Millbrook Wastewater System - Outline Options Appraisal

Generic Option	Location of Risk	Planning Objective and Description of Risk	Option Reference	Description	Further Description	Unconstrained Option?	Constrained Option?	Feasible Option?	Net Benefits	Estimated Cost	Preferred Option	Best value / Least cost or Reasons for Rejection
Control/ Reduce surface water entering the sewers	Catchment Wide	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.1	Rain gardens	Rain gardens to take roof runoff.	Yes	No					Environmental - Strategic Environmental Assessment
Control/ Reduce surface water entering the sewers	Catchment Wide	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.2	SUDs	Smaller SuDS interventions – the flow can be held, intercepted, infiltrated.	No						Cost Effective
Control/ Reduce surface water entering the sewers	Catchment Wide	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.3	SUDs	Target larger industrial units – roof runoff into tanks.	No						Cost Effective
Control/ Reduce surface water entering the sewers	North Baddesley	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.4	Surface water separation / SUDs	Removal of surface water flows from network, through SuDS schemes.	Yes	Yes	Yes	Moderate Positive ++	£TBC - With Partners	No	Best Value
Control/ Reduce surface water entering the sewers	Millbrook Road	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.5	Surface water separation	Surface Water Separation.	No						Cost Effective
Control/ Reduce surface water entering the sewers	Mayflower Park	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.6	Surface water separation	Surface Water Separation.	Yes	Yes	Yes	Moderate Positive ++	£TBC - With Partners	No	Best Value
Control/ Reduce surface water entering the sewers	Blechynden Terrace Southampton CSO	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.25	Storm Overflows, Shellfish Waters	Storage or Separation of surface water to reduce spill frequency below 20 spills per annum at Blechynden Terrace Southampton CSO (area of separation / volume to be determined).	Yes	No					Environmental - Strategic Environmental Assessment
Control/ Reduce surface water entering the sewers	Millbrook WTW	PO1, PO4, PO7 - Flooding PO5 - Storm Overflows	MILL.SC01.26	Storm Overflows, Shellfish Waters	Surface water separation to reduce spills from Millbrook WTW storm overflow (average cost assumed to reduce CSO spills to Band 0).	Yes	No					Environmental - Strategic Environmental Assessment
Control / Reduce groundwater infiltration												
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Freemantle	PO1- Internal Flooding	MILL.SC03.1	Customer Education Programme	Customer education programme to reduce the risk.	Yes	Yes	Yes	Minor Positive +	£115K	No	Best Value
Improve quality of wastewater entering sewers (inc reducing FOG, RAG, pre-treatment, trade waste)	Catchment Wide	PO1 - Internal Flooding	MILL.SC03.2	Business Education	Partnership with manufacturers to make it clearer what can and can't be flushed/removal of non-flushable products from market.	No						Technically feasible and Deliver the required outcome
Control / Reduce the quantity / flow of wastewater entering sewer system												
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO1, PO4, PO7 - Flooding	MILL.PW01.1	Smart networks	Smart networks – improve incident response time.	No						Do customer support it
Network Improvements (eg increase capacity, storage, conveyance)	North Baddesley	PO5 - Storm Overflows	MILL.PW01.2	Storage for storm flows	Upstream attenuation.	No						Cost Effective
