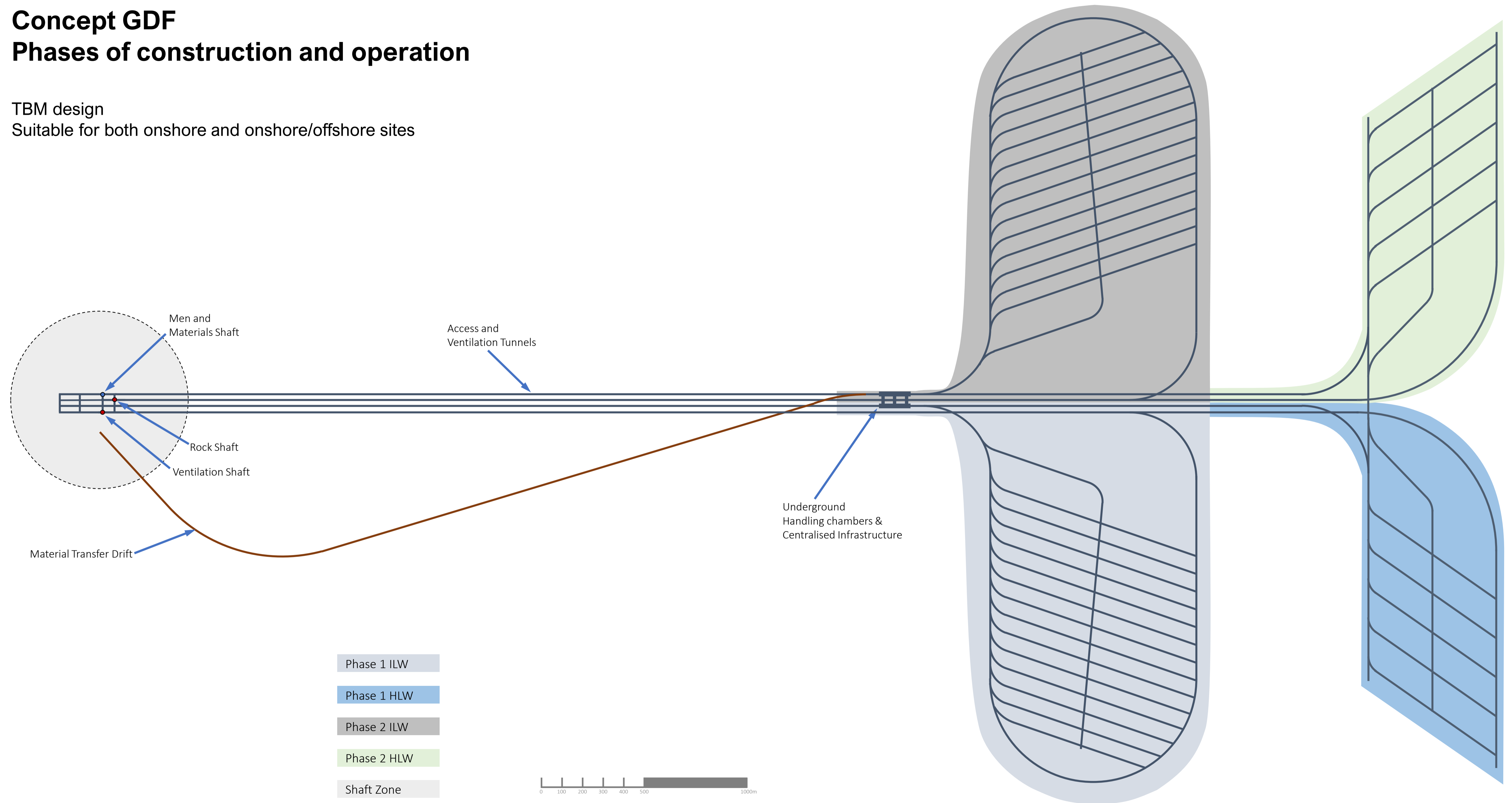


**APPENDIX B:
CONCEPT TBM
GDF LAYOUTS**

October 2022

Concept GDF Phases of construction and operation

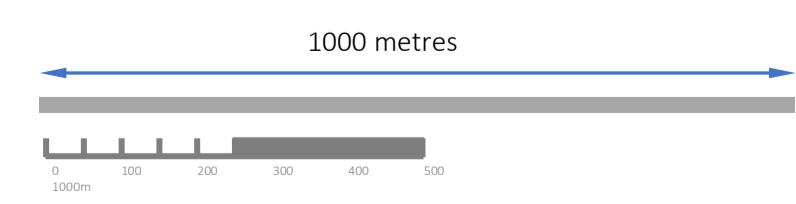
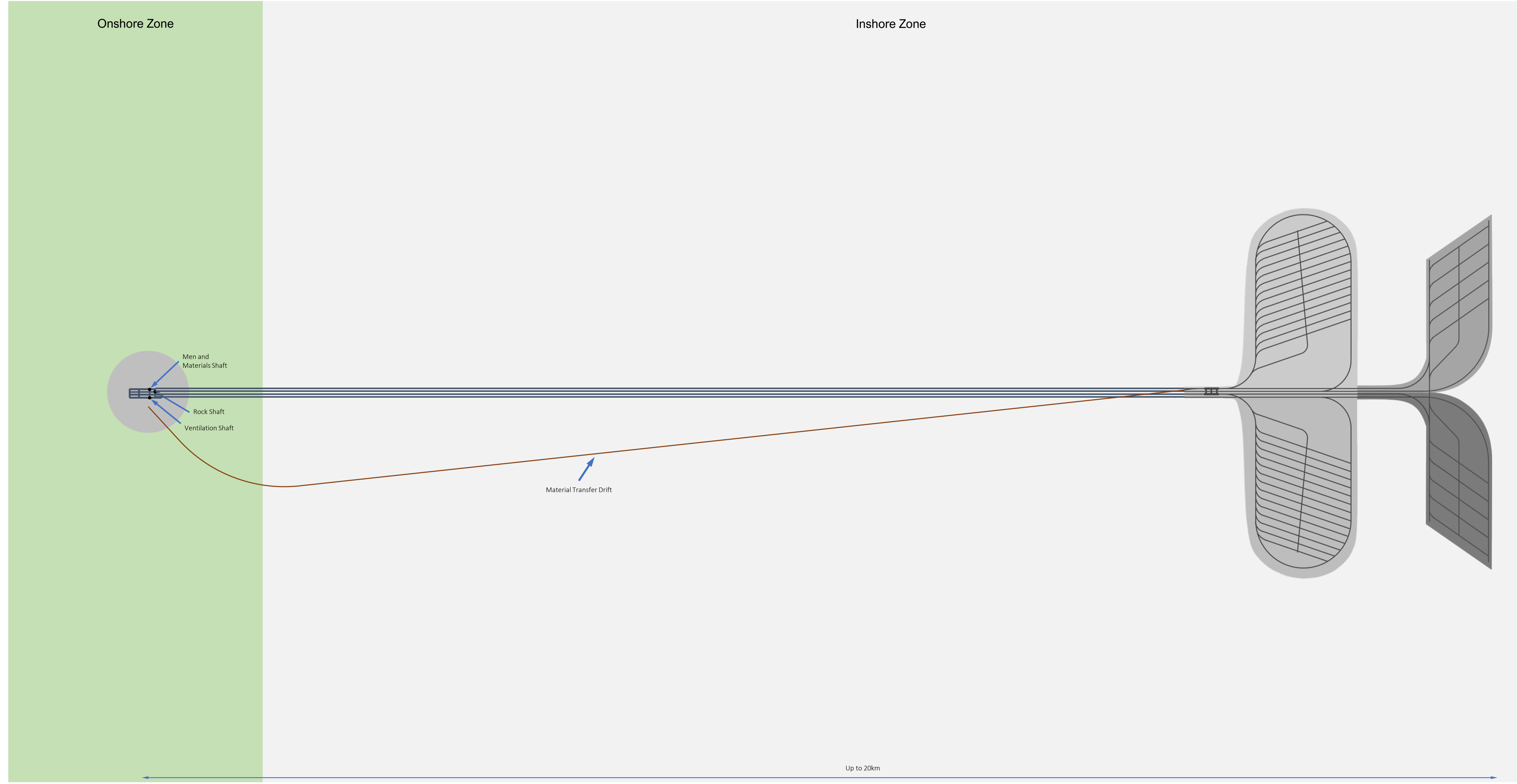
TBM design
Suitable for both onshore and onshore/offshore sites



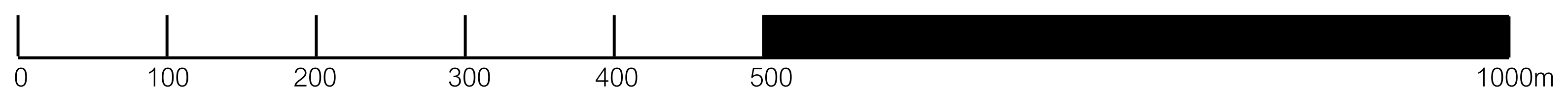
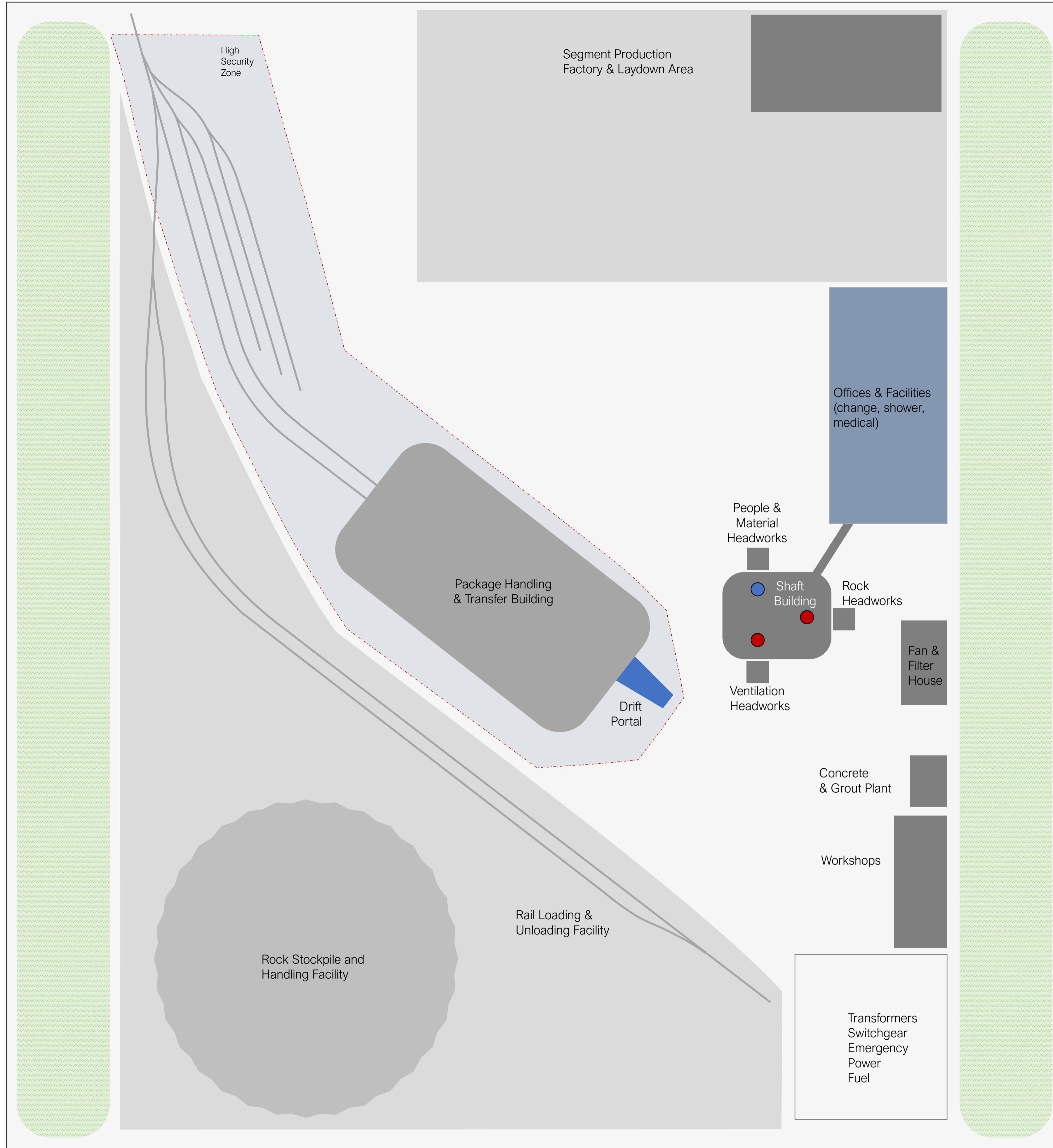
Concept Nearshore GDF

