**Surface Water Source and Abstraction**

**Negative Impact/s:**

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| --- | --- | --- | --- |
| Bacterial Contamination  | Chemical Contamination  | Aesthetic (Taste/Colour which prevents consumption)  | Lack of Water Availability  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Event / Cause** | **Risk Factor/s** | **Current Control Measure/s** | **Risk** | **Improvement/s** |
| Bacteria enters water supply | Toilets upstream/within 30mHuman houses upstreamAnimal access to sourceFarming activities nearbySource inlet area is dirty/pollutedBathing/Laundry performed at source*Other (Please list)* | Fencing around sourceAppropriate screening and filter on source infrastructureHousehold water treatment and storage (HWTS)*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) | Move toilet/sMove source inletInstall screen and filtrationClean source areaBuild fence around sourcePrevent human activities at source*Other (Please list)* |
|  |  |  |  |
| Chemicals enter water supply | Use of pesticides in areaWaste water discharge in areaAlgae present at sourceMining in areaNaturally occurring high levels*Other (Please list)* | Appropriate water treatmentWaste water discharges are managed*Other (Please list)* | *High**Medium**Low* | Move sourceRemove chemical source/sInstall treatment*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dirt/Debris in water supplyLandslideSubsidence | Soil erosion at sourceIntake located at bottom of slope or gullyUnconsolidated soil on surrounding slopesDeforestation in areaSurface run-off into source*Other (Please list)* | Filter at source outletStorage/settlement tanksTerraces for soil on gradientVegetation on gradientRunoff divertedGully rehabilitationProtective structure around inlet/ concrete abstraction structure*Other (Please list)* | *High**Medium**Low* | Move sourceInstall filterInstall storage/settlementUpgrade abstraction to concrete structureBuild protective structureManage soil on slopes*Other (Please list)* |
|  |  |  |  |
| Uncontrolled supplyDrought | Variation in source water level/sLeaks in abstraction structure*Other (Please list)* | Minimum head device (Dam)Overflow installed*Other (Please list)* | *High**Medium**Low* | Install damInstall overflowRepair structure*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Flooding of intake area (fresh water)Damage from flooding | Located in flood areaLocated at bottom of slope or inside river bendLow permeability soil in surrounding areaDeforestation in area*Other (Please list)* | Surrounding vegetationConcrete structureOverflow/DrainageRunoff water divertedInlet located at side of riverHWTS prepared*Other (Please list)* | *High**Medium**Low* | Move sourceUpgrade structure (concrete)Install overflow/drainageDig diversion trench/es*Other (Please list)* |
|  |  |  |  |
| Storm damage to intake structure | Exposed locationDebris loose in area*Other (Please list)* | Protection from forest/ other structureConcrete structure*Other (Please list)* | *High**Medium**Low* | Upgrade structure (concrete)Install protective structure/s*Other (Please list)* |
|  |  |  |  |
| Tsunami/ King Tide | Located near shoreline*Other (Please list)* | Concrete structureMangrove protectionCoral reef protection*Other (Please list)* | *High**Medium**Low* | Move sourceUpgrade structure (concrete)*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Earthquake | Located in earthquake area*Other (Please list)* | Suitable Materials (e.g. Ferro cement)*Other (Please list)* | *High**Medium**Low* | Upgrade structureMove source*Other (Please list)* |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |

