borehole records shall be included in the NDM design report.

D. Notwithstanding the general requirements of Clause 1.8 above, soil conditions and ground conditions shall constitute the Contractors risk and the Contractor shall undertake such investigation as necessary to establish the sub surface conditions at no extra cost to ADM.

1.1.9 Design Requirements

A. The Contractor is responsible for the design of all pipes including all joints, the thrust and reception pits/shafts including supports and thrust wall, the size of the pits/shafts to suit his method of construction and for the design of the jacking system in general.

B. The Contractor shall ensure that the design of the thrust wall and any other associated Temporary Works is such as to prevent damage to any part of the Permanent Works or any immediately adjacent service or structure.

C. The Contractor shall design thrust and reception pits/shafts to allow the safe operation of the plant, equipment and handling of the materials and to withstand all loading imposed by ground pressure, superimposed loads from surface structures and maximum proposed thrust force.

D. The Contractor shall design pipes to withstand the maximum axial thrust with a factor of safety of 4 based on the full effective area and the ultimate compressive strength of the pipe material.

E. Where GRP or similar material pipes with concrete surround are proposed, the concrete surround shall be designed to withstand the maximum jacking force. The design shall also ensure that the GRP or similar material pipe is not subjected to any forces during installation.

F. The Contractor shall design pipe joints in conjunction with resilient packing that avoids projections which could obstruct the travel of the pipe. He shall ensure that the joints will be watertight under axial loading and at the permissible deflection of the pipes.

G. Where it is proposed to construct certain section within larger diameter pipes and grout the annular space:

1. Ensure that the difference between the external face of the inner pipe and the internal face of the outer pipe is not less than 150mm and no more than 250mm unless otherwise approved by the Engineer.