Phases of construction and operation

TBM design

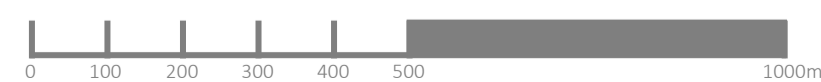
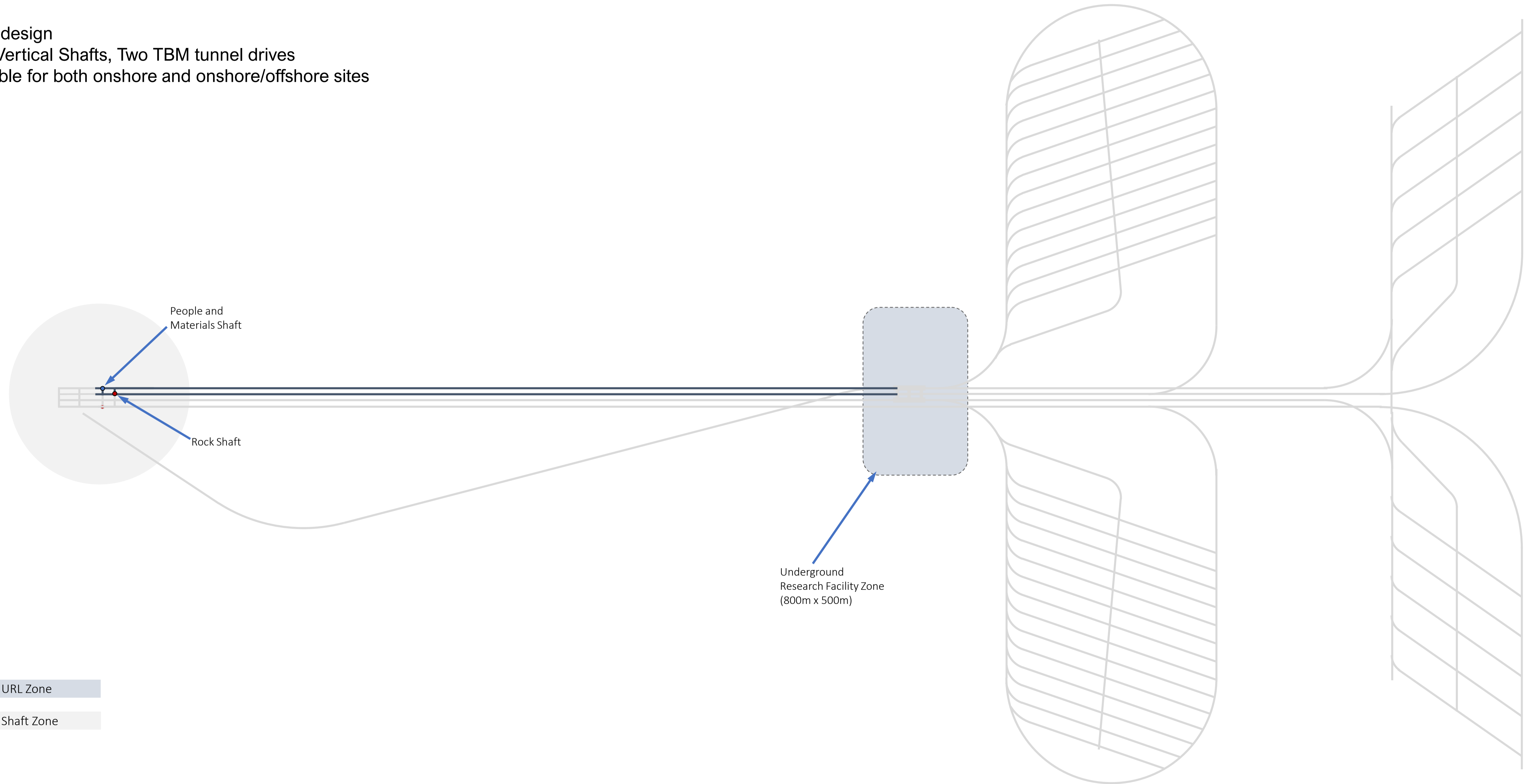


Concept GDF
 Example Surface
 Facilities Layout
 1.3km x 1.2km



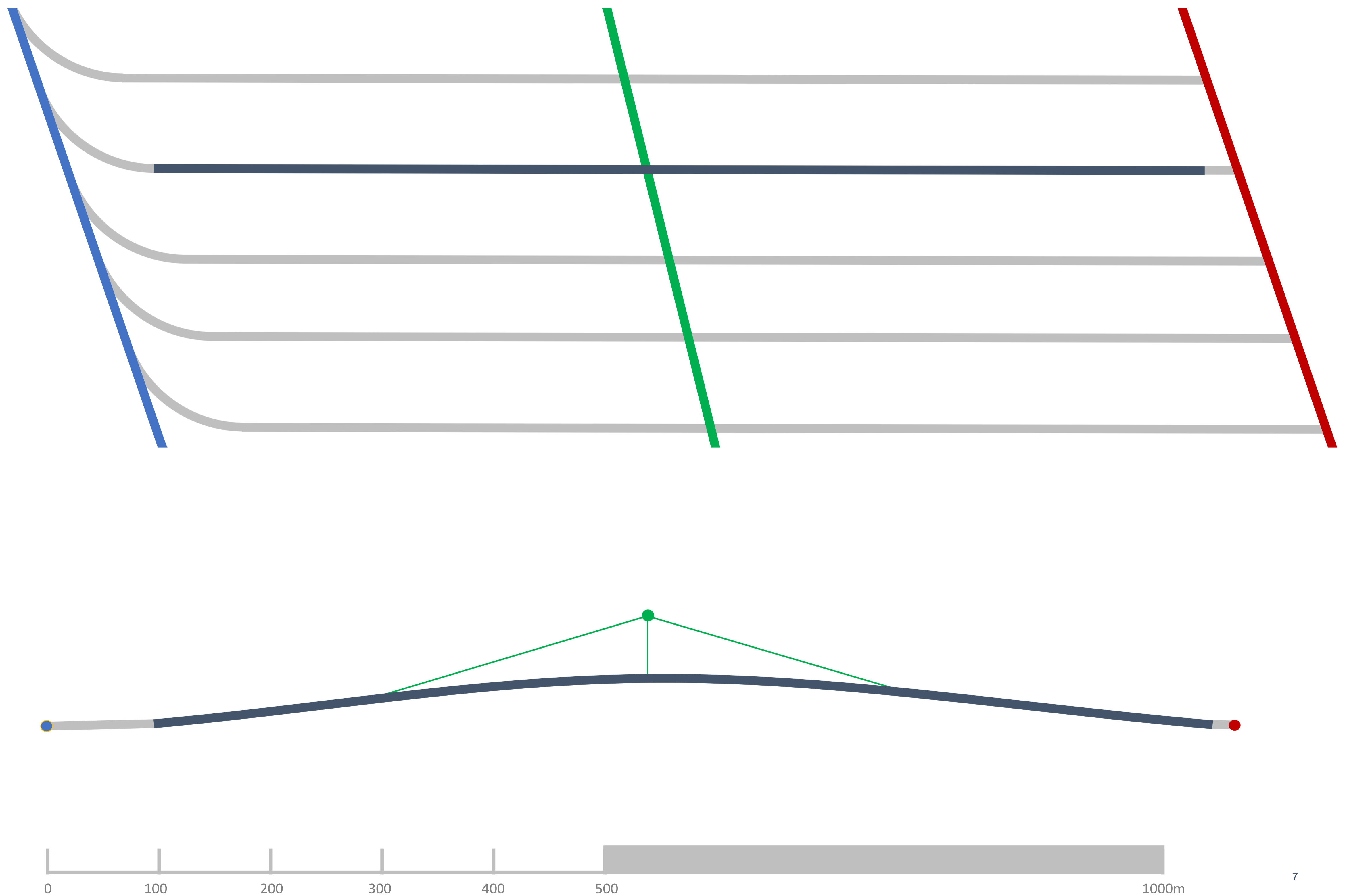
Concept GDF Underground Research Laboratory (URL)