**Spring Water Source**

**Negative Impact/s:**

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| --- | --- | --- | --- |
| Bacterial Contamination  | Chemical Contamination  | Aesthetic (Taste/Colour which prevents consumption)  | Lack of Water Availability  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Event / Cause** | **Risk Factor/s** | **Current Control Measure/s** | **Risk** | **Improvement/s** |
| Bacteria enters water supply | Toilets upstream/within 30mAnimals access to sourceFarming activities nearbySurface water can flow into sourceSilt/soil/dirt near source**IF SPRING IS COVERED:**Spring box (including cover, air vent and overflow) is dirtySilt/soil/dirt inside source*Other (Please list)* | Clean and well-maintained spring box and coverFencing around sourceOverflow to drainage area outside fencingDiversion ditchAppropriate screen and filter on source outlet*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) | Move toilet/sBuild fenceBuild spring box (inclusive of cover, meshed air vent and overflow)Clean spring box and coverDig diversion ditchInstall screen and filter on outlet pipe*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Chemicals enter water supply | Use of pesticides in areaWaste water discharge in areaAlgae present at sourceMining in areaNaturally occurring high levels*Other (Please list)* | Appropriate water treatmentWaste water discharges are managed*Other (Please list)* | *High**Medium**Low* | Move sourceRemove chemical source/sInstall treatment*Other (Please list)* |
|  |  |  |  |
| Dirt/Debris in water supplyLandslidesSubsidence | Soil erosion at sourceIntake located at bottom of slope or gullyUnconsolidated soil on surrounding slopesDeforestation in areaSurface run-off into source*Other (Please list)* | Spring Box covering sourceFilter at source outletStorage/settlement tanksTerraces for soil on gradientVegetation on gradientRunoff divertedGully rehabilitationSpring box flush valve*Other (Please list)* | *High**Medium**Low* | Move sourceInstall filterInstall storage/settlementBuild spring boxBuild protective structure around spring boxManage soil on slopes*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Uncontrolled supplyDrought | Variation in source water level/sLeaks in spring box structure*Other (Please list)* | Minimum head device in spring box structureOverflow installed in spring box*Other (Please list)* | *High**Medium**Low* | Install min head deviceInstall overflowRepair spring box*Other (Please list)* |
|  |  |  |  |
| Flooding of intake area (fresh water)Damage from flooding | Located in flood areaLocated at bottom of slope/near river bankLow permeability soil in surrounding areaDeforestation in area*Other (Please list)* | Surrounding vegetationSpring box (concrete and with strong foundation structure)Overflow/DrainageRunoff water divertedSealed coverHWTS prepared*Other (Please list)* | *High**Medium**Low* | Move sourceBuild/adapt spring boxInstall overflow/drainageDig diversion trench/esInstall sealed cover*Other (Please list)* |
|  |  |  |  |
| Storm damage to spring structure | Exposed locationDebris loose/overhanging*Other (Please list)* | Protection from forest/ other structureConcrete spring box*Other (Please list)* | *High**Medium**Low* | Upgrade spring boxInstall protective structure/s*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tsunami/ King Tide | Located near shoreline*Other (Please list)* | Spring boxSealed coverMangrove protectionCoral reef protection*Other (Please list)* | *High**Medium**Low* | Move sourceUpgrade spring box*Other (Please list)* |
|  |  |  |  |
| Earthquake | Located in earthquake area*Other (Please list)* | Suitable Materials (e.g. Ferro cement)*Other (Please list)* | *High**Medium**Low* | Upgrade spring boxMove source*Other (Please list)* |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |

