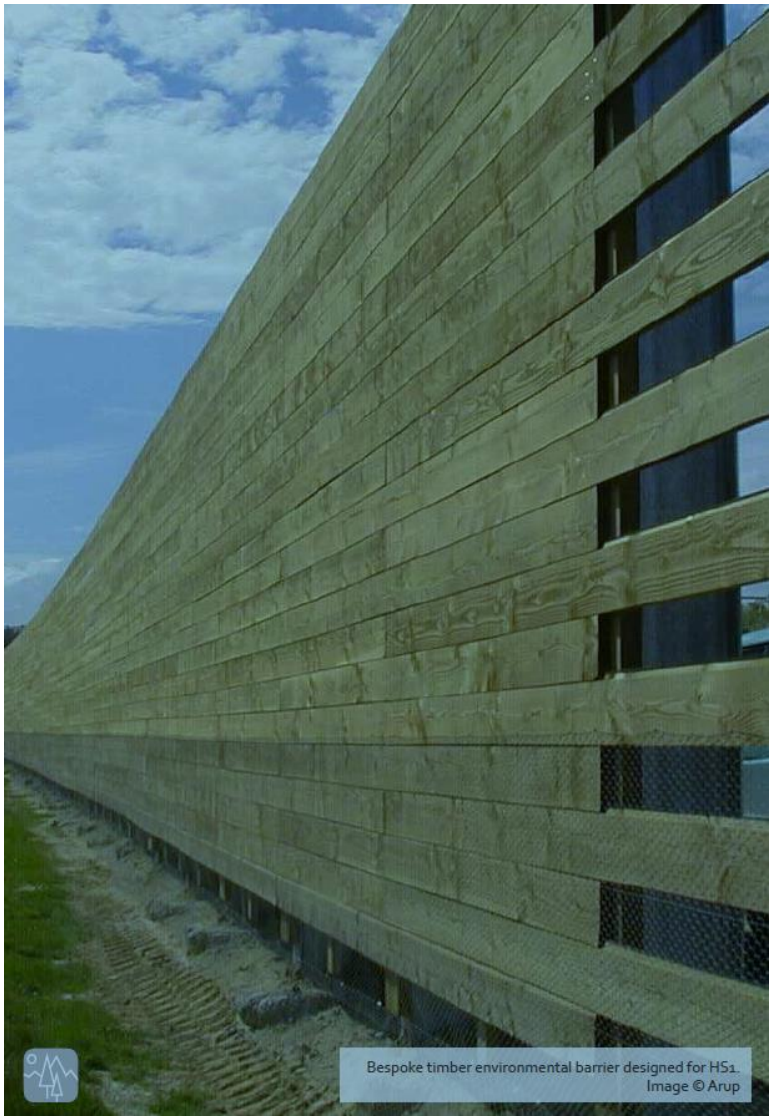
Horniman Museum, London, UK
Green roofs provide valuable ecological and aesthetic benefits to buildings and structures
Image © Aecom

Guys Hospital, London, UK
Plant set back from the edge of the roof
Image © WestonWilliamson+Partners

Guys Hospital, London, UK
Facade extends above roofline to further mask plan on roof
Image © WestonWilliamson+Partners

# Headhouse design approach

Jubilee Line Headhouse, Southwark, London, UK
Image © WestonWilliamson+Partners



Bespoke timber environmental barrier designed for HS1.
Image © Arup

# Headhouse design approach

Hard and soft landscape interface at Canary Wharf, London, UK
Image © David Iliff