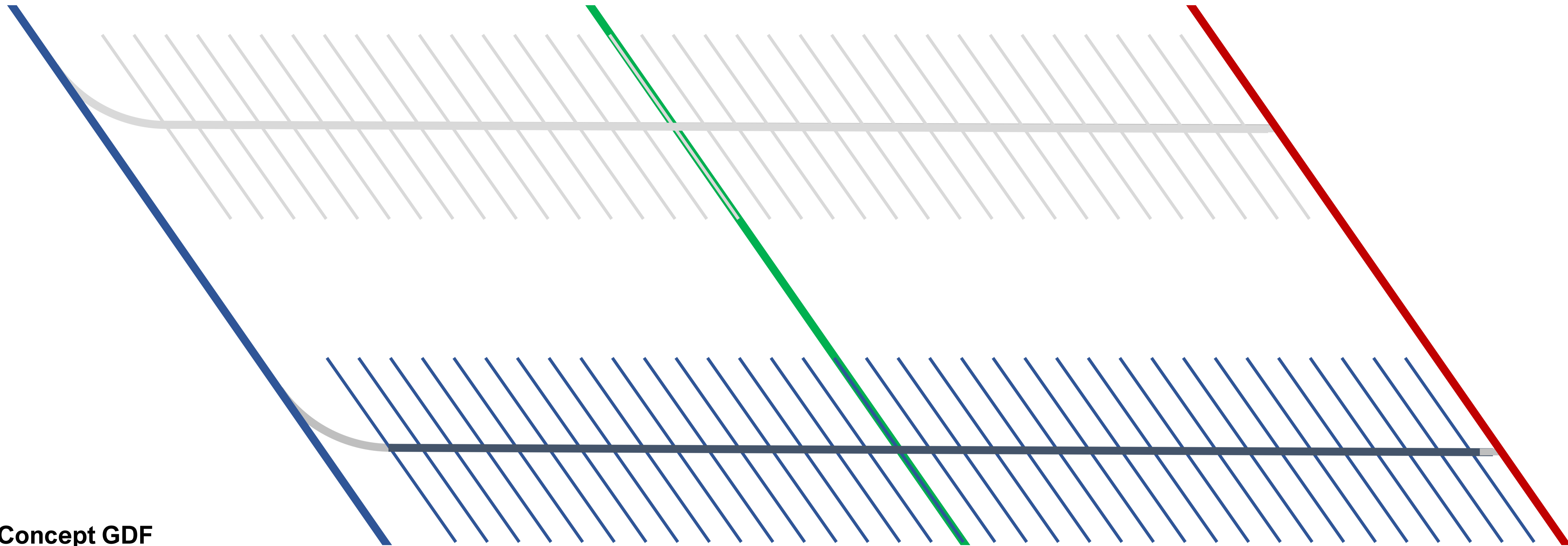
TBM design
Two Vertical Shafts, Two TBM tunnel drives
Suitable for both onshore and onshore/offshore sites



Concept GDF Cross-section showing an example ILW chamber

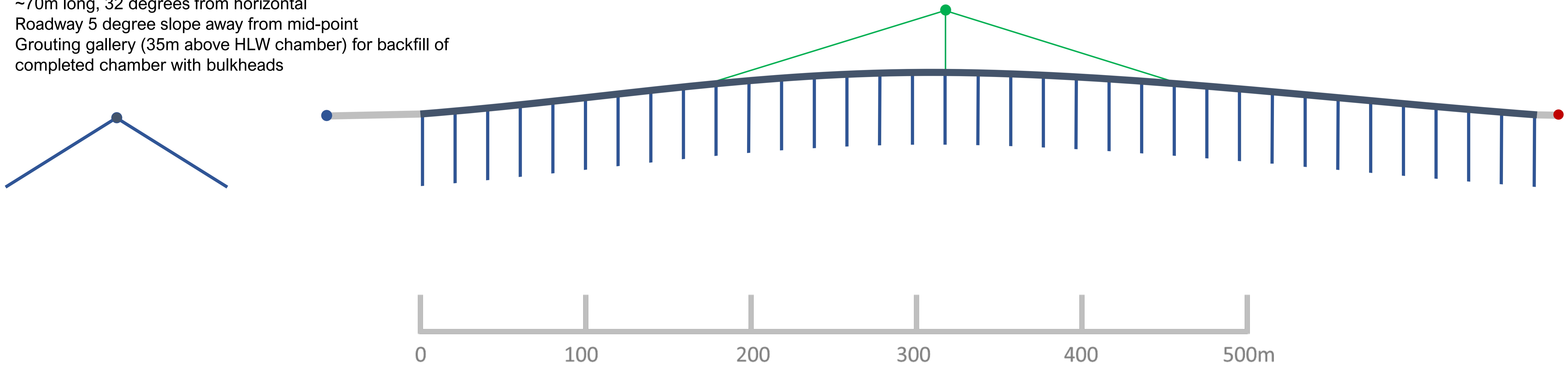
5-degree slope away from mid-point
Overhead grouting gallery chamber for backfilling
Bulkheads installed at each end





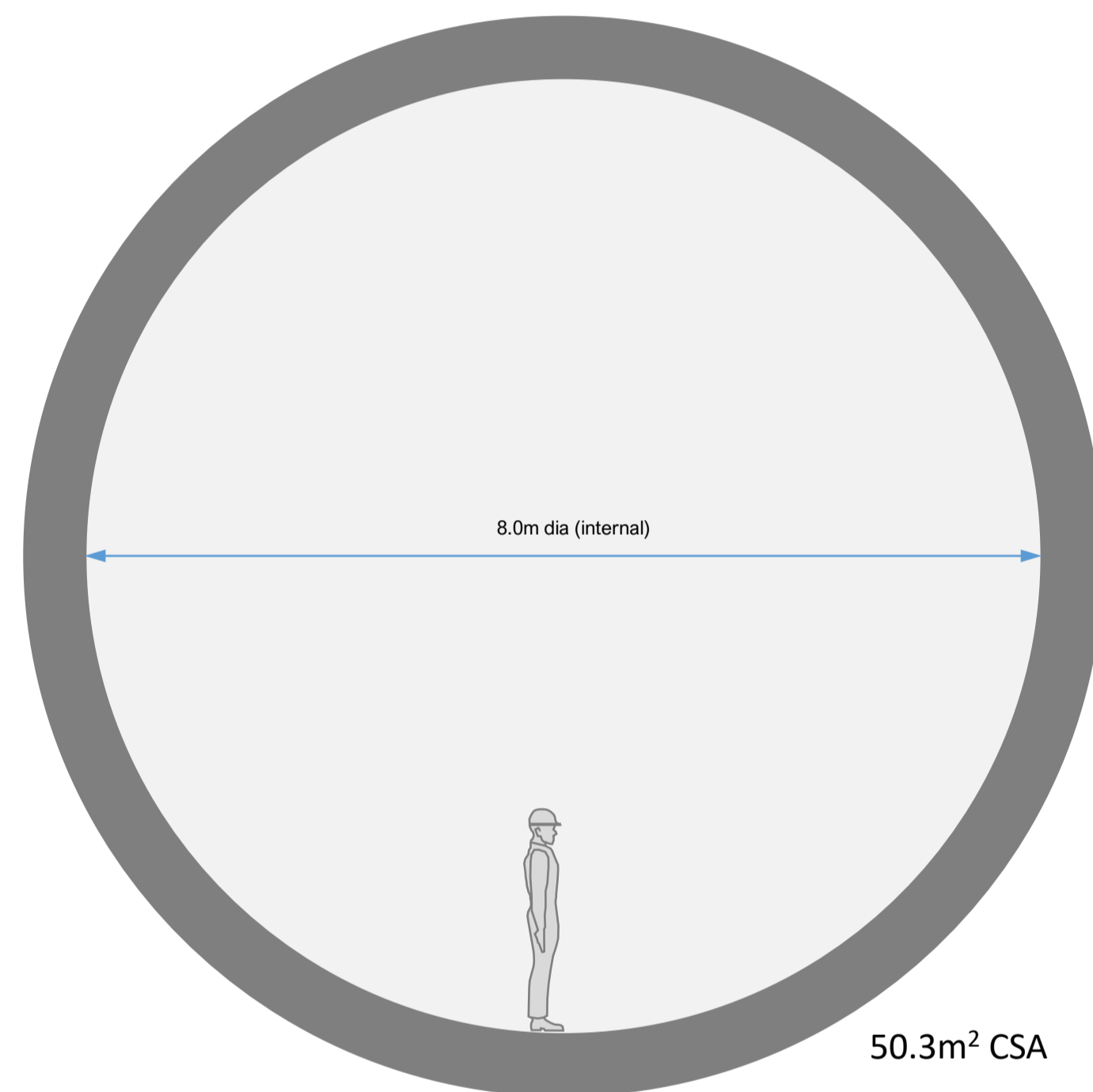
Concept GDF
Cross-section showing
HLW chamber & inclined drilled shafts

700m long chamber
70 shafts (35 either side), 20m spacing
~70m long, 32 degrees from horizontal
Roadway 5 degree slope away from mid-point
Grouting gallery (35m above HLW chamber) for backfill of
completed chamber with bulkheads