**Rainwater Collection and Storage**

**Negative Impact/s:**

|  |  |  |  |
| --- | --- | --- | --- |
| Bacterial Contamination  | Chemical Contamination  | Aesthetic (Taste/Colour which prevents consumption)  | Lack of Water Availability  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Event / Cause** | **Risk Factor/s** | **Current Control Measure/s** | **Risk** | **Improvement/s** |
| Bacteria enters water supplyDirt/Debris enters water supply | Roof is dirtyGutters are dirtyTank is dirtyOpen access to tankTank is crackedTap is leakingAnimals can access water collection areaWater collection area is dirty/ standing waterPollution (e.g. trees, Excreta etc.) near systemCollection bucket dirty*Other (Please list)* | Tank cover in placeTank inlet has mesh/sieveFirst flush filterAll openings have screensCollection area is fencedOverflow pipe leads to drainage point outside collection area*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) |  NoClean roof/guttersClean tankInstall covers on tankInstall inlet mesh/sieveInstall first flush filterRepair cracksRepair/replace tapAdd drainage/clean collection areaRemove pollution from collection areaBuild fence around collection area*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Chemicals enter water supply | Roof is corroded/rust*Other (Please list)* | Appropriate water treatment*Other (Please list)* | *High**Medium**Low* | Install FilterRepair/replace/paint roof*Other (Please list)* |
|  |  |  |  |
| Loss of rainwater captureDrought | Dry periods > 3 monthsHoles in roofDamaged gutteringDamaged piping from gutter to collection tank*Other (Please list)* | Inclined roofing in good conditionGuttering covers the length of the roof on all available sidesGuttering is closed at both endsCorrosion resistant roofing and gutter materials (e.g. PVC)*Other (Please list)* | *High**Medium**Low* | Replace/repair roofReplace/repair guttersReplace/repair downpipe*Other (Please list)* |
|  |  |  |  |
| Flooding of collection tank (Fresh Water) | Located in flood areaLocated at bottom of slope/near river bankLow permeability soil in surrounding areaDeforestation in areaOpen access to tank*Other (Please list)* | Surrounding vegetationSealed tankOverflow/DrainageRunoff water divertedConcrete foundationRaised above flood levelTank is anchored to foundationHWTS prepared*Other (Please list)* | *High**Medium**Low* | Move tankBuild/raise foundationInstall overflow/drainageDig diversion trench/esAnchor structureSeal tank*Other (Please list)* |
|  |  |  |  |
| Storm Damage | Exposed locationDebris loose/overhanging*Other (Please list)* | Protection from forest/ other structureConcrete foundationTank anchoredGutters secured/removableRoofing secured*Other (Please list)* | *High**Medium**Low* | Build/adapt foundationAnchor tankSecure guttersSecure roofing*Other (Please list)* |
|  |  |  |  |
| Landslide/ Subsidence | Tank located at bottom of slope or gullyUnconsolidated soil on surrounding slopesDeforestation in areaTree roots growing near tank foundations*Other (Please list)* | Concrete foundationTank anchoredTerraces for soil on gradientVegetation on gradientGully rehabilitationSealed tank*Other (Please list)* | *High**Medium**Low* | Move tankBuild/adapt foundationBuild protective structure around tankManage soil on slopes*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tsunami/ King Tide | Located near shoreline*Other (Please list)* | Concrete foundationSealed tankMangrove protectionCoral reef protection*Other (Please list)* | *High**Medium**Low* | Move tankBuild/adapt foundationSeal tank*Other (Please list)* |
|  |  |  |  |
| Earthquake | Located in earthquake area*Other (Please list)* | Concrete foundationTank is anchoredSuitable Materials (e.g. Ferro cement)*Other (Please list)* | *High**Medium**Low* | Build/adapt foundationAnchor tankMove tank*Other (Please list)* |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |

