ANNEX B page 1	NEW ABBEY CORN MILL: KILN FUNNEL WEST VAULT BRICKWORK REPAIR BY PARTLY DISMANTLING EXISTING BRICKWORK AND REBUILDING		
OPTION 1	Description: Carefully record and number brickwork of ½ brick thick vaulted section between ribs, temporarily prop to prevent collapse during dismantling. Take down brickwork, numbering bricks and setting aside. Rebuild reusing original brick in original locations and new lime mortar, incorporating new red clay bricks of matching dimensions where originals are not capable of reuse. Correct deflected profile of vault to correct geometrical arch radii, sweetening in at junction with ribs. Incorporate stainless steel helical bar reinforcement into selected bed joints and at connection to retained existing ribs and north and south vaults		
Setting / Building Fabric Impact	**Technical Impact**	**Staff / Business Impact**	**Conclusion**
- Authenticity of vault construction lost though bricks would be reused - Loss of original construction shuttering board marking evidence. + Though a rebuild, reuse of original brick in lime mortar would largely replicate original appearance	+ Reuse of original brick in lime mortar is a traditional proven like for like repair. + Restores mass masonry structural performance as originally conceived. + Avoids need for major support intervention which would not be fully reversible in future.	+ Safe means of working achievable – removes unknowns of working around existing unsound vault. - Temporary storage logistics for dismantled brickwork challenging + On completion removes H&S risk of collapse + On completion removes reputational risk of collapse + Relatively short closure required to accommodate works + On completion allows closed off passage area below Kiln to be reopened to public	Preferred solution to be pursued

ANNEX B page 2	NEW ABBEY CORN MILL: KILN FUNNEL WEST VAULT BRICKWORK REPAIR BY RAKING OUT & REPOINTING EXISTING BRICKWORK MASONRY
OPTION 2	Description: Temporarily prop to prevent collapse during works using elaborate shuttering arrangement to enable changing localised access to individual areas to be provided. Carefully rake out pointing over brickwork of ½ brick thick vaulted section between ribs working in small areas relating to individual bricks to prevent destabilisation. Repoint in new lime mortar, allowing mortar to gain strength prior to raking out adjacent areas for repointing. Incorporate stainless steel helical bar reinforcement into selected bed joints and at connection to retained existing ribs and north and south vaults.

Setting / Building Fabric Impact	**Technical Impact**	**Staff / Business Impact**	**Conclusion**
+ Largely maintains authenticity of vault construction though risk remains that need for full dismantling and reconstruction could become apparent during works + Allows some board marked mortar to be retained where repointing not required. - Loss of original construction shuttering board marking evidence elsewhere where repointing required.	+ Repointing is a traditional like for like repair. - Due to thinness of vault and small brick unit size, very difficult to achieve thorough raking out and full re pointing – risk of destabilising including adjacent areas recently repointed. - Longer term structural performance of deflected vault remains questionable. - Possibility that further future remedial work will be necessary due to structural deficiency of deflected form	- Risk of destabilising and localised collapse during works - difficult working conditions in confined space - High temporary support cost - MCU staff resource intensive, lengthy process to achieve - Extended closure period required to accommodate works + on completion removes H&S risk of collapse + on completion removes reputational risk of collapse + On completion allows closed off passage area below Kiln to be reopened to public - Requires frequent ongoing monitoring for signs of structural distress due to structural deficiency of deflected form - Reputational risk should further remedial work requiring closure become necessary	Approach rejected due to technical difficulties in achieving, resource demand, working conditions and possibility that a long term solution would not be achieved.

ANNEX B page 3	NEW ABBEY CORN MILL: KILN FUNNEL WEST VAULT BRICKWORK REPAIR BY SECURING EXISTING BRICKWORK TO NEW INSERTED METAL OR CONCRETE SUPPORT STRUCTURE WITHIN FUNNEL & LOCALLY REPOINT
OPTION 3	Description: Temporarily prop to prevent collapse during works using elaborate shuttering arrangement to enable changing localised access to individual areas to be provided. Install fabricated steelwork support system or concrete reinforcement cage within Funnel spanning over vault from floor / base to external wall masonry. Drill holes into brickwork joints at close centres to house new resin fixed stainless steel rods. Connect new rods back to new steel support system or into new cast in-situ concrete support structure over vault. Locally rake out defective mortar and point up from below in lime mortar.

Setting / Building Fabric Impact	Technical Considerations	Staff / Business Impact	Conclusion
+ Largely maintains authenticity of vault construction though risk remains that partial reconstruction would be necessary. + some board marked mortar on underside could remain in situ but risk of becoming detached during drilling / works - multiple fixings into lower kiln brickwork / floor and external wall masonry fabric required for support metalwork structure. -New steel or concrete support structure intrusive within Kiln Funnel	- vibration for drilling fixings seriously risks destabilising - Securely fixing to multiple small units of brick, some in friable condition very difficult to achieve without installing very large number of fixings - Installing steelwork / reinforced concrete structure above fragile vault in confined space logistically difficult. + In theory reversible at macro scale by removing support structure - Multiple fixings into masonry not reversible without damaging brickwork - In situ concrete capping option over vault not reversible.	- Risk of destabilising and localised collapse during works - difficult working conditions in confined space - MCU staff resource intensive, lengthy process to achieve - Extended closure period required to accommodate works + on completion removes H&S risk of collapse + on completion removes reputational risk of collapse + On completion allows closed off passage area below Kiln to be reopened to public	Approach rejected due to technical difficulties in achieving, resource demand, working conditions and need for major irreversible support structure intervention.