Network Improvements (eg increase capacity, storage, conveyance)	Blechynden Terrace CSO	PO14 - Shellfish Waters	MILL.PW01.3	Storage for storm flows	Additional Storage for Shellfish Schemes.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC01 Bellemoor Tavern, Bellemoor Road Southampton	PO4, PO7 & PO10 - Flooding	MILL.PW01.4	Cut & Pump, Upsizing and Offline Storage	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC02 Bellemoor Tavern, Bellemoor Road Southampton	PO4, PO7 & PO10 - Flooding	MILL.PW01.5	Upsizing and Parallel Rider Sewer (Box Culvert)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC03 Hill Lane, Southampton	PO4, PO7 & PO10 - Flooding	MILL.PW01.6	Upsize & Divert Flows to a New Sewer	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC04 Hill Lane/Burgess Road, Southampton	PO4, PO7 & PO10 - Flooding	MILL.PW01.7	Upsize	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO1, PO4, PO7 - Flooding	MILL.PW01.8	Network Screening	More intervention and protection for surface water sewers.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	2 TERMINUS TERRACE SOUTHAMPTON MPS	PO1- Internal Flooding	MILL.PW01.9	Maintenance Programme	Improve resilience: Review operation and maintenance of Harestock WTW to improve resilienceAn efficient maintenance programme for pumping stations and/Treatment works to elimate the risk of a pollution incident due to an operational failure.	No						Do customer support it and Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Hotspot 1 - St Denys Hotspot 2 - Ocean Village	PO1- Internal Flooding	MILL.PW01.10	Additional Storage	Additional Storage.	No						Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Catchment Wide	PO8 (2050)- Dry Weather Flow	MILL.PW01.11	Pipe Rehabilitation Programme	Relining/improving structural grades of sewers across the catchment.	No						Cost Effective, Do customer support it and Risk and uncertainty - future resilience
Network Improvements (eg increase capacity, storage, conveyance)	Freemantle	PO1- Internal Flooding	MILL.PW01.12	Jetting Programme	Jetting Programme.	No						Deliver the required outcome
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC05 - Redbridge Road	PO4 and PO5 - Growth	MILL.PW01.13	New Ring Sewer and Online Storage Tank Sewer (MILLGR020 Option 2 Section 1 (Plan 1))	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC06 - Lord's Wood to rear of Goldcrest Gardens	PO4 and PO5 - Growth	MILL.PW01.14	New Parallel Ride Sewer (MILLGR020 Option 2 Section 2 (Plan 2))	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC07 - Western Esplanade	PO4 and PO5 - Growth	MILL.PW01.15	New sewer and upsizing (MILLGR020 Option 2 Section 3 (Plan 3))	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC08 - Romsey Road	PO4 and PO5 - Growth	MILL.PW01.16	New sewer and upsizing (MILLGR020 Option 2 Section 4 (Plan 4))	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC09 - Millbrook WTW	PO4 and PO5 - Growth	MILL.PW01.17	Increase the pump rate at the WTW offline storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC10 - Thomas Road	PO4 and PO5 - Growth	MILL.PW01.18	Increase in manhole diameter (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC11 - Jarretts Lane	PO4 and PO5 - Growth	MILL.PW01.19	Increase in manhole diameter (MILLGR020 Option 2)	DAP Option.	No						

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Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC12 - Blechynden Terrace Southampton	PO4 and PO5 - Growth	MILL.PW01.20	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC13 - Liverpool Street Southampton	PO4 and PO5 - Growth	MILL.PW01.21	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC14 - Manor Road Chilworth	PO4 and PO5 - Growth	MILL.PW01.22	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC15 - Park Road Southampton	PO4 and PO5 - Growth	MILL.PW01.23	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL, FC15 - Whitebeam Way	PO4 and PO5 - Growth	MILL.PW01.24	Storage (MILLGR020 Option 2)	DAP Option.	No						