**Groundwater Abstraction**

**Negative Impact/s:**

|  |  |  |  |
| --- | --- | --- | --- |
| Bacterial Contamination  | Chemical Contamination  | Aesthetic (Taste/Colour which prevents consumption)  | Lack of Water Availability  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Event / Cause** | **Risk Factor/s** | **Current Control Measure/s** | **Risk** | **Improvement/s** |
| Bacteria enters water supplyDirt/Debris enters water supply | Toilet within 10m of wellToilets above well heightOther pollution source/s within 10m of well e.g. rubbishStanding water within 2m of wellBroken drainage channelSurface water can enter wellCracks in concrete wallCollection bucket dirty*Other (Please list)* | Fence around wellWell is sealed to 3m depth with lining extended above groundDrainage channel installed and delivered to area outside of fencingWell head/apron is concrete and cleanSanitary seal between well shaft and apronOpen well is covered*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) | Move toiletsBuild fence around wellRepair/Install concreteLine well to 3m depthRepair/upgrade well apronClean well areaRemove pollutionCover well*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Chemicals enter water supply | Use of pesticides in areaWaste water discharge in areaMining in areaNaturally occurring high levels*Other (Please list)* | Appropriate water treatmentWaste water discharges are managed*Other (Please list)* | *High**Medium**Low* | Move sourceRemove chemical source/sInstall treatment*Other (Please list)* |
|  |  |  |  |
| Low level of supply/ Drought | Dry periods > 3 monthsLow yield wellSealed lining does not allow water ingress*Other (Please list)* | Correct well liningSuitable lifting mechanismWater levels monitoredAdequate depth*Other (Please list)* | *High**Medium**Low* | Replace/repair liningStart water level monitoringExtend well depthImprove lifting mechanism*Other (Please list)* |
|  |  |  |  |
| Flooding (Fresh Water) | Located in flood areaLocated at bottom of slope/near river bankLow permeability soil in surrounding areaDeforestation in areaOpen access to well*Other (Please list)* | Surrounding vegetationSanitary seals on wellWatertight well casingAdequate drainageRunoff water divertedWellhead raised/ on moundHWTS prepared*Other (Please list)* | *High**Medium**Low* | Move sourceCover open wellProtect/Seal wellheadInstall drainageDig diversion trenchRaise height wellhead*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Storm Damage | Exposed locationDebris loose/overhangingOpen access to well*Other (Please list)* | Protection from forest/ other structureConcrete wellhead structureSecured cover*Other (Please list)* | *High**Medium**Low* | Build/adapt wellheadSecure cover*Other (Please list)* |
|  |  |  |  |
| Landslide/ Subsidence | Tank located at bottom of slope or gullyUnconsolidated soil on surrounding slopesDeforestation in areaTree roots growing near well foundationsOpen access to well*Other (Please list)* | Concrete wellhead structureSealed wellheadTerraces for soil on gradientVegetation on gradientGully rehabilitation*Other (Please list)* | *High**Medium**Low* | Move sourceBuild/adapt foundationBuild protective structure around tankManage soil on slopesCover/seal well*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tsunami/ King Tide/ Saline intrusion | Located near shorelineOn unmanaged aquiferOpen access to well*Other (Please list)* | Concrete wellheadSealed wellheadMangrove protectionCoral reef protectionDeepened well >30mManaged aquifer recharge*Other (Please list)* | *High**Medium**Low* | Move sourceBuild/adapt wellheadCover/seal wellDeepen well*Other (Please list)* |
|  |  |  |  |
| Earthquake | Located in earthquake areaOpen access to well*Other (Please list)* | Concrete wellheadCovered wellSuitable Materials (e.g. Ferro cement)*Other (Please list)* | *High**Medium**Low* | Build/adapt wellheadCover wellMove source*Other (Please list)* |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |

**PIPING**

**Negative Impact/s:**

|  |  |  |  |
| --- | --- | --- | --- |
| Bacterial Contamination  | Chemical Contamination  | Aesthetic (Taste/Colour which prevents consumption)  | Lack of Water Availability  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Event / Cause** | **Risk Factor/s** | **Current Control Measure/s** | **Risk** | **Improvement/s** |
| Piping is broken / leak developsBacteria into supplyChemicals into supply | Pollution near pipingOld pipe/corrodedPiping is exposedMore than 50m head loss without breaking pressure*Other (Please list)* | Pressure rated plastic pipingPiping buried in trenchIsolation joints in intervalsBreak pressure points*Other (Please list)* | *High**Medium**Low* | Replace/repair pipingBury exposed pipingInstall isolation pointsInstall break pressure points*Other (Please list)* |
|  |  |  |  |
| Piping becomes blocked | Water source is unscreenedPiping lengths >1kmPiping goes through multiple gradients*Other (Please list)* | Water source/ pipe inlet is screened or meshedAir release valves on piping lengths >1kmBreak pressure points*Other (Please list)* | *High**Medium**Low* | Install screens/meshInstall air release valvesInstall break pressure points*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Flooding (Fresh Water) | Located in flood areaLocated at bottom of slope/near river bankLow permeability soil in surrounding areaDeforestation in area*Other (Please list)* | Surrounding vegetation along pipe trackPiping is buried/anchoredPressure rated plastic piping in good conditionRunoff water diverted from pipe trackPiping is raised above flood level*Other (Please list)* | *High**Medium**Low* | Move/raise pipingBury/anchor pipingUpgrade pipe materialInstall runoff drainageDig diversion trench*Other (Please list)* |
|  |  |  |  |
| Storm Damage | Exposed locationDebris loose/overhangingPipe is hanging loosely or openly exposed*Other (Please list)* | Protection from forest/ other structurePiping is buried/anchoredPressure rated piping in good condition*Other (Please list)* | *High**Medium**Low* | Move pipingBuild protective structureBury/Anchor pipingUpgrade pipe material*Other (Please list)* |
|  |  |  |  |
| Landslide/ Subsidence | Pipe located at bottom of slope or gullyUnconsolidated soil on surrounding slopesDeforestation in areaPiping is exposed*Other (Please list)* | Protection from forest/ other structurePiping is buried/anchoredPressure rated piping in good conditionTerraces for soil on gradientVegetation on gradientGully rehabilitation*Other (Please list)* | *High**Medium**Low* | Move pipingBuild protective structure over pipeBury/Anchor pipingUpgrade pipe materialManage soil on slopes*Other (Please list)* |
|  |  |  |  |
| Tsunami/ King Tide/ Saline Intrusion | Located near shorelinePiping is exposedLeak/s in pipe*Other (Please list)* | Piping is buried/anchoredPressure rated piping in good conditionMangrove protectionCoral reef protection*Other (Please list)* | *High**Medium**Low* | Move pipingBury/Anchor pipingUpgrade pipe material*Other (Please list)* |
|  |  |  |  |
| Earthquake | Located in earthquake areaPiping is exposedOld/corroded/non flexible pipe material*Other (Please list)* | Piping is buried/anchoredPressure rated piping in good conditionSuitable Materials (e.g. Flexible plastic piping PVC)*Other (Please list)* | *High**Medium**Low* | Move pipingBury/Anchor pipingUpgrade pipe material*Other (Please list)* |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |