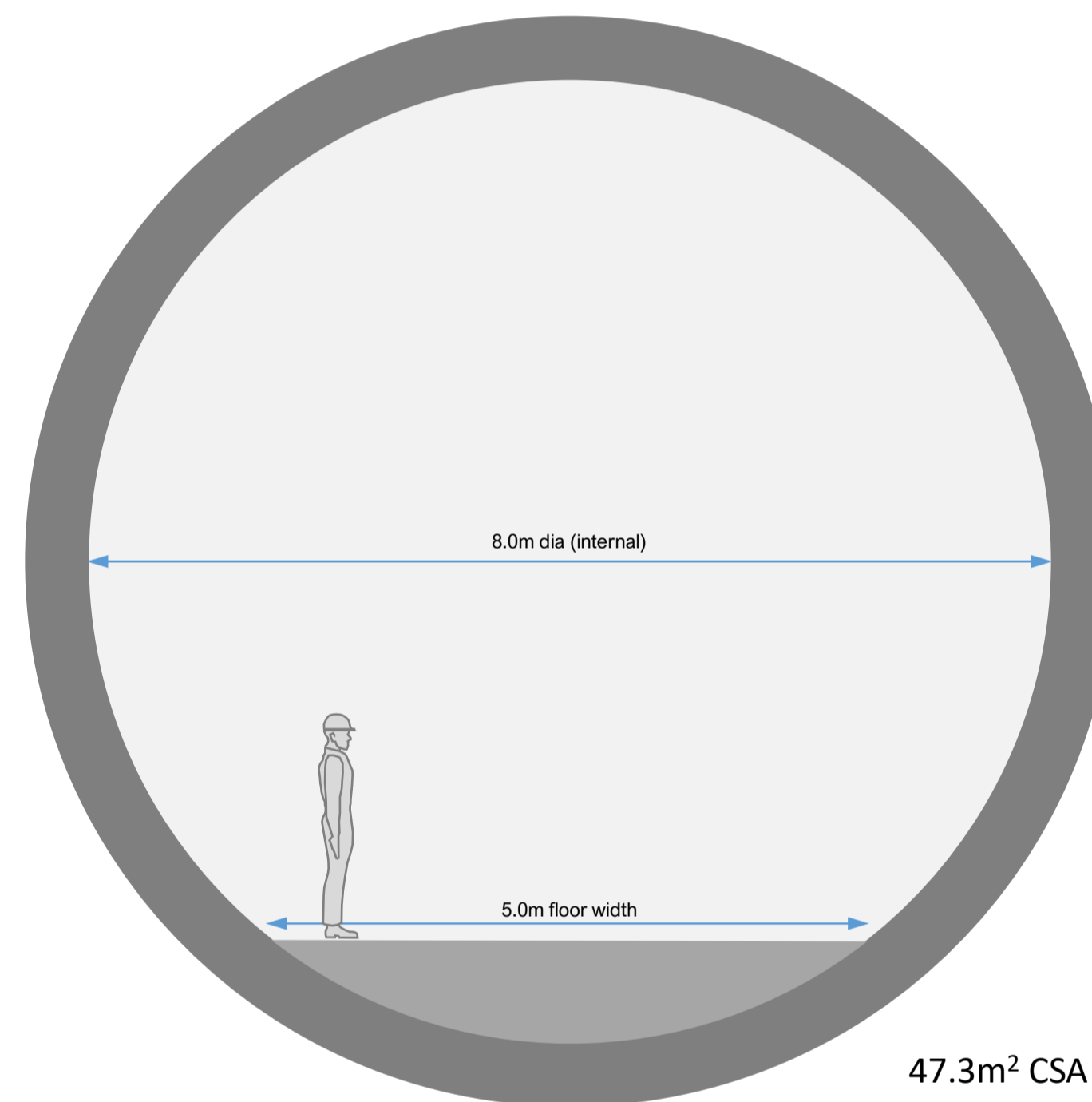


Concept GDF Construction Tunnel Cross Sections

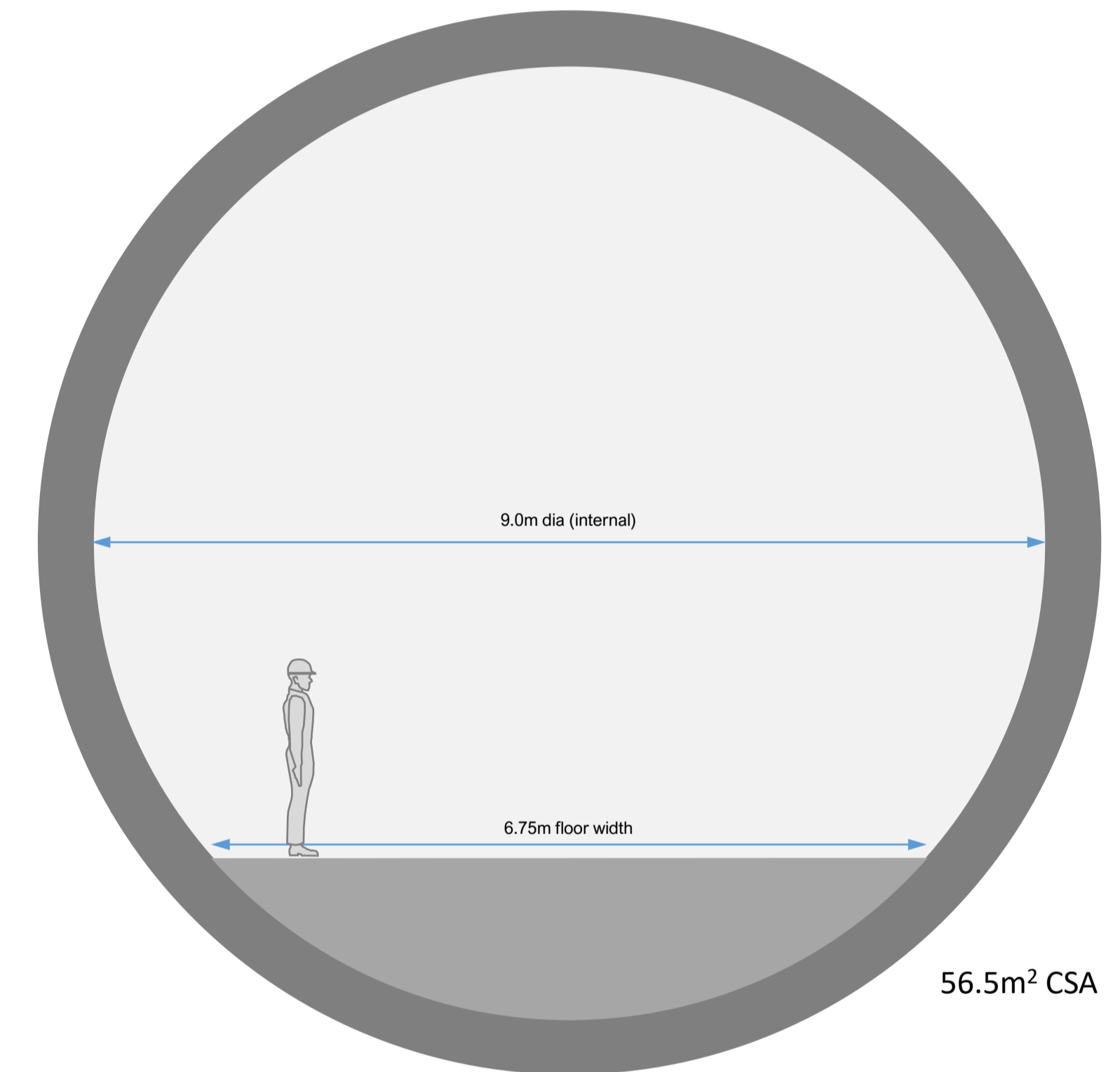
Access Tunnel Drive (as-built)
8.0m internal diameter, ~9.1m external diameter
(excluding temporary fittings, walkway,
conveyor, ventilation, pipes etc)



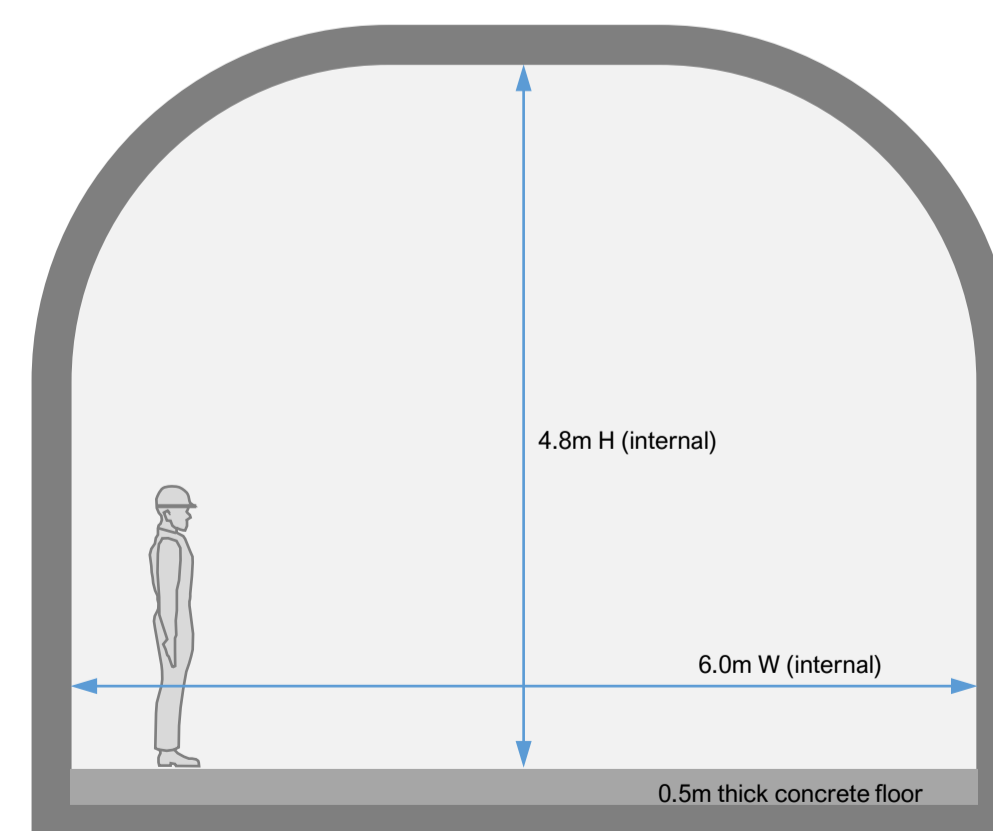
Operational Access Roadway
5m floor width
(pre-cast concrete invert)



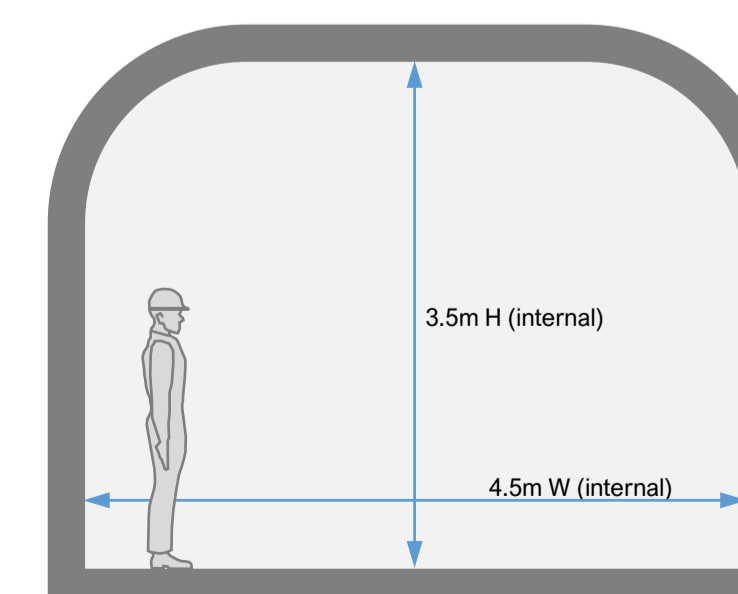
Operational ILW Chamber
9.0m internal diameter, ~10.2m external diameter
6.75m floor width
(pre-cast concrete invert)