Network Improvements (eg increase capacity, storage, conveyance)	MILL FC01 - BLECHYNDEN TERRACE SOUTHAMPTON CSO	PO5 and PO14 - Spill Assessments	MILL.PW01.25	Storage (FC01 - BLECHYNDEN TERRACE SOUTHAMPTON CSO)	The DAP model has a confidence score of 2 and was last verified in 2014.	Yes	Yes	Yes	Major Positive +++	£49,010K	Yes	Best Value
Network Improvements (eg increase capacity, storage, conveyance)	MILL FC02 - MILLBROOK WTW	PO5 and PO14 - Spill Assessments	MILL.PW01.26	Storage (FC02 - MILLBROOK WTW)	The DAP model has a confidence score of 2 and was last verified in 2014.	Yes	Yes	Yes	Major Positive +++	£TBC - With Partners	Yes	Best Value
Improve treatment (capacity and quality at existing works or develop new WTWs)	Treatment Works	PO1, PO4, PO7 - Flooding	MILL.PW02.1	Increase storm storage	Increase storm storage - more capacity at storm tanks.	No						Risk and uncertainty - future resilience
Improve treatment (capacity and quality at existing works or develop new WTWs)	Treatment Works	PO11 - Nutrient Neutrality	MILL.PW02.2	Tertiary Treatment	Reedbeds to help with nutrient neutrality.	Yes	No					Operational
Improve treatment (capacity and quality at existing works or develop new WTWs)	Treatment Works	PO11 - Nutrient Neutrality	MILL.PW02.3	Tertiary Treatment	Work with EA to introduce nitrogen treatment at works (through WINEP?).	Yes	No					Operational
Improve treatment (capacity and quality at existing works or develop new WTWs)	MILLBROOK WTW	PO8 (2050)- Dry Weather Flow	MILL.PW02.4	Permit Review	Proposed permit-45128m3.	Yes	Yes	Yes	Minor Positive +	£2,555K	No	Best Value
Wastewater Transfer												
Mitigate impacts on Air Quality (e.g. Carbon neutrality, noise, odour)												Not included in the first round of DWMPs
Improve Land and Soils												Not included in the first round of DWMPs
Mitigate impacts on Water Quality												
Reduce consequences Properties (e.g. Property Flood Resilience)	Hotspot 1 - St Denys Hotspot 2 - Ocean Village	PO1- Internal Flooding	MILL.RC04.1	Property Flood Mitigation / Resistance	Short-term property level protection ahead of flood alleviation scheme - Non-return valves and flood mitigation doors / gates.	Yes			Minor Negative -		No	Least Cost
Study/ investigation to gather more data	Catchment Wide	PO4, PO5, PO7, PO10 Flooding/ Storm Overflows	MILL.OT01.1	data sharing	Better data sharing between partners – if we all know the full picture we can better apply for funding to undertake flooding schemes throughout the catchment.	No						Deliver the required outcome
Study/ investigation to gather more data	Hotspot 1 - Chapel Hotspot 2 - City Centre	PO1- Internal Flooding	MILL.OT01.2	Investigation into causes	Further investigation to identify the cause of the internal flooding incident.	Yes			Minor Negative -		No	Least Cost
Study/ investigation to gather more data	Catchment Wide	PO8 (2050)- Dry Weather Flow	MILL.OT01.3	Infiltration Reduction Plan	Relining/improving structural grades of sewers across the catchment.	Yes			Minor Negative -		Yes	Least Cost
Study/ investigation to gather more data	Solent and Dorset Coast Solent & Southampton Water	PO11 - Nutrient Neutrality	MILL.OT01.4	Nutrient Budget	Catchment is Hydraulically linked to; Solent and Dorset Coast (Threat/Remedy Identified or Anticipated) Solent & Southampton Water (NO Threat/Remedy Identified or Anticipated).	Yes	Yes	Yes	Minor Positive +	£75K	Yes	Best Value
Study/ investigation to gather more data	Catchment Wide	PO4- 1 in 50 year PO5- Storm Overflow PO7- Hydraulic Overload PO10- Surface Water Management	MILL.OT01.5	Improve Hydraulic Model	Improve Hydraulic Model.	Yes	Yes	Yes	Minor Positive +	£340K	Yes	Best Value
Study/ investigation to gather more data	Millbrook WTW	PO8 (2050)	MILL.OT01.6	Study / Investigation - Silt Removal at WTW	Study / Investigation: Removal of silt at Millbrook WTW to increase capacity.	Yes	Yes	Yes	Minor Positive +	£TBC - With Partners	Yes	Best Value