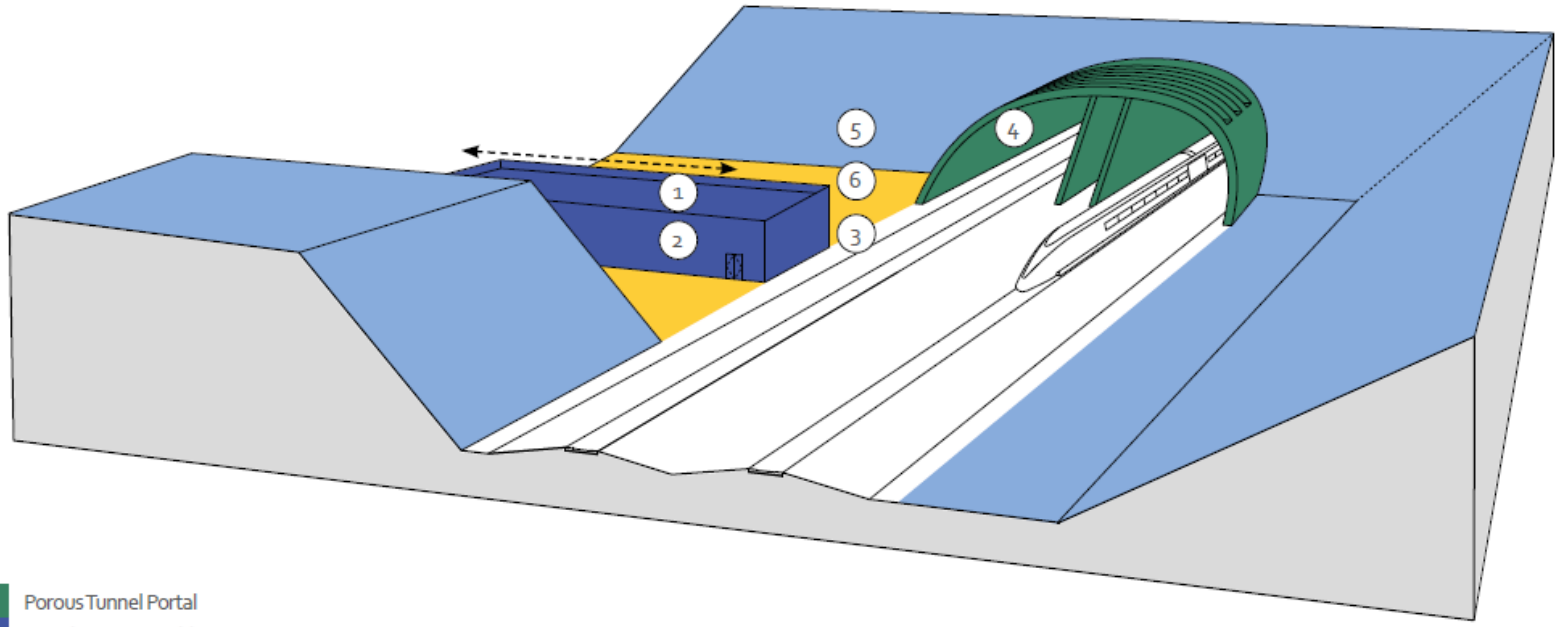
# Headhouse design approach

# Headhouse design approach


# A typical portal

1 Roof Treatment
2 Facade Treatment
3 Perimeter Condition
4 Portal Treatment
5 Landscape Treatment
6 Materiality

N.B. For 1, 2 and 3 see Headhouses and Portal Support Buildings




Porous Tunnel Portal
Portal Support Building
Ground Surface (including public realm and landscape)
Compound (with road access)
Rail Corridor
Road Access

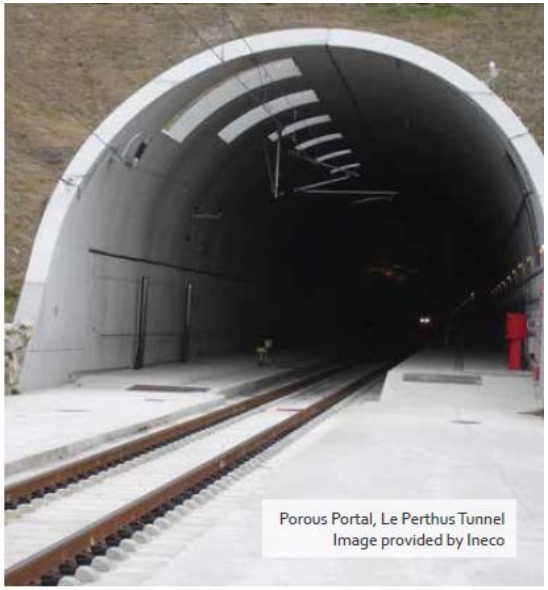
Diagram illustrating a typical Headhouse Building