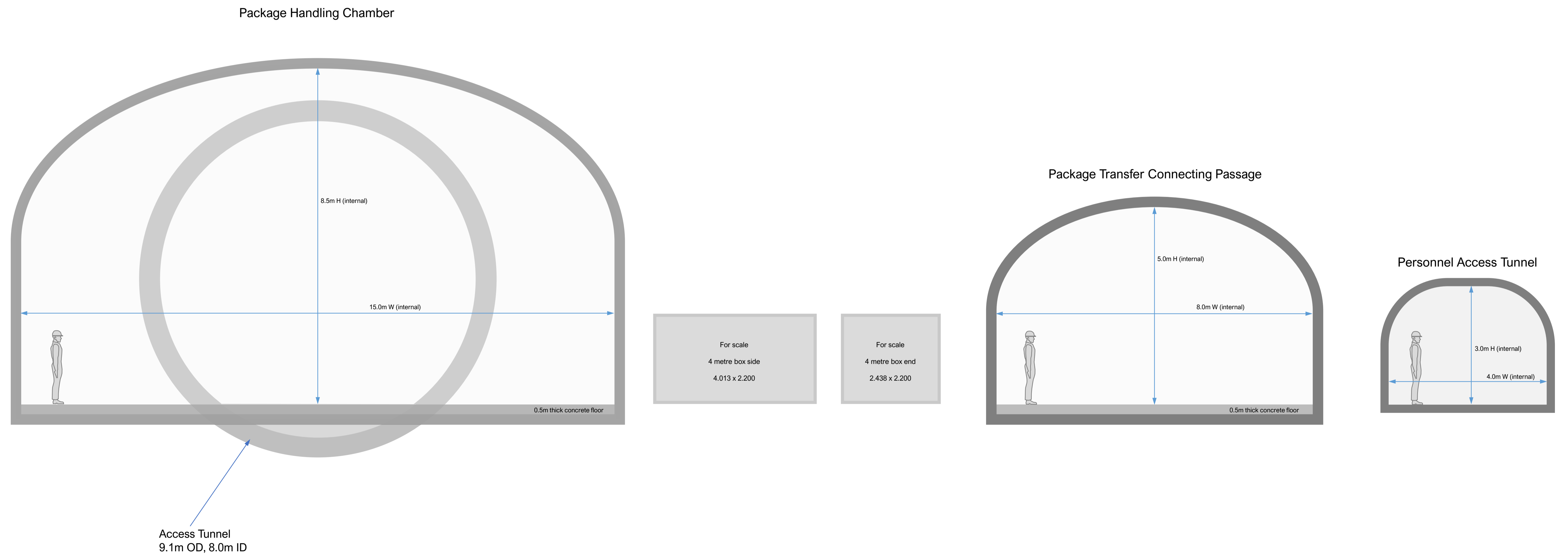
Operational HLW Chamber



Grouting Gallery Roadway (GGR)

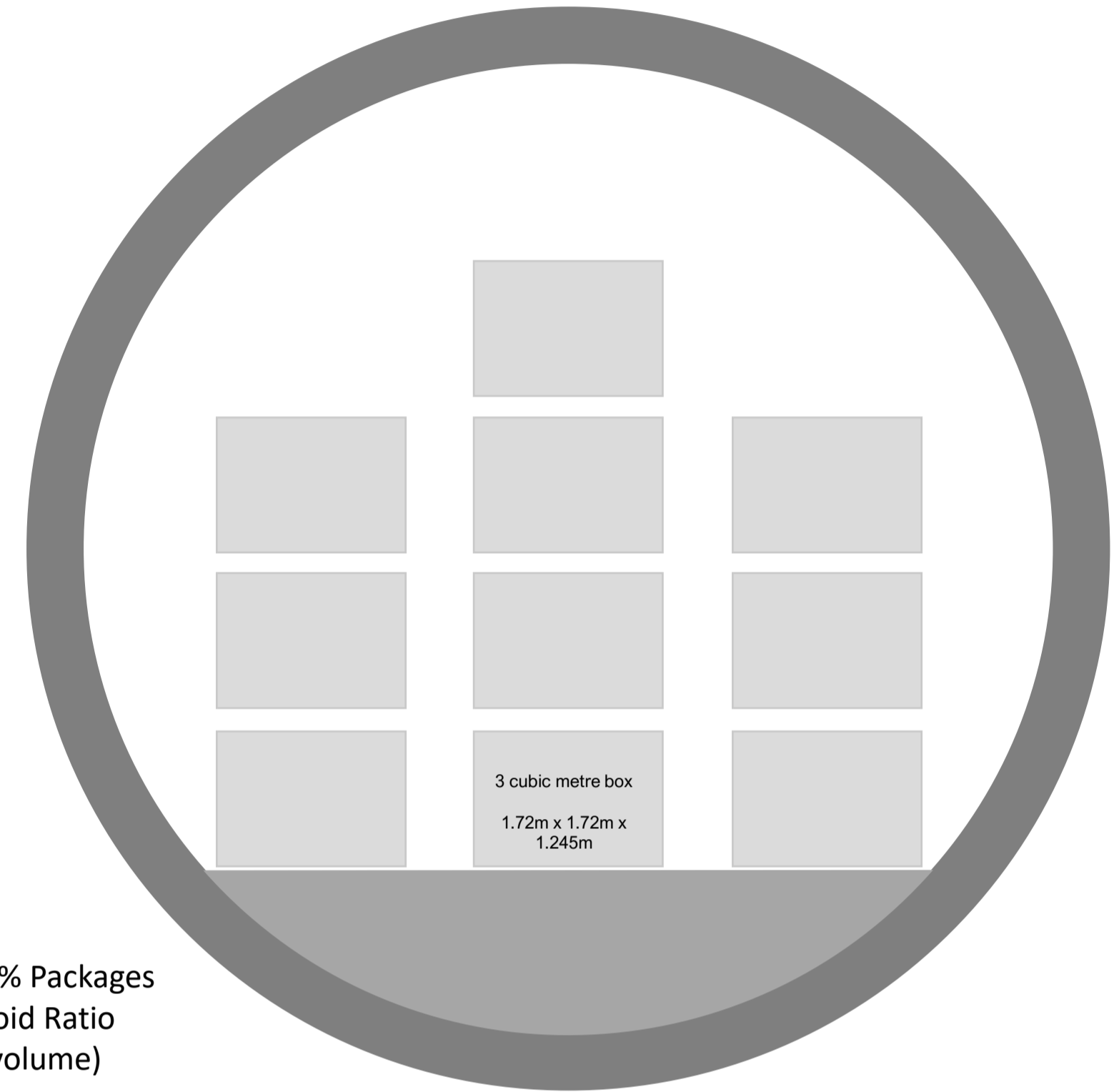


**Concept GDF
Transfer & Handling Chambers
Cross Sections**



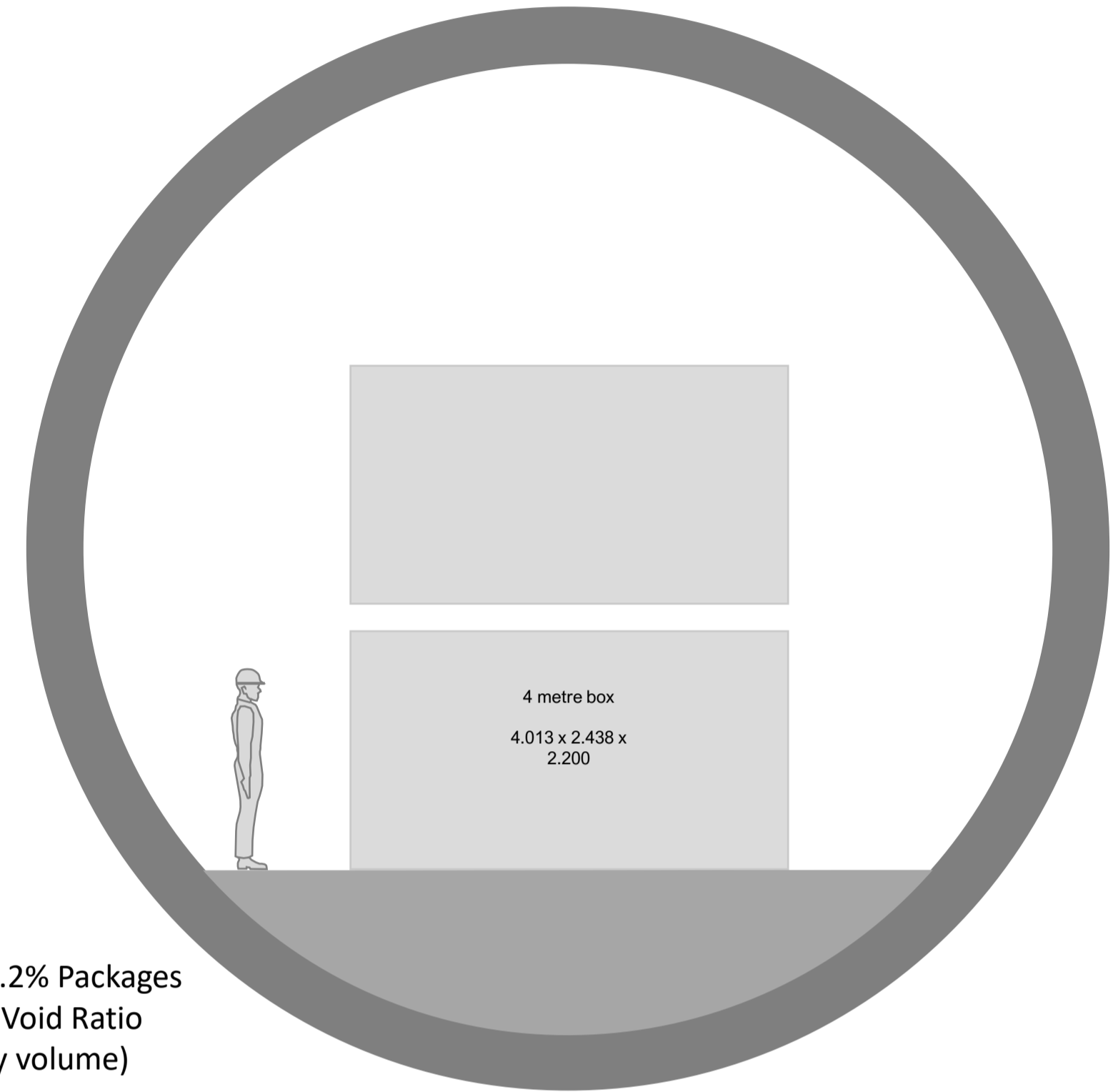
Concept GDF Package Layouts within 9.0m ID ILW Chambers

ILW Chamber with 3 cubic metre boxes
10 boxes per 2.4m (dependent upon spacing)
980m long chamber = 408 rows, 4,080 boxes



