
Bentonite Homogenisation: Development of the Design Basis

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Exchange Forum 6 London

3-4 November 2015



Issues to be Resolved

- Bentonite used in a wide range of applications in disposal systems
- Homogeneity of bentonite needed in each system may differ, experimentalists and engineers need to be guided on the needs of the post-closure safety case – what are the requirements on homogeneity and how can they be related to technical feasibility?
 - homogenisation, development of heterogeneity, tolerability in the safety case



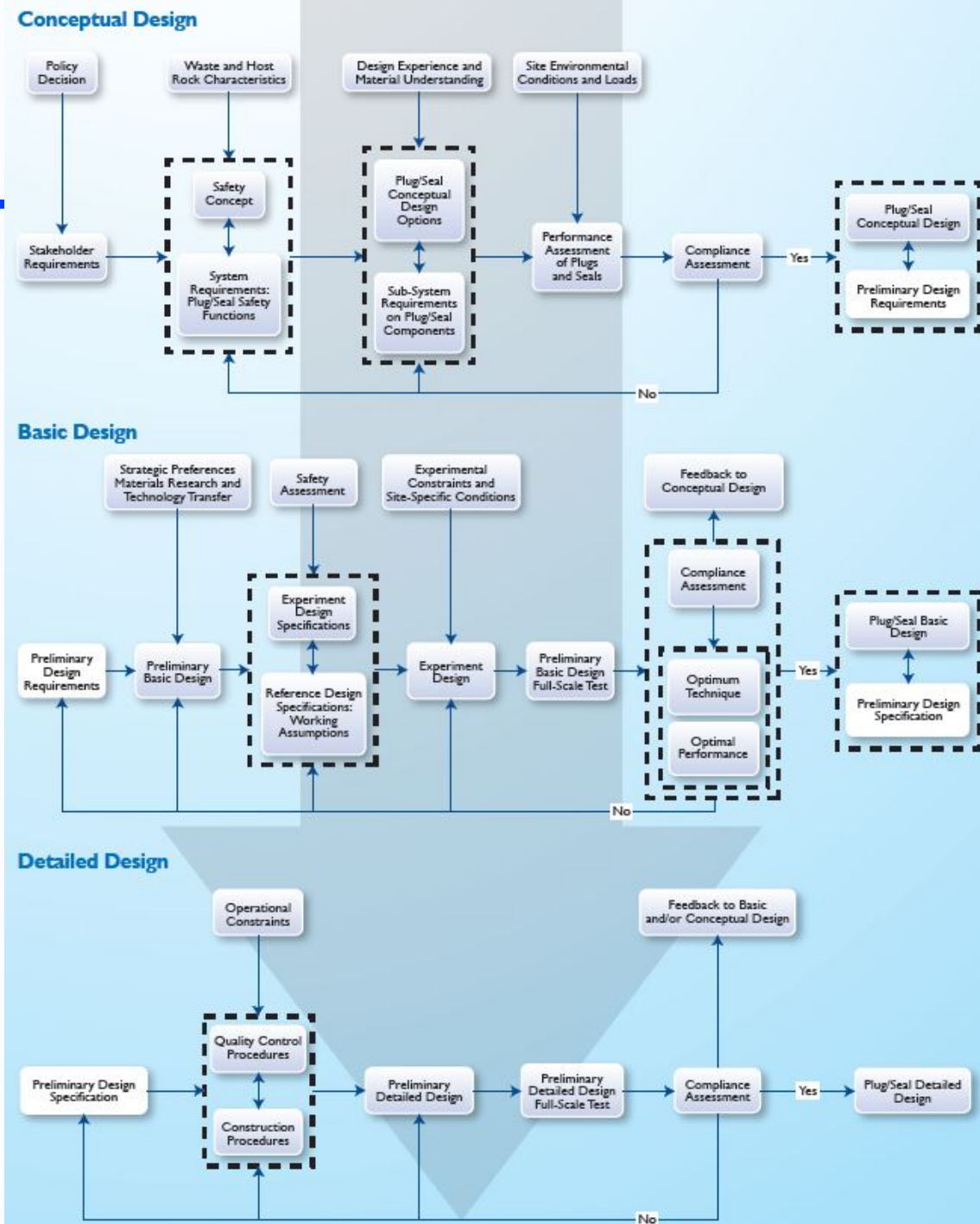
Nagra FE Experiment,
Köhler *et al.* (2015)



Andra FSS Experiment,
Foin *et al.* (2015)

Current Work

- DOPAS Project has developed an approach for integrating the design basis with performance assessment, full-scale testing and engineering design



Proposed Work and Resources for a Joint Project

- Review current designs, design basis and modelling approaches for bentonite systems focusing on requirements on homogeneity (6MM)
- Work collaboratively with WMO representatives to further develop requirements / design basis hierarchies for bentonite systems (6MM)
- Undertake scoping performance assessment calculations to understand the impact of heterogeneity (12MM)
- Use results of scoping calculations and compliance evaluation based on wider project results to refine and revise design basis (6MM)
- *Galson Sciences would look to work collaboratively with waste management organisations*

References

- **Régis Foin, Jean-Michel Bosgiraud, Gilles Armand, Aurélien Noiret (2015), Technical feasibility of the Cigéo Project seals, Lucoex Conference Proceedings, pp 63-70.**
- **Sven Köhler, Toshihiro Sakaki, Hanspeter Weber, Benoit Garitte, Herwig R. Müller. Backfilling a Horizontal Tunnel with Granular Bentonite – Machine Development, Pre- & Mock-up Tests and Application at the Mont Terri URL, Lucoex Conference Proceedings, pp 35-47.**