# Portal design approach

Non-Porous Tunnel Portal, Pulverdingen, Germany
Image © K. Jähne

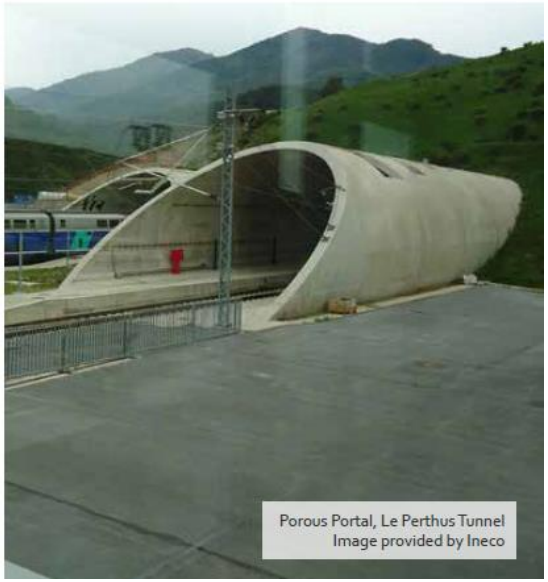
# Portal design approach

Göggelsbuch Tunnel, Germany
image © Sebastian Terfloth



Porous Portal, Le Perthus Tunnel