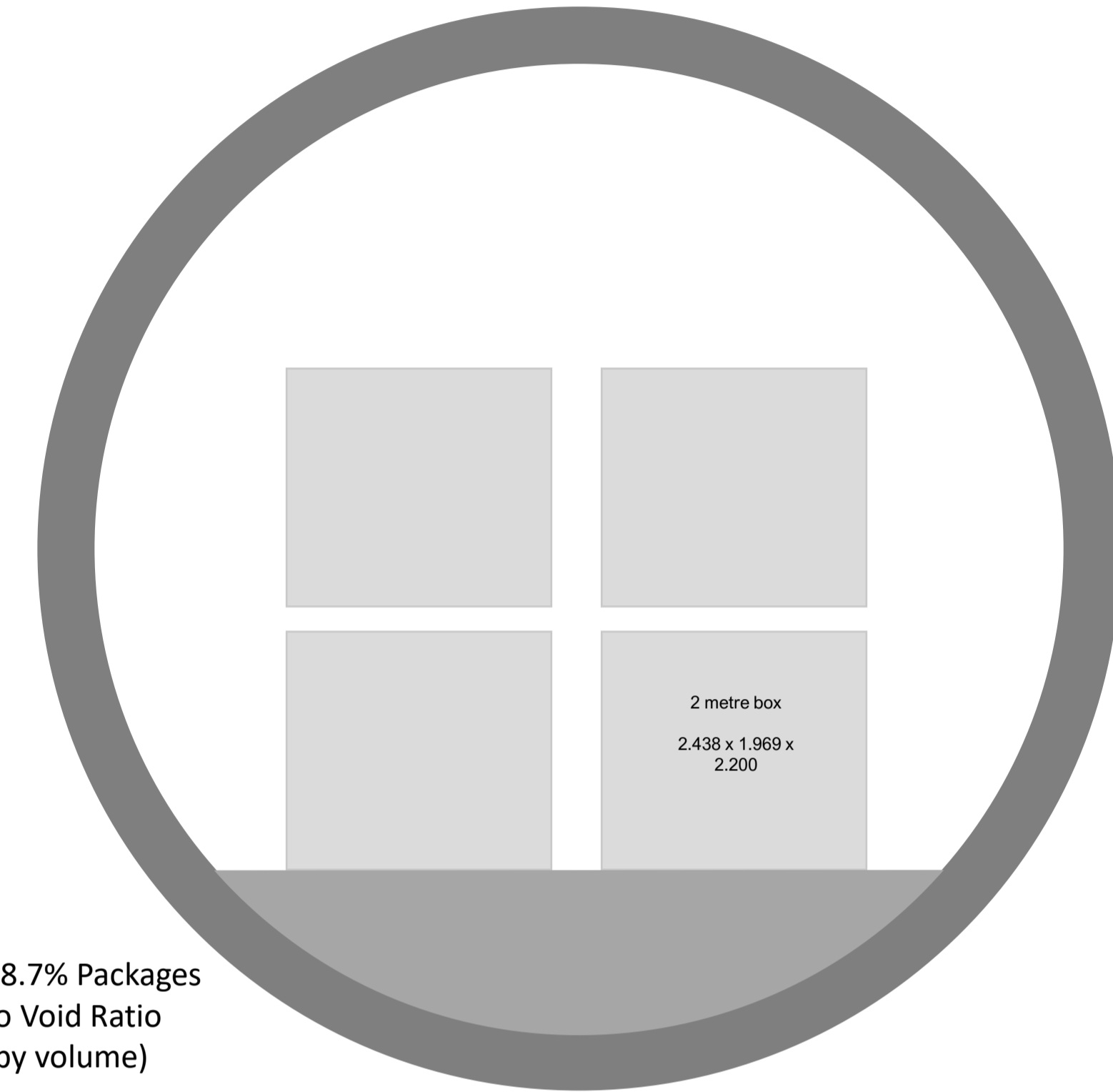
27.1% Packages to Void Ratio (by volume)

ILW Chamber with 4 metre boxes
2 boxes per 2.8m (dependent upon spacing)
980m long chamber = 350 rows, 700 boxes



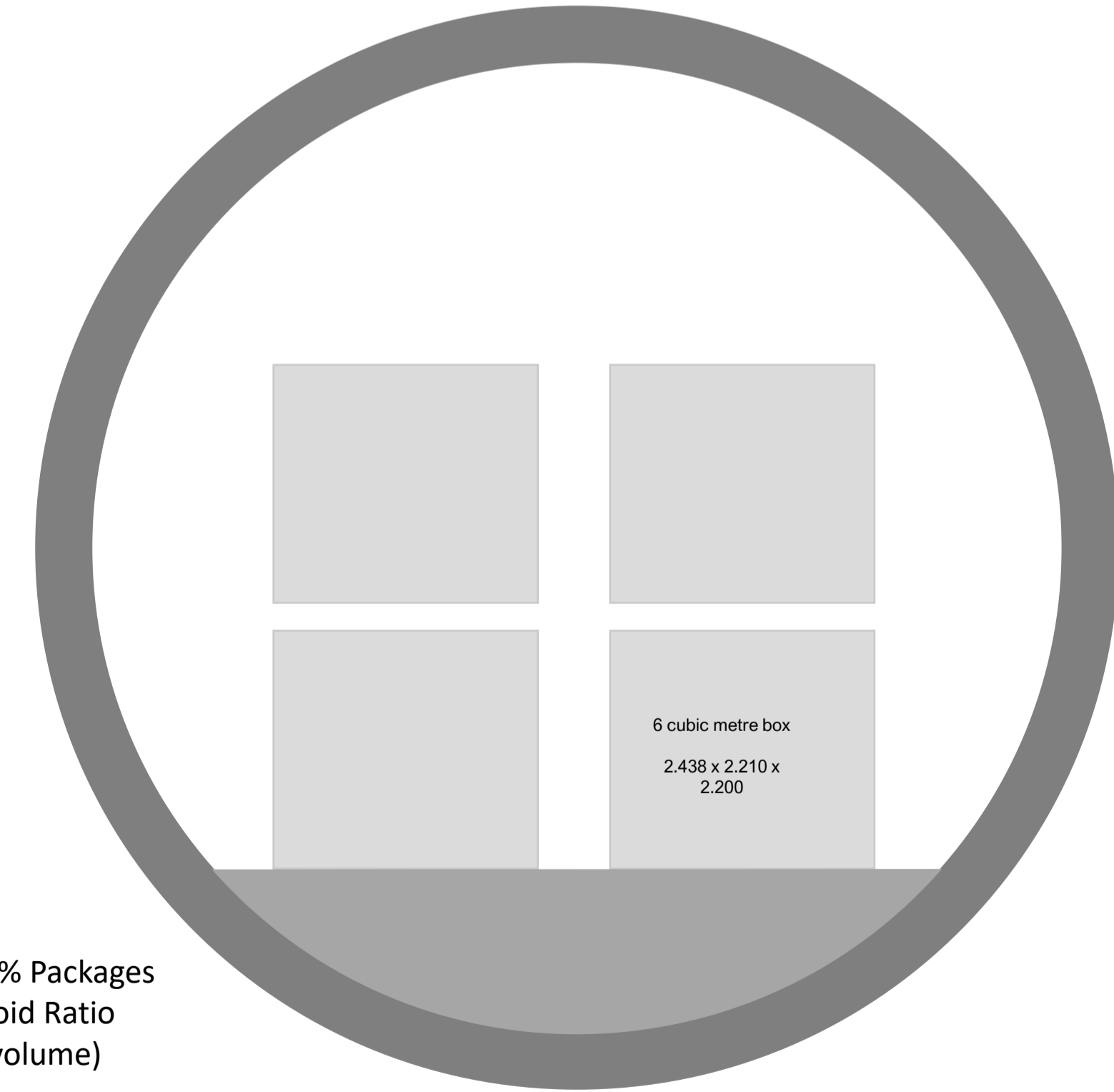
27.2% Packages to Void Ratio (by volume)

ILW Chamber with 2 metre boxes
4 boxes per 2.6m (dependent upon spacing)
980m long chamber = 376 rows, 1,504 boxes



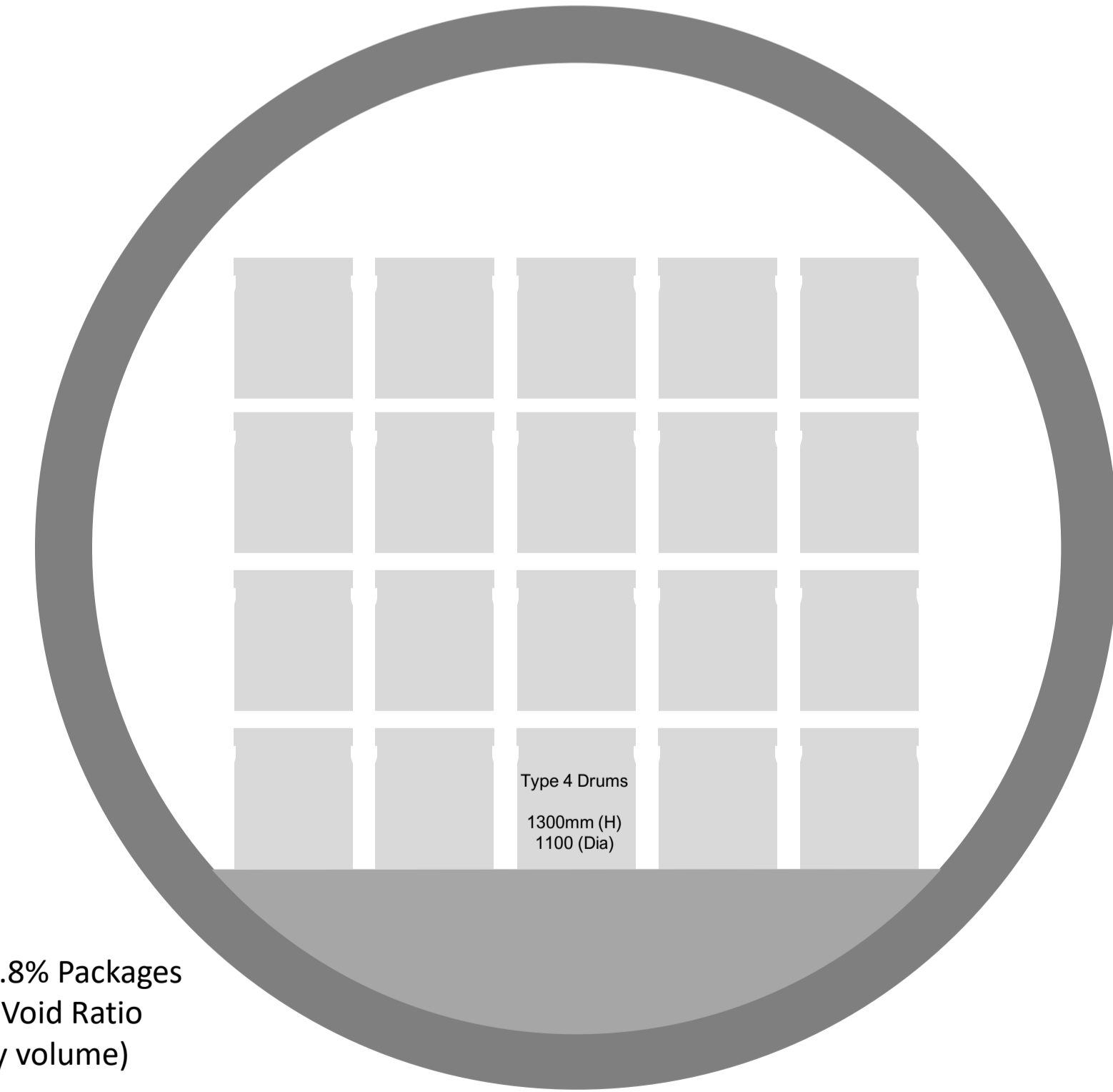
28.7% Packages to Void Ratio (by volume)

