Note: Scales provided for guidance only and relevant on A1 paper size.
Concept GDF
Phases of construction and operation

TBM design
Suitable for both onshore and onshore/offshore sites
Men and Materials Shaft

Concept Nearshore GDF Phases of construction and operation

TBM design
Concept GDF
Example Surface
Facilities Layout
1.3km x 1.2km
Concept GDF - Overall Footprint
Surface & Underground

TBM Design
Suitable for both onshore and onshore/offshore sites
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
5.0m floor width
8.0m dia (internal)

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
5.0m floor width
8.0m dia (internal)

Grouting Gallery Roadway (GGR)
Concept GDF
Transfer & Handling Chambers
Cross Sections

Package Handling Chamber

Access Tunnel
9.1m OD, 8.0m ID

Package Transfer Connecting Passage

For scale
4 metre box side
4.013 x 2.200

Personnel Access Tunnel

For scale
4 metre box end
2.438 x 2.200

For scale
4 metre box end
2.438 x 2.200

2.5m thick concrete floor

8.5m H (internal)

0.5m thick concrete floor

5.0m H (internal)

15.0m W (internal)

8.0m W (internal)
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

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

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

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

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

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

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)

- Bentonite plug spacers (1.5m thick top cap)
- AGR Container
  - 2.5m H, 0.9m dia
- Bentonite plug spacers (0.5m thick base)
- Spacer (2.0m H)

HLW Container
Packaging Dimensions
(7.2m total height)

- Bentonite plug spacers (1.5m thick top cap)
- AGR Container
  - 3.2m H, 0.9m dia
- Bentonite plug spacers (0.5m thick base)
- Spacer (2.0m H)

PWR Container
Packaging Dimensions
(8.5m total height)

- Bentonite plug spacers (1.5m thick top cap)
- PWR Container
  - 4.5m H, 0.9m dia
- Bentonite plug spacers (0.5m thick base)
- Spacer (2.0m H)