Image provided by Ineco

Lötschberg Tunnel Portal, Switzerland
Image © Adrian Michael

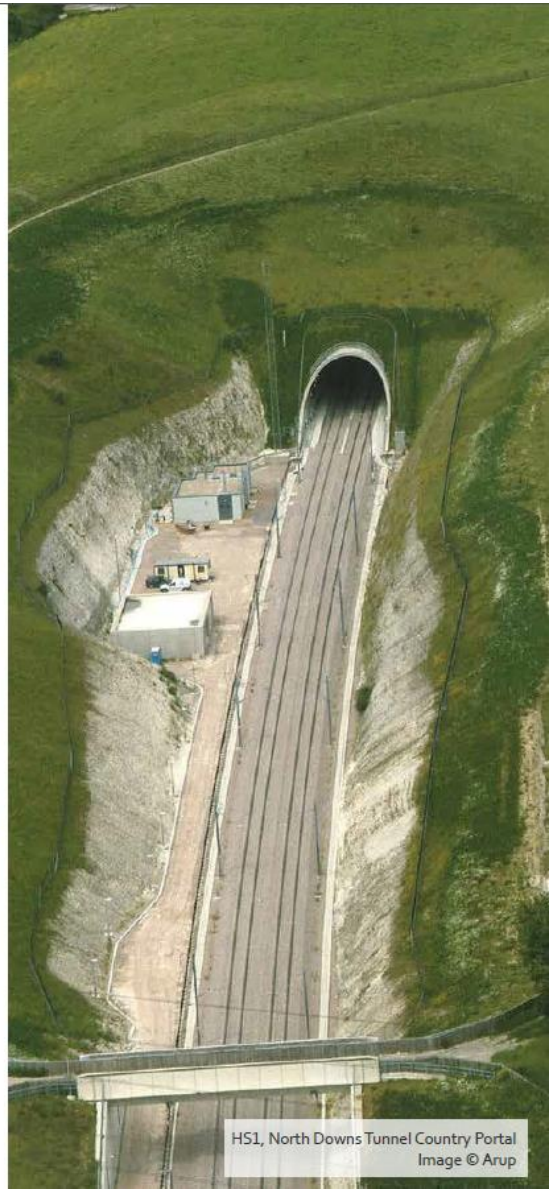


Porous Portal, Le Perthus Tunnel
Image provided by Ineco

# Portal design approach

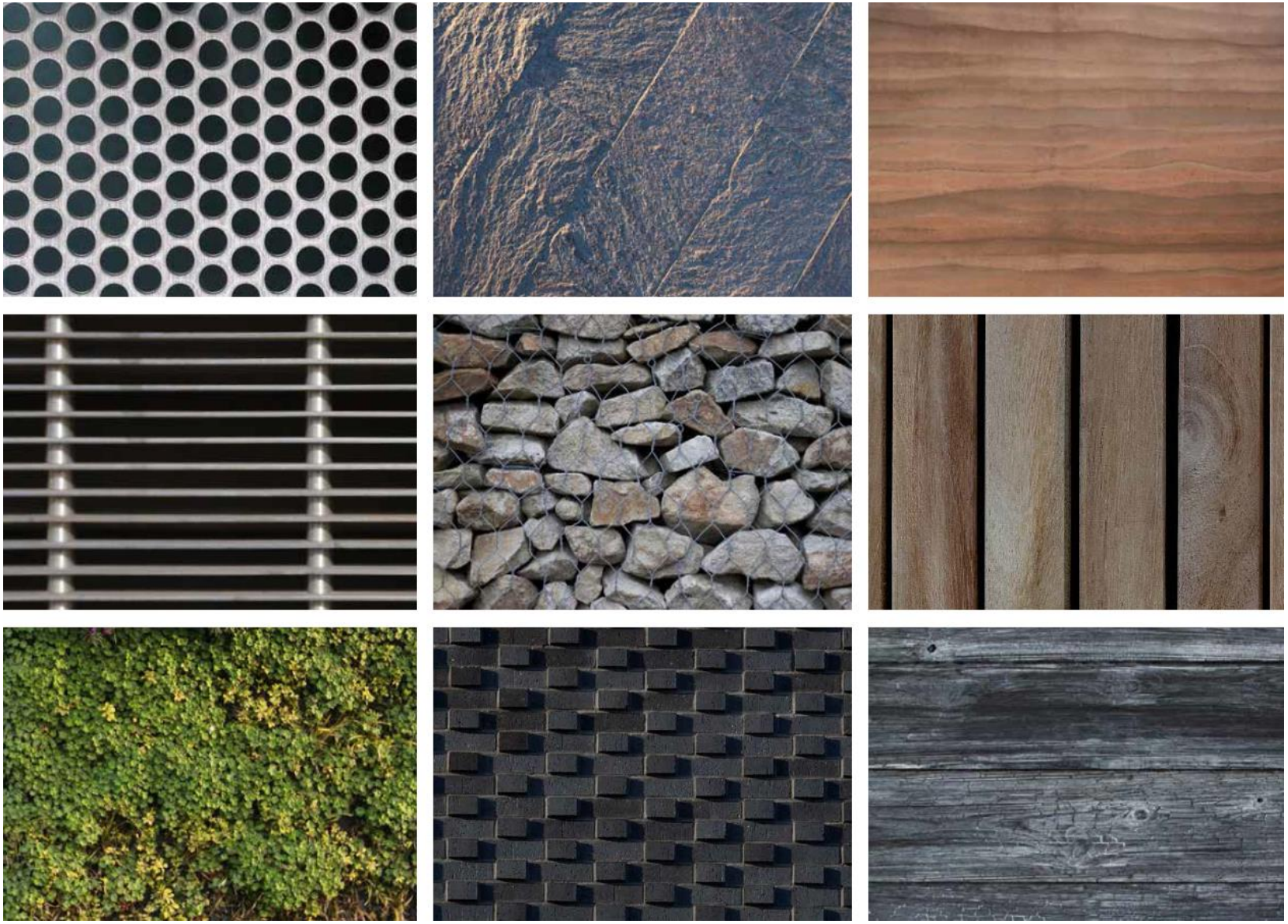