ILW Chamber with 6 cubic metre boxes
4 boxes per 3.0m (dependent upon spacing)
980m long chamber = 326 rows, 1,304 boxes



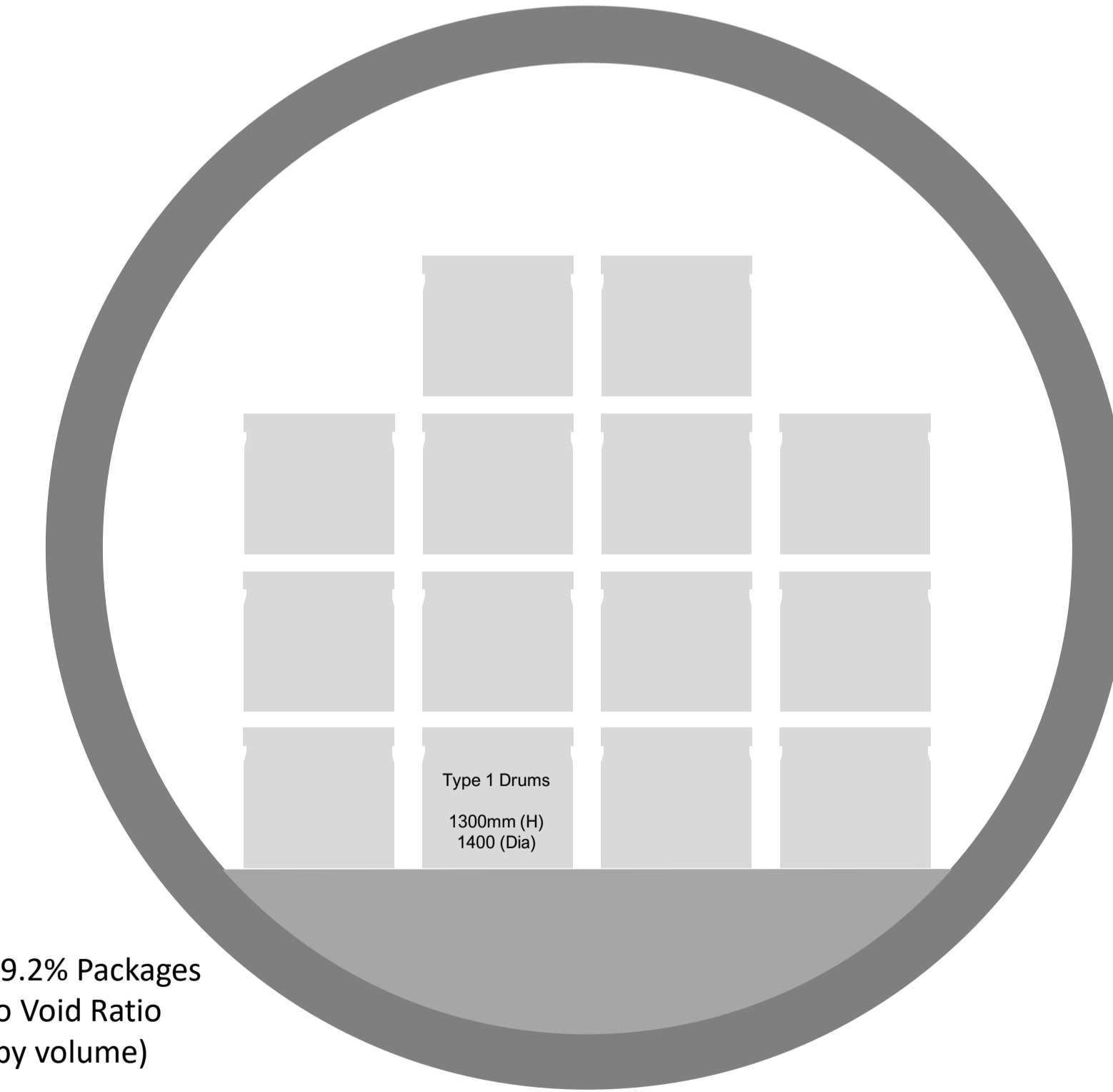
27.9% Packages to Void Ratio (by volume)

ILW Chamber with Type 4 drums
20 drums per 1.4m (dependent upon spacing)
980m long chamber = 700 rows, 14,000 drums



28.8% Packages to Void Ratio (by volume)

ILW Chamber with Type 1 drums
14 drums per 1.6m (dependent upon spacing)
980m long chamber = 576 rows, 8,064 drums

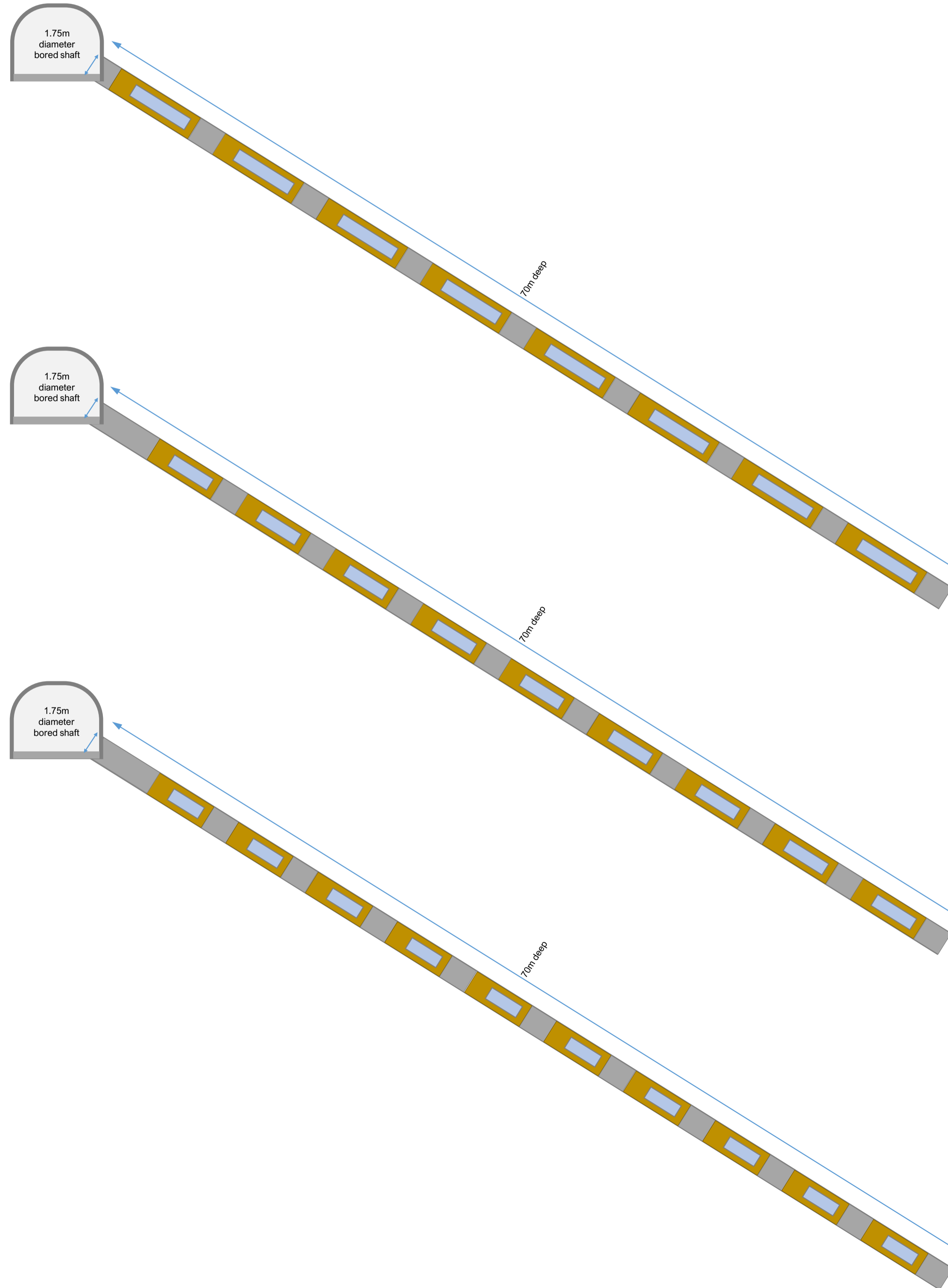


29.2% Packages to Void Ratio (by volume)

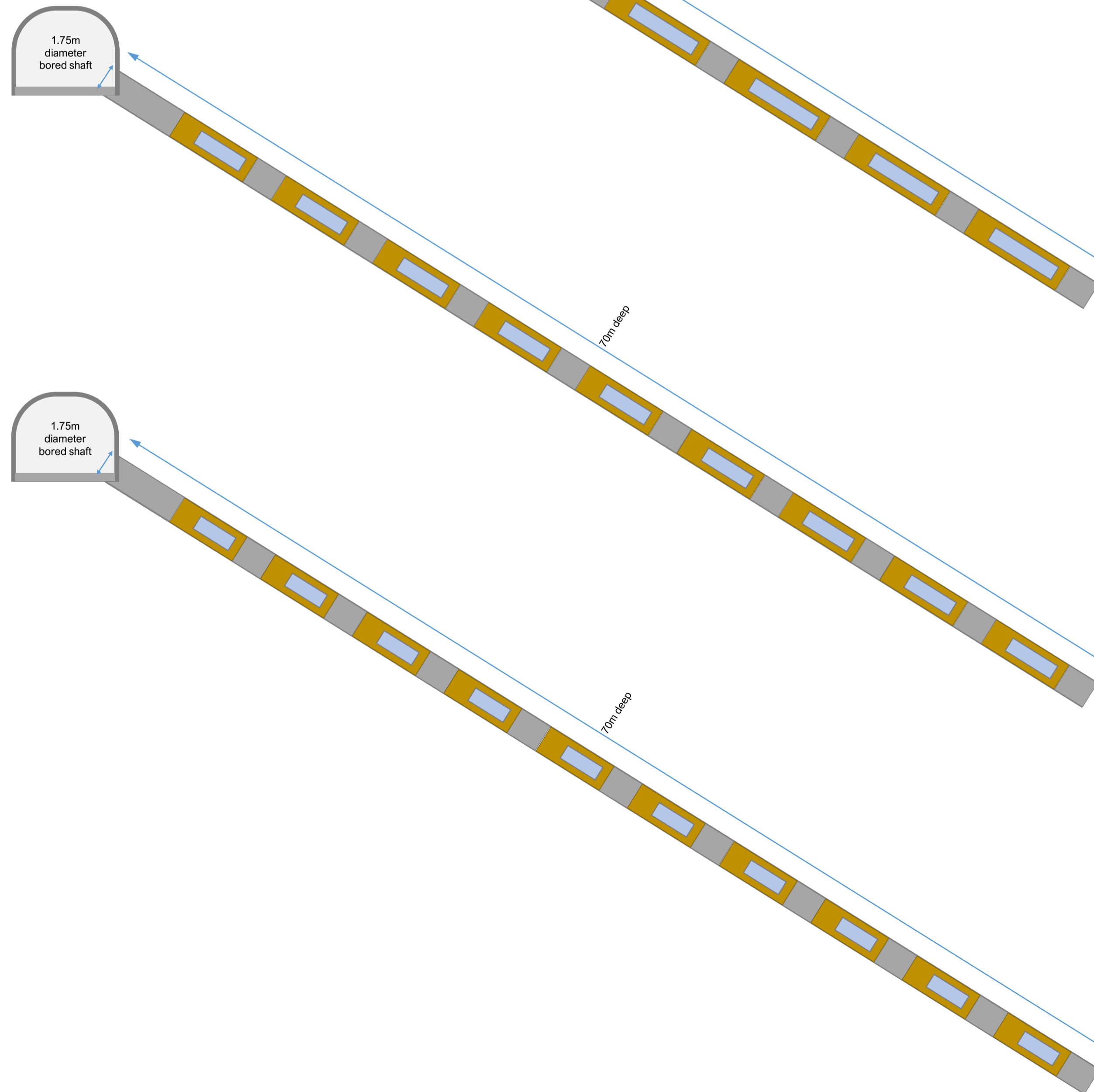
Void Ratio calculations all based on total volumes and include deduction for tunnel invert (e.g. 63.62m² tunnel CSA less 7.13m² for invert = 56.49m²)

