

SOUTHERN WWTP - SHORT LIST			Short list assessment for a new wastewater treatment plant and land discharge site for the Southern WWTP							
			SITE ONE: SHARPE FARM		SITE TWO: NARROWS/RUKUHIA		SITE THREE: PENNIKET ROAD		SITE FOUR: GOLF COURSE	
Assessment Criteria		Ranking	Rationale		Ranking	Rationale		Ranking	Rationale	
1. Operational	1a	Ability to discharge stage 1 flows to land (airport only)	3	Low-lying land at Sharpe Farm has drainage and permeability restrictions while the small area of land above the terraces (southwest part of site) has rolling slopes and restricted subsoil permeability. Some deficit irrigation of topsoils may be feasible.	3	The low lying land has drainage and permeability restrictions while the elevated land has rolling slopes and restricted subsoil permeability. Some deficit irrigation of topsoils may be feasible.	7	Both sites at Penniket Rd will accept treated wastewater when application rates match the soils infiltration. Year round discharge still unlikely because of this and further investigation would be required to confirm whether the site could take all Stage 1 flows under deficit irrigation. (Risk associated with PFAS considered under groundwater criteria 5c)	7	Soils have adequate infiltration characteristics for year round irrigation. Surface applied treated wastewater will potentially move through the soil rapidly to the Waikato River (i.e. possible to discharge to land, not considering potential geotechnical risk associated with such a discharge). The nature of the soil material indicates little renovation is likely but scoring based on high quality discharge not requiring further land treatment to achieve required quality).
	1b	Accessibility from transport corridors for operation	8	Good access available from both Faiping Road (noting "residential" nature) and Raynes Road. Assumed that Raynes Road would be utilised as the preferred.	7	Assumes access either via existing formed access from Narrows Road or (preferably) SH3) Narrows Road would be an option for ongoing access but with challenges turning on/off SH3. Property links to SH3 in Rukuhia. No existing formed access (and appears to be some encroachment from neighbouring dwelling) but remains an opportunity. Current access from Raynes Road has some sightline issues and fairly sharp gradient. Raynes Road access will be cut-off with construction of Southern Links but opportunity to work with WK to seek new access.	6	Site access directly off SH3 is convenient. Sightlines are better than Site 4 but SH3 in this location is a high-speed environment and some safety concerns remain.	4	Site access directly off SH21 is convenient; however, the sightlines, proximity to the Narrows Bridge, and traffic speeds make this a dangerous access point (while this would improve post-Southern Links, the timing of those works are too uncertain to include here). Some modifications would be required to the turn in area - possibly opportunity to relocate the access and create a right-turn bay to improve safety (this has not been investigated in detail therefore has not been taken into account in scoring.)
	1c	Access to utilities/power	7	Doubled ended WEL 11kV supply along the paper Faiping Rd, immediately adjacent site. No potable water supply available. 2.9km to HCC SH3 Reservoir. Existing bore on site, no take consent.	5	11kV supply available from SH3, approx. 300m / 11kV supply available on Raynes Rd to north, approx. 800m / 11kV supply available on Narrows Rd to south approx. 600m. No potable water supply available. 2.4km to HCC SH3 Reservoir. Approx 3.5km from WDC supply adjacent SH3 industrial site at Airport.	7	Water and 11kV supplies on site boundary However, the Water pipeline is 150mm PVC which appears to have been set up for the localised industrial estate and so may have a limited total capacity (potentially fire fighting supply only)	6	WEL and Waipā Networks both have 11kV supplies coming to adjacent the site. Both are single ended and they are not linked for any form of resilience. There is a potable water supply to the northern end of the site. This is a Waikato District OD63mm. Existing bore on site, but no take consent.
	1d	Greenhouse gas emissions	8	Shortest conveyance route from contributing catchment with relatively short distance to Waikato River for future discharge (depending on chosen discharge location)	6	Second shortest route from contributing catchment with moderate distance to Waikato River for future discharge (depending on chosen discharge location)	4	Second longest route from contributing catchment with moderate distance to Waikato River for future discharge (depending on chosen discharge location)	2	Furthest from contributing catchments (from Southern links), will require intermediate pump station. Close to potential discharge location
	1e	Treatment plant hydraulics (ie requirement for pumping)	5	Relatively flat site so constrained hydraulic profile through the site. Elevated ILW + main reactors would allow a largely gravity flow through.	7	The sloping sites will allow a predominantly gravity flow through the treatment plant, apart from RAS and general 'site drainage returns'	5	Relatively flat site so constrained hydraulic profile through the site. Elevated ILW + main reactors would allow a largely gravity flow through.	5	Relatively flat site so constrained hydraulic profile through the site. Elevated ILW + main reactors would allow a largely gravity flow through.