Irlahuell Tunnel Portal, Germany
Image © Sebastian Terfloth


Stadtbahn Bonn
Image ©Leit

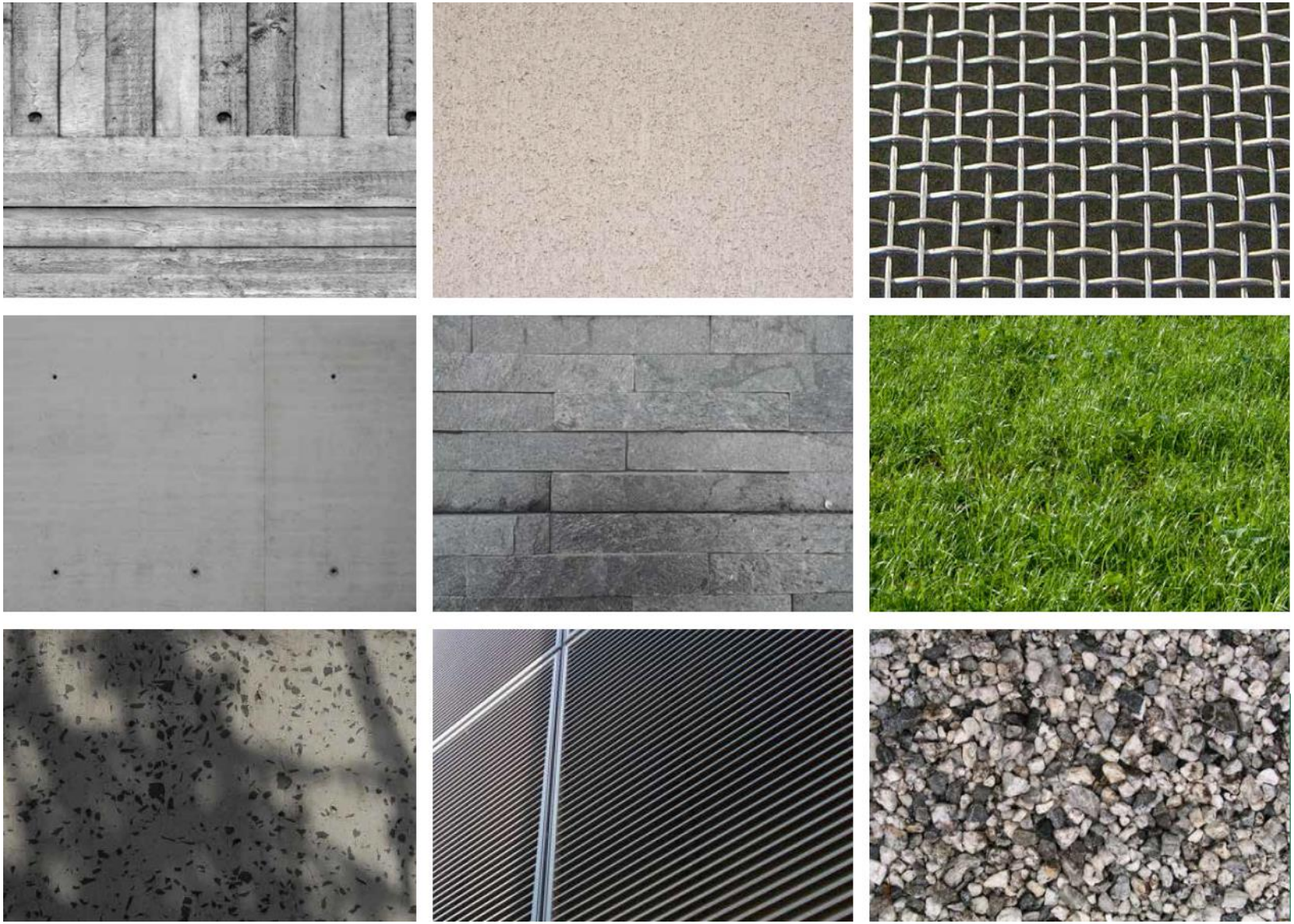

HS1, North Downs Tunnel Country Portal
Image © Arup

# Buildability

# Materiality



# Materiality



# Materiality