**Water Storage Tank/Reservoir**

**Negative Impact/s:**

|  |  |  |  |
| --- | --- | --- | --- |
| Bacterial Contamination  | Chemical Contamination  | Aesthetic (Taste/Colour which prevents consumption)  | Lack of Water Availability  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Event / Cause** | **Risk Factor/s** | **Current Control Measure/s** | **Risk** | **Improvement/s** |
| Bacteria enters water supplyDirt/Debris enters water supplyUncontrolled flow (Low level / High pressure) | Open access to tankVents/screens are dirtyTank is crackedPipes are leakingDirty inside tankStanding water around tankLeaks in surrounding pipes*Other (Please list)* | Fencing around tankTank cover in placeTank inlet has mesh/sieveTank has air vent (meshed)Overflow pipe (clean) leading to drainage area outside fenceFloat valve controlling flow*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) | Build FenceInstall covers on tankInstall inlet mesh/sieveInstall air ventRepair cracksRepair/replace pipesClean tankInstall overflow pipeInstall float valve*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Flooding (Fresh water) | Located in flood areaLocated at bottom of slope/near river bankLow permeability soil in surrounding areaDeforestation in areaSurface water access to tank*Other (Please list)* | Surrounding vegetationSealed tankOverflow/DrainageRunoff water divertedConcrete foundationRaised above flood levelTank is anchored to foundationHWTS prepared*Other (Please list)* | *High**Medium**Low* | Move tankBuild/raise foundationInstall overflow/drainageDig diversion trench/esAnchor structureSeal tank*Other (Please list)* |
|  |  |  |  |
| Storm damage | Exposed locationDebris loose/overhanging*Other (Please list)* | Protection from forest/ other structureConcrete foundationTank anchoredPiping is secured to tankCovers are secured*Other (Please list)* | *High**Medium**Low* | Move tank to protected areaBuild/adapt foundationAnchor tankSecure pipingSecure covers*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Landslide/ Subsidence | Tank located at bottom of slope or gullyUnconsolidated soil on surrounding slopesDeforestation in areaTree roots growing near tank foundations*Other (Please list)* | Concrete foundationTank anchoredTerraces for soil on gradientVegetation on gradientGully rehabilitationSealed tank*Other (Please list)* | *High**Medium**Low* | Move tankBuild/adapt foundationBuild protective structure around tankManage soil on slopes*Other (Please list)* |
|  |  |  |  |
| Tsunami/ Tidal Surge/ Saline Intrusion | Located near shoreline*Other (Please list)* | Concrete foundationSealed tankTank anchoredMangrove protectionCoral reef protection*Other (Please list)* | *High**Medium**Low* | Move tankBuild/adapt foundationSeal tankAnchor tank*Other (Please list)* |
|  |  |  |  |
| Earthquake | Located in earthquake area*Other (Please list)* | Concrete foundationTank is anchoredSuitable Materials (e.g. Ferro cement)*Other (Please list)* | *High**Medium**Low* | Build/adapt foundationAnchor tankMove tank*Other (Please list)* |
|  |  |  |  |