	1f	Operability and flexibility during operation	9	Large site with usable space around the proposed WWTP location for operational activities	8	Large site with usable space around the proposed WWTP location for operation. Scores lower than site 1 as the remnant forest stands reduce the usable space.	2	Challenges with operating the site within a limited footprint and across two pieces of land	3	Challenges with operating the site across the two parcels (split by future southern links)
	1g	Future proofing	9	Large site with usable space around the proposed WWTP location	8	Large site with usable space around the proposed WWTP location. Scores lower than site 1 as the remnant forest stands reduce the usable space.	1	Limited space for future expansion / construction space for building of future stages while plant remains on line / construction of renewals and replacements (again while plant remains on line)	7	Site is more space constrained due to shape, proximity to Waikato River (and the geotechnical constraints around the river bank) and southern links split
2. Conveyance	2a	Distance and complexity of pipelines from contributing catchments	9	Shortest conveyance route, avoids SH3.	7	Short-length along SH3, second shortest conveyance route from Southern Links.	4	Longer length of conveyance, long distance along SH3.	1	Furthest from contributing catchments (from Southern links), will require intermediate pump station and Waikato River crossing (river crossing of raw wastewater).
	2b	Distance and complexity to potential river discharge sites	6	One option for route to discharge to the Waikato River, assumption to follow roads. Shorter distance than site two.	5	Two options for route to discharge to the Waikato River, one option will require crossing of SH21. Assumption to follow roads.	4	Three options for route to discharge to the Waikato River, route will have to go around the airport. Longest length of pipelines.	7	Close proximity to the Waikato River. Might be difficult to get to the river given incised nature of river at the Narrows.
3. Mana whenua										
4. Physical	4a	Liquefaction and geotechnical risk	6	Site likely to be susceptible to liquefaction in a moderate to large earthquake event, with lateral spreading risk (to stream). A wide range of treatments are available to manage liquefaction effects, including ground improvements and strengthened foundations. Weak soils may be present across the site and require excavation and replacement or another engineering treatment below new structures	5	Site likely to be susceptible to liquefaction in a moderate to large earthquake event, with lateral spreading risk around drainage channels. A wide range of treatments are available to manage liquefaction effects, including ground improvements and strengthened foundations. Risk of weak ground with high groundwater levels.	7	Liquefaction risk, risk of weak soils.	4	The western/riverbank edge of this site is at risk of slope instability, and will require setback distance of 20m to 30m. Localised areas underlain by weak clayey soils swampy areas would be prone to high settlement and low bearing capacity. Potential for loose sandy soils that will be susceptible to liquefaction below groundwater table.
	4b	Potential impacts of contaminated soil	8	Agricultural land, several sheds and stockyards. Low risk of contaminated land issues requiring considerable risk assessment or management to enable development.	9	Agricultural land, only one shed observed. Low risk of contaminated land issues requiring considerable risk assessment or management to enable development.	7	Historical use of southern paddocks, dwelling and sheds. Elevated risk in southern portion of site due to observations of potential trials and proximity to Airport. Northern area of Site 3 is low risk. Need to consider potential PFAS in groundwater beneath Airport.	5	Old golf course – broad cast pesticide application and registered HAIL. Likely contains elevated levels of contaminants throughout the site that will require some form of risk assessment and management, largely dependent on the any proposed WWTP design / earthworks.