Concept GDF Package Layouts within HLW Chamber

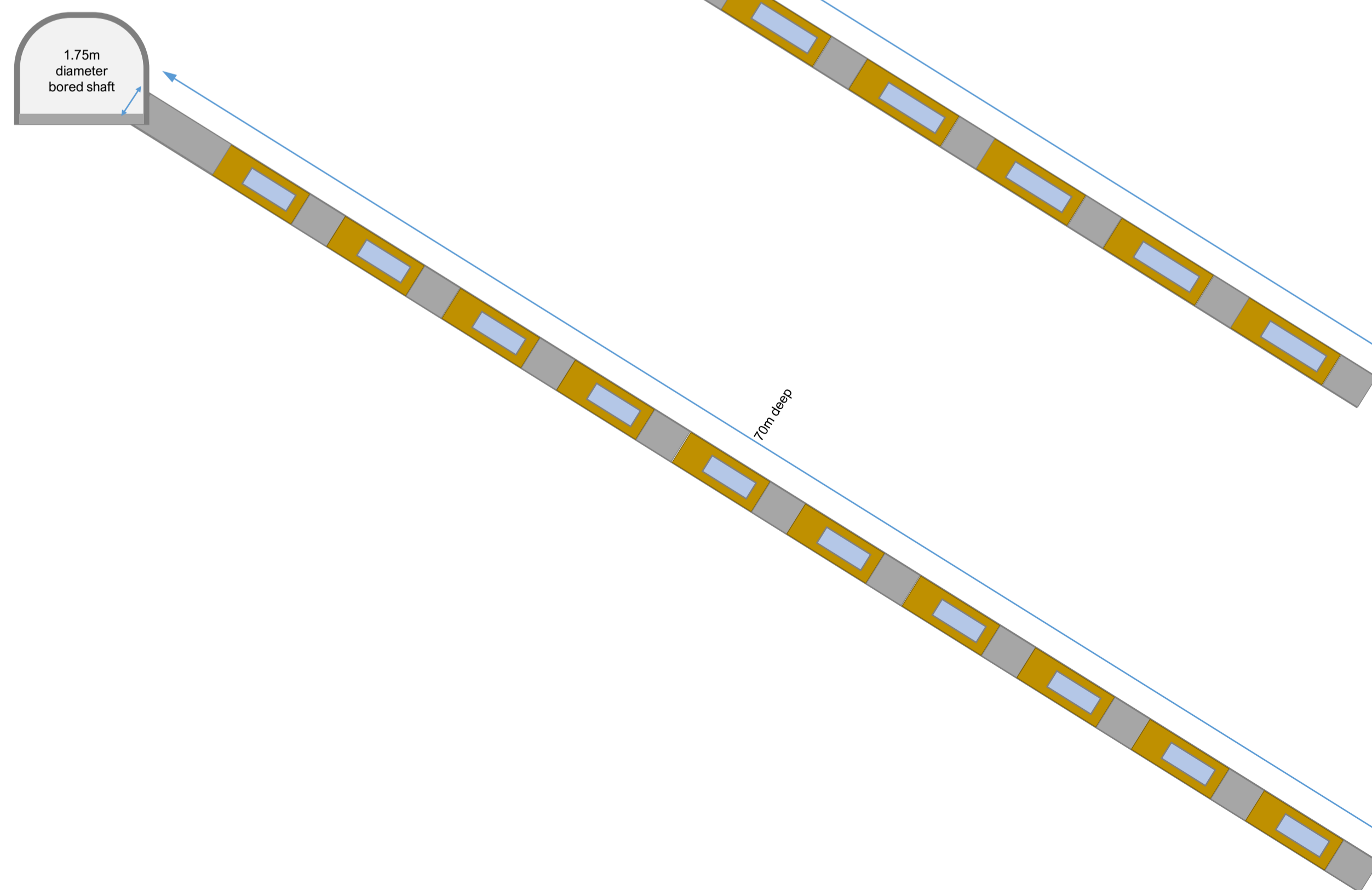
HLW Chamber & 70m deep shaft
with 8No PWR Containers



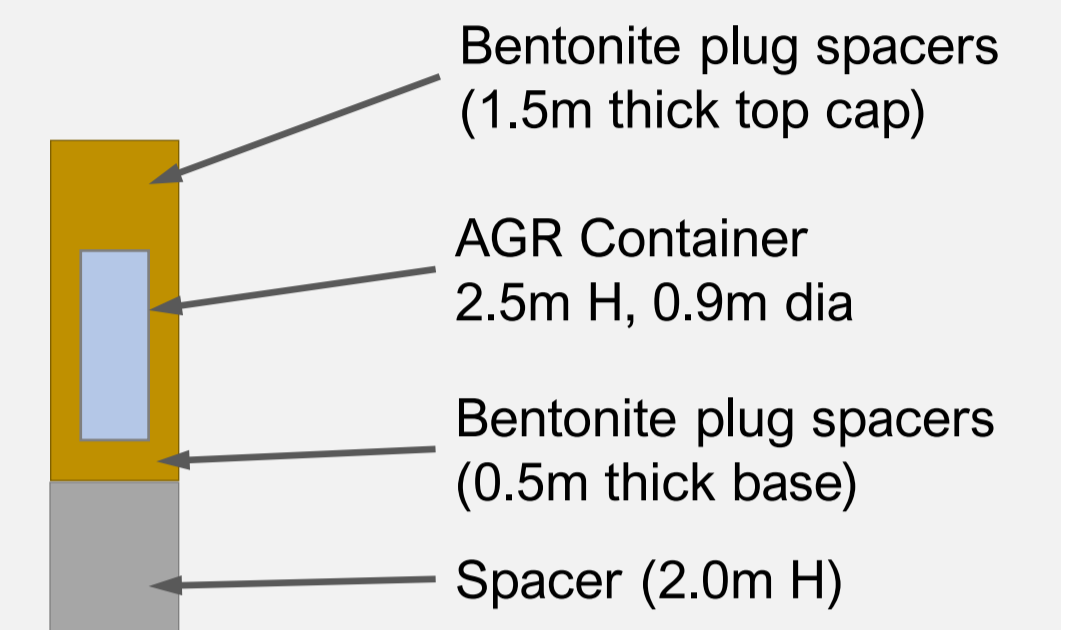
HLW Chamber & 70m deep shaft
with 9No HLW Containers



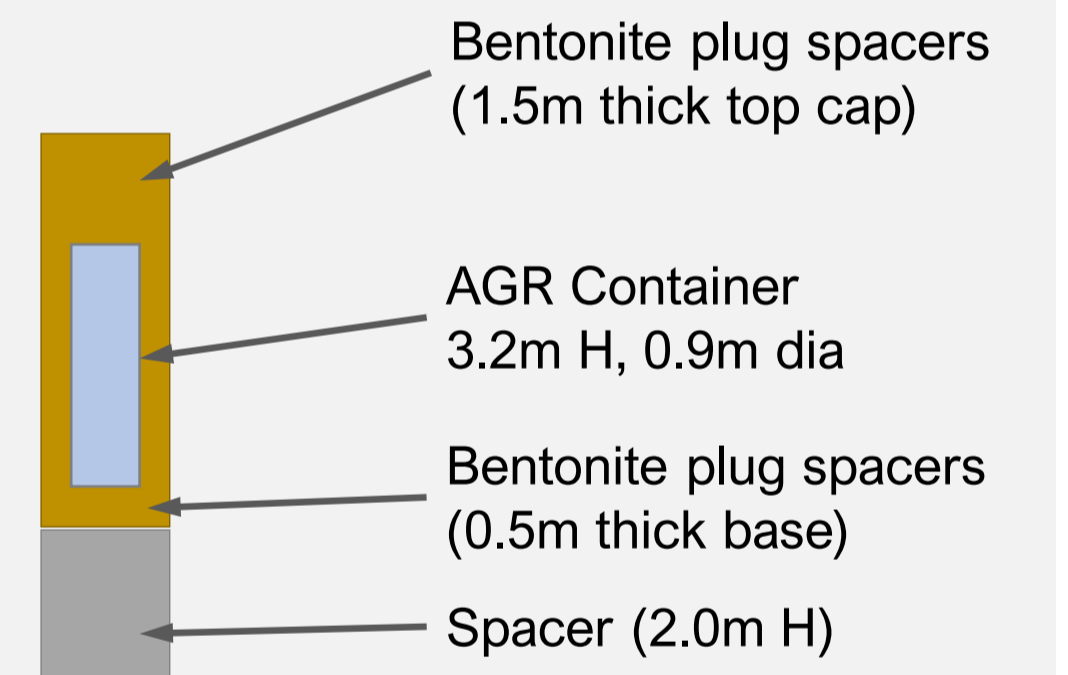
HLW Chamber & 70m deep shaft
with 10No AGR Containers



AGR Container
Packaging Dimensions
(6.5m total height)



HLW Container
Packaging Dimensions
(7.2m total height)



PWR Container
Packaging Dimensions
(8.5m total height)