**Distribution Points/Standpipes**

**Negative Impact/s:**

|  |  |  |  |
| --- | --- | --- | --- |
| Bacterial Contamination  | Chemical Contamination  | Aesthetic (Taste/Colour which prevents consumption)  | Lack of Water Availability  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Event / Cause** | **Risk Factor/s** | **Appropriate Control Measure/s** | **Risk** | **Improvement/s** |
| Bacteria enters water supply | Leaks in surrounding pipesAnimals access to areaStanding water in collection areaRubbish/pollution near tapstandTap stand is crackedTaps are leaking*Other (Please list)* | Fence around stand pipeDrainage channel to area located outside of the fenceClean concrete apron and tapstand*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) |  NoBuild fence/sInstall drainageRepair/replace pipe/sRepair/replace apron and/or tapstand/sRepair/replace tap/sClean collection area/s*Other (Please list)* |
|  |  |  |  |
| Chemicals enter water supply | Pipes are corroded*Other (Please list)* | Plastic piping*Other (Please list)* | *High**Medium**Low* |  NoReplace corroded pipe/s*Other (Please list)* |
|  |  |  |  |
| Uncontrolled flow (Low level / High pressure) | More than 100m head loss without breaking pressureLow delivery head <10mSignificant leaks in pipes*Other (Please list)* | Optimised pipe size for head (calculated)Pressure rated piping in good condition*Other (Please list)* | *High**Medium**Low* | Replace pipingRepair piping*Other (Please list)* |
|  |  |  |  |
| Flooding (Fresh Water) | Located in flood areaLocated at bottom of slope/near river bankLow permeability soil in surrounding areaDeforestation in area*Other (Please list)* | Surrounding vegetationSealed piping on tapstandAdequate drainageRunoff water divertedTapstand raised/ on moundHWTS prepared*Other (Please list)* | *High**Medium**Low* | Move tapstandProtect/Seal tapstandInstall drainage around tapstandDig diversion trenchRaise height tapstand*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Storm Damage | Exposed locationDebris loose/overhanging*Other (Please list)* | Protection from forest/ other structureConcrete tapstand and apron*Other (Please list)* | *High**Medium**Low* | Build/adapt tapstandBuild protective structure*Other (Please list)* |
|  |  |  |  |
| Landslide/ Subsidence | Tapstand located at bottom of slope or gullyUnconsolidated soil on surrounding slopesDeforestation in areaTree roots growing near tapstand foundations*Other (Please list)* | Concrete tapstand structureSealed piping on tapstandTerraces for soil on gradientVegetation on gradientGully rehabilitation*Other (Please list)* | *High**Medium**Low* | Move tapstandBuild/adapt tapstandBuild protective structure around tapstandManage soil on slopes*Other (Please list)* |
|  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tsunami/ King Tide | Located near shoreline*Other (Please list)* | Concrete tapstandSealed piping on tapstandMangrove protectionCoral reef protectionRaised tapstand*Other (Please list)* | *High**Medium**Low* | Move tapstandBuild/adapt tapstandRaise tapstand*Other (Please list)* |
|  |  |  |  |
| Earthquake | Located in earthquake area*Other (Please list)* | Concrete tapstandSuitable Materials (e.g. Ferro cement)*Other (Please list)* | *High**Medium**Low* | Build/adapt tapstand*Other (Please list)* |
|  |  |  |  |
| *(Circle below as appropriate)* |  |  | *High**Medium**Low* |  |
|  |  |  |  |