	4c	Flooding risk	9	Not identified as flood hazard area or ponding area in District Plan	8	Not identified as flood hazard area or ponding area in District Plan. However, site observations indicated low lying areas of the site are subject to rainfall ponding especially during winter months	9	Not identified as flood hazard area or ponding area in District Plan	9	Not identified as flood hazard area or ponding area in District Plan
	4d	Buildability	7	Flat site unlikely to present notable construction challenges, risk of sediment discharge to Nukuhau Stream manageable with normal controls. Good bi-directional access. New culvert on Nukuhau tributary would be required. Assumes access from Raynes Road.	5	Building on the slopes will provide good ground but higher associated earthworks volumes, more sediment control required. Access restricted compared to site 1. Assumes access off Raynes Road, which is likely to require significant modification for construction purposes. Access from SH3 more suitable but would require approval from WK for a new access (as existing unformed) and would impact on neighbour. Access from Narrows also an option but has some challenges with the Narrows-SH3 intersection which would likely require left in/out only.	8	Both sites flat ground, easy earthworks and good, relatively safe access. Construction access would likely require left in/out only.	4	Well drained site likely to be relatively dry, all weather working conditions. Risk of sediment discharge to Waikato River manageable with normal controls but any point source discharge would require careful management in terms of erosion/scour/outfall control. Access to and from SH21 is a problem in terms of public and construction vehicle safety (sightlines, proximity to the Narrows Bridge, and traffic speeds make this a dangerous access point)
5. Natural environment	5a	Potential for impacts on the natural character of wetlands, rivers and lakes and their margins	7	Assume WWTP located to the west of the paper road - which is located within riparian margins of a tributary system but away from Nukuhau main stem (and the associated Significant Natural Area). A potential wetland is identified within the eastern section of the site (likely be 100m+ away from WWTP), near the Nukuhau Stream main channel. Further wetland delineation would be required. Tributaries of the Nukuhau Stream traverse the site, so there is potential for moderate impacts on the natural character of these waterways. Opportunities to provide mitigation that will have a positive impact on natural character through management and restoration of existing waterways.	6	One watercourse traverses the site. Assume WWTP located at western end of site where waterway is heavily modified. No wetlands identified but noted that it is highly likely there was wetland here in the past and further wetland delineation would be required. Limited impact on natural character of wetlands/streams, opportunities to provide mitigation that will have a positive impact on natural character through management and planting of existing waterways.	10	No wetlands, watercourses, or lakes identified within the site.	5	No wetlands identified within the site (further survey may be needed if site is chosen). However, one watercourse along the eastern edge of the site and several man-made ponds are present, which likely provide habitat to aquatic fauna and avifauna. Dependent on location of WWTP. Potential for moderate impact on natural character of the Waikato River (and on the identified Outstanding Natural Landscape overlay that runs along the river margin) due to proximity of WWTP.
	5b	Potential for impacts on aquatic and terrestrial ecology including vegetation, fish, birds, bats and lizards	7	Assume WWTP located to the west of the paper road, some riparian vegetation clearance anticipated of tributary - minimal impacts to birds. No stream diversion expected but some potential for impact on fish. Some impacts for bats (noise, lighting, likely removal of trees in centre of site). Opportunities to provide mitigation that will have a positive impact on aquatic and terrestrial ecology through stream enhancement and riparian planting of existing waterways. Noting that noise (blowers at night) needs to be mitigated quite low anyway for DP requirements. While lights are provided for night vision, they do not need to be turned on as a matter of routine. Restoration opportunities available along the Nukuhau Stream and tributary and well as through usage of the balance land.	3	SNA identified within the site as well as remnant kahikatea stands - which provide important habitat for terrestrial fauna. Assume WWTP can be located around the remnant stands - clearance of any of these trees is considered a no-go. Current proposed location (at western end of site) has high risks on bat and lizard populations within SNA and kahikatea vegetation (if requiring removal). Should watercourse require diversion/damming of watercourse, this will impact any native fish. No significant impacts anticipated for avifauna, which comprise of primarily Not Threatened species. Construction risks to bats from noise and lighting during construction. Opportunities to provide mitigation that will have a positive impact on aquatic and terrestrial ecology through stream enhancement and riparian planting of existing waterways and expansion of the remnant stands. Noting that noise (blowers at night) needs to be mitigated quite low anyway for DP requirements. While lights are provided for night vision, they do not need to be turned on as a matter of routine. Restoration opportunities available around the remnant bush.	9	Impacts on terrestrial ecology are limited to bats - from noise and lighting (tree removal not expected). Low likelihood but potential impact for lizards, which may reside in the scrubby vegetation on the edges of the site. Only Not Threatened avifauna are expected within proximity to the site.	5	Clearance of trees may cause injury to bats and avifauna, and clearance of grassy groundcover may injure native lizards. Potential challenges getting approval for removal of vegetation on site and associated loss of bat habitat. Should WWTP placement require diversion/ damming of watercourse or removal of man-made ponds, this will likely impact native fish. Vegetation within the site is mixed native exotic and is generally scattered throughout. Removal will impact terrestrial fauna. Opportunities to provide mitigation that will have a positive impact on aquatic and terrestrial ecology through stream enhancement and riparian planting of existing waterways and well an enhancement of existing planting
	5c	Potential for impacts on groundwater (and therefore users) and surface water quality	6	Some risk to wetlands and surface water bodies if land discharge progressed and would need to consider appropriate setbacks. Impacts of drawdown on potential wetlands or surface water bodies would need to be addressed, though we have assumed this could be managed to a low risk level via appropriate siting, design and construction controls. Shallow wells directly down-gradient are potential receptors of land discharge or could be in zone of drawdown influence. Given the rural nature of the site the risk of consolidation settlement damaging private assets is likely to be low. The contaminated land assessment also indicates a low risk of contamination requiring significant risk assessment or controls	5	Some risk to surface water bodies if land discharge progressed and would need to consider appropriate setbacks. Higher direct risk to waterbodies from stormwater run off and spills, would require additional management. Shallow wells directly down-gradient are potential receptors of land discharge or could be in zone of drawdown influence.	4	Low direct risk to waterbodies. Risk of discharge to land mobilising PFAS from adjacent sites and/or drawdown during construction having the same effect. Groundwater gradient unclear, at least 8 shallow bores which could be receptors of any site discharge or could be in zone of drawdown influence.	5	Some risk to surface water bodies if land discharge progressed and would need to consider appropriate setbacks. Higher direct risk to Waikato River and watercourse along back of site from stormwater run off and spills, would require additional management. No wells down gradient (geotechnical risk covered above).
	5d	Potential for impacts on highly productive soil	5	Majority of site classified as LUC2	5	Area where WWTP likely to be located is split across 2, 3 & 4	5	Both parcels classified as LUC 1 - southern parcel has a business/commercial zone, therefore NPSHPL will not apply to that parcel (that parcel would score 10 on its own)	5	Classified as LUC 3, noting that this land is not currently managed as production land so no loss of actual productive land (however, loss of capacity remains)

6. Built environment	6a	Potential for odour effects	5	(Based on current possible layout) High risk odour sources can likely be located more than 150m from the site boundary. Other odour sources, including the reactors, will be closer but there is a sufficient buffer to minimise these risks. Approximately 14 dwellings are located within 300m of high risk odour sources. The rural residential development which is occurring to the north of the site on private roads off Peacocks Rd and also on Faiping Rd will increase sensitivity of the area to possible odour effect in the event of a plant malfunction. May be able to locate high risk units 200m from nearest dwelling. Some consentability risk.	5	(Based on current possible layout) High risk odour sources can likely be located more than 150m from the site boundary. Other odour sources, including the reactors, will be closer but there is a sufficient buffer to minimise these risks. Approximately 8 dwellings are located within 300m of high risk odour sources (noting that two of these have been acquired by the crown for the Southern Links project). May be able to locate high risk units 200m from nearest dwellings. Overall there looks to be a lower housing density than site 1 but there are sites within 200m that could be developed as a permitted activity. Commercial land use to the northwest of the plant which would have a lower odour sensitivity. Some consentability risk.	2	Unable to locate high risk odour sources more than 150m from the site boundary. Treatment processes will potentially located adjacent to the boundary. Therefore, the site offers no significant odour buffer. Residential and commercial receptors are located to southeast of the site. These receptors will be generally not located in the predominant downwind direction. However, at least 1 dwelling is likely to be located within 100m of the plant and potentially up to 11 dwellings within 300m of the plant. A number of commercial operators will also be located within 300m of the plant. A positive feature of the site are open fields in other directions. Although this land would not be control by the council and land use could change over time with reverse sensitivity implications. Moderately high consentability risk	2	Unable to locate high risk odour sources more than 150m from the site boundary. Treatment process will be located 30-50m from the site boundary. Residential receptors are located to east of the site which is in the predominant downwind direction. One dwelling may be located within 100m of the plant and potentially up to 19 dwellings could be located within 300m of the plant. A feature of the site is the river running along the site west boundary. Potentially winds and any emitted odour could be channelled along the river. Moderately high consentability risk