**User/Household**

**Negative Impact/s:**

|  |  |  |  |
| --- | --- | --- | --- |
| Bacterial Contamination  | Chemical Contamination  | Aesthetic (Taste/Colour which prevents consumption)  | Lack of Water Availability  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Event / Cause** | **Risk Factor/s** | **Appropriate Control Measure/s** | **Risk** | **Improvement/s** |
| Bacteria enters water supplyDirt/Debris enters water supply | Non covered storageContainers are dirtyDirty buckets for collection*Other (Please list)* | Sealed storage containersHWTS available*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) | Obtain sealed storage containersClean/disinfect storage Containers & bucketsBegin HWTS*Other (Please list)* |
|  |  |  |  |
| Low level of supply | Variability in water supplyMain water system regularly unavailable*Other (Please list)* | Adequate storage volume at household*Other (Please list)* | *High**Medium**Low* | Increase storage quantity*Other (Please list)* |
|  |  |  |  |

**Sanitation**

**Negative Impact/s:**

|  |  |  |  |
| --- | --- | --- | --- |
| Direct Human Contact  | Human exposure via environment | People DON’T use the toilet  | Vector borne contact |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Event / Cause** | **Risk Factor/s** | **Appropriate Control Measure/s** | **Risk** | **Improvement/s** |
| Human contact with faeces | Broken/dirty riser or panWooden floor*Other (Please list)* | Concrete/solid floorClean riser and panHandwashing station*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) | Clean/replace riser or panClean floorReplace floor surfaceInstall handwashing station*Other (Please list)* |
|  |  |  |  |
| Surrounding environment is contaminated by faeces/sludge/ waste water | Shallow pits depthBroken septic tankHigh groundwater table*Other (Please list)* | Collection pit is adequatelylinedCollection pit has adequatedepthCollection pit has accesscoverSeptic tank has drainagetrench/treatment*Other (Please list)* | *High**Medium**Low* | Rebuild toiletLine new toilet pitInstall access coverInstall septic tank drainage*Other (Please list)* |
|  |  |  |  |
| People don’t use sanitation facilities | Toilet smellsToilet is hotToilet has lots of flies*Other (Please list)* | Adequate air ventilationSuperstructure provides privacy and security*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) | Install adequate ventilation to cool and minimise fliesImprove superstructure*Other (Please list)* |
|  |  |  |  |
| Flooding (Pits and other waste storage is flooded) | Located in flood areaLocated at bottom of slope/near river bankLow permeability soil in surrounding areaDeforestation in area*Other (Please list)* | Surrounding vegetationSealed piping on toiletAdequate drainageRunoff water divertedToilet raised/ on moundHWTS prepared*Other (Please list)* | *High**Medium**Low* | Move toiletProtect/Seal toiletInstall drainage around toiletDig diversion trenchRaise height toilet*Other (Please list)* |
|  |  |  |  |
| Storm Damage (Toilet no longer functioning) | Exposed locationDebris loose/overhanging*Other (Please list)* | Protection from forest/ other structureConcrete/steel structure*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) | Move toiletBuild reinforced structure*Other (Please list)* |
|  |  |  |  |
| Landslide/ Subsidence (Toilet no longer functioning) | Toilet located at bottom of slope or gullyUnconsolidated soil on surrounding slopesDeforestation in areaTree roots growing near toilet foundations*Other (Please list)* | Concrete structureSealed piping on toiletTerraces for soil on gradientVegetation on gradientGully rehabilitation*Other (Please list)* | *High**Medium**Low* | Move toiletBuild/adapt toiletImprove protective structure around toiletManage soil on slopes*Other (Please list)* |
|  |  |  |  |
| Tsunami/ King Tide | Located near shoreline*Other (Please list)* | Concrete structureSealed piping on toiletMangrove protectionCoral reef protectionRaised toilet*Other (Please list)* | *High***(Action Needed Now)***Medium*(Upgrades Needed)*Low*(No Action Required) | Move toiletBuild/adapt toiletRaise toilet*Other (Please list)* |
|  |  |  |  |
| Earthquake | Located in earthquake area*Other (Please list)* | Concrete structureSuitable Materials (e.g. Ferro cement)*Other (Please list)* | *High**Medium**Low* | Build/adapt toilet*Other (Please list)* |
|  |  |  |  |