	6b	Potential for noise effects (including plant and traffic access)	7	Noise expected to be able to be mitigated to a prescribed level at the boundaries. Blowers and centrifuges are the highest noise potential. Both come in acoustic enclosures which would be housed withing concrete buildings. Potentially higher sensitivity receiving environment due to lower ambient noise; however, Southern Links Designation would already have an impact on the noise environment and therefore residents are aware that there will be a change in noise environment in the future.	7	Noise expected to be able to be mitigated to a prescribed level at the boundaries. Blowers and centrifuges are the highest noise potential. Both come in acoustic enclosures which would be housed withing concrete buildings. Potentially lower sensitivity receiving environment than Site 1 due to proximity to SH3 and the resulting higher level of existing noise. In addition, Southern Links Designation would already have an impact on the noise environment and therefore residents are aware that there will be a change in noise environment in the future.	5	Noise expected to be able to be mitigated to a prescribed level at the boundaries but much more challenging with very limited buffers. Blowers and centrifuges are the highest noise potential. Both come in acoustic enclosures which would be housed withing concrete buildings. Potentially lower sensitivity receiving environment due to proximity to SH3 and the resulting higher level of existing noise as well as the industrial and airport land uses.	5	Noise expected to be able to be mitigated to a prescribed level at the boundaries but much more challenging with smaller buffers than sites 1 and 2. Blowers and centrifuges are the highest noise potential. Both come in acoustic enclosures which would be housed withing concrete buildings. Potentially higher sensitivity receiving environment due to lower ambient noise even with proximity to SH21; however, Southern Links Designation would already have an impact on the noise environment and therefore residents are aware that there will be a change in noise environment in the future.
	6c	Potential for landscape and visual effects	6	Highly visible from residential properties to the north. Existing vegetation provides a lot of screening and remaining appear possible to screen from adjacent plant. Also visible from residential properties to the south, but easier to screen.	5	Highly visible including from SH3 and Raynes Road - transient viewers - but impacts on viewshaft in district plan. Highly visible from residential properties to the north and east (including Rukuhia village) but opportunity to screen along edge of site (away from SH3). Future southern links corridor would remove visual audience to the north.	7	Highly visible including from SH3 - transient viewer. Few direct neighbours overlooking site. Expected to have a lower sensitivity than other sites due to the surrounding industrial/airport land uses. More challenging to screen with proximity to SH3 (maintaining vegetation harder in proximity to SH and limit on size of trees acceptable.	3	Smaller visual audience but elevated neighbours would be difficult to screen. Expected to be sensitive to visual effects due to significant change from existing golf course land use. This site will also impact an identified Outstanding Natural Landscape (per the proposed Waikato District Plan)
	6d	Potential for archaeological impacts	5	Archaeological artefacts have been found on the farm in the past and the current landowner is aware of probable borrow pits on the land. It was not possible to see them during the initial field survey as the grass was very long. It is intended to return to site in autumn to re-assess the nature and extent of the archaeological evidence. Archaeological sites more likely to be present on the eastern half of the site, scoring based on WWTP on western side.	9	No known sites on this land. The research has not lead to the identification of sites and no archaeological sites are anticipated.	9	No known sites on this land. The research has not lead to the identification of sites and no archaeological sites are anticipated.	2	Three known sites within the golf course. This includes two pa (one at north and one at south. South end probably destroyed when existing infrastructure constructed. North end would have been impacted to some degree by the golf course construction) and one extensive garden site.
	6e	Potential for heritage impacts	10	There are currently no known heritage sites affected by the proposal (potential archaeological sites covered above).	10	There are currently no known heritage sites affected by the proposal.	10	There are currently no known heritage sites affected by the proposal.	10	There are currently no known heritage sites affected by the proposal (archaeological sites covered above).
	6f	Alignment with long term growth / alternative land uses	6	Not in an area that is strategically identified Outside immediate development areas but in area that is already becoming rural-residential/large lot	6	Not in an area that is strategically identified Outside immediate development area but directly adjacent large lot residential	6	The Southern portion of Site 3 is located within the existing Airport Business zone Southern precinct, forming part of the sub-regions limited industrial land supply. Through Plan Change 20: Airport Northern precinct extension, HCC has presented expert evidence encouraging the safeguard of industrial land in the sub-region. HCC's appointed economic expert has identified the importance of industrial/land adjoining Airport activities to be considered a 'scarce resource' that should be developed to its full industrial potential leveraging the strategic locational advantages the Airport and associated linkages provide.	6	Not in an area that is strategically identified Site appears to present better uses however this is difficult to evidence