

Appendix G2

Environmental Impact Assessment

BASIC ASSESSMENT REPORT

ENVIRONMENTAL IMPACT ASSESSMENT

Key:

D	=	Duration of impact	<ul style="list-style-type: none"> S = Short term - 0-5 years. M = Medium term - 5-11 years. L = Long term - impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention. P = Permanent - mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.
L	=	Likelihood of impact	<ul style="list-style-type: none"> C = Certain - the event is expected to occur in most circumstances. L = Likely - the event will probably occur in most circumstances. M = Moderate - the event should occur at some time. U = Unlikely - the event could occur at some time. R = Rare/Remote - the event may occur only in exceptional circumstances
S	=	Significance of impact	<p>Provides an overall impression of an impact's importance, and the degree to which it can be mitigated. The range for significance ratings is as follows-</p> <p>0 – Impact will not affect the environment. No mitigation necessary.</p> <p>1 – No impact after mitigation.</p> <p>2 – Residual impact after mitigation.</p> <p>3 – Impact cannot be mitigated</p>

PLANNING AND DESIGN PHASE

Alternative	Feature / Aspect	Impact	Impact Assessment			Mitigation	S
			D	L	S		
S1	Socio-economic aspects	Possible impact of alignment on structures (e.g. farm buildings).	P	U	3	Due consideration to existing structures during the finalisation of the alignment to prevent/minimise impacts.	
	Infrastructure & Services	Possible impact of alignment on infrastructure (e.g. R510 road, access road to Wovenfontein, Exxaro pipeline).	P	M	3	Due consideration to existing infrastructure during the finalisation of the alignment to prevent/minimise impacts.	
	Flora	Possible impact of alignment on protected trees.	P	M	3	Final alignment will attempt to avoid protected trees, where possible.	
	Watercourse	<ul style="list-style-type: none"> Possible impact of alignment on watercourses (i.e. Rietspruit main stem and tributaries). Impacts of existing river crossings to watercourse characteristics (i.e. flow, biota, habitat) may be exacerbated by the new pipeline crossings. 	L	L	3	<ul style="list-style-type: none"> The point where the proposed gravity main ties in with the existing Exxaro pipeline, at the western end of the route, should not encroach upon the 1:100 year floodline nor the riparian habitat of the western tributary of the Rietspruit. River crossings of the Rietspruit main stem and eastern tributary should be selected to minimise impacts to watercourse characteristics. 	
S2	Infrastructure & Services	The siting of the pump station could impact on existing infrastructure at the Wovenfontein Balancing Dams	P	U	2	Due consideration to be given to existing structures and infrastructure during the siting of the pump station to prevent or minimise impacts.	

BASIC ASSESSMENT REPORT

CONSTRUCTION PHASE

Alternative	Feature / Aspect	Impact	Impact Assessment			Mitigation	S
			D	L	S		
S1	Watercourses	<ul style="list-style-type: none"> The pipeline crossings of the Rietspruit main stem and eastern tributary could lead to the alteration of the structure (i.e. bed and banks), damage to the riparian habitat, lead to increased siltation and adversely affect aquatic biota (e.g. clogging of gills, influence movement). Impacts of existing river crossings to flow may be exacerbated by the temporary diversions. 	S	L	3	<ul style="list-style-type: none"> No construction material will be stockpiled in the 1:100 year floodline. Intercept silt-laden runoff from construction site along eastern tributary of the Rietspruit. Proper erosion and sedimentation prevention techniques to be implemented. Riparian areas must be reinstated and exotic species must be removed and replaced with indigenous riparian vegetation during execution of rehabilitation. Temporary diversion to be built to maintain a dry works area. If possible, construction at the watercourse crossings should be undertaken during the dry season. Pipelines to be encased with concrete to prevent any damage. Tie-in points at riverbanks must be suitably safeguarded with gabion cut-off walls to prevent erosion. Diversion to be removed and affected area to be reinstated following the installation of the pipeline and the concrete encasing. 	1
	Soil	<ul style="list-style-type: none"> Erosion on slopes. Loss of topsoil. Establishment of borrow pits. Blasting-related impacts 	S	M	2	<ul style="list-style-type: none"> Stabilisation of cleared areas to prevent and control erosion will be actively managed. The method chosen (e.g. watering, planting, retaining structures, commercial anti-erosion compounds) will be selected according to the site-specific conditions. In areas to be affected by construction activities a minimum of 300mm of topsoil should be removed and stockpiled separately. Permit to be sought for proposed borrow pits, in terms of the Minerals and Petroleum Resources Development Act (No. 28 of 2002). Blasting to be undertaken in such a manner as to control impacts to existing Exxaro pipeline, roads (R510, access roads), other infrastructure, structures, human health and animals. 	1
	Flora	<ul style="list-style-type: none"> Damage to / removal of protected trees and medicinal plants. Damage to riparian vegetation at river crossings. Encroachment by exotic species. 	S	M	2	<ul style="list-style-type: none"> Marking of all protected trees within construction servitude. These trees must not be damaged except if they fall within the direct right of way of the pipeline. Permit(s) to be obtained under the National Forests Act (No. 84 of 1998) if protected trees are to be cut, disturbed, damaged, destroyed or removed. Control of alien invasive species in line with the requirements of the Conservation of Agricultural Resources Act will be undertaken 	1
	Fauna	<ul style="list-style-type: none"> Poaching. Obstruction of movement. Preventing access to watering points. Harm from construction activities. Loss of animals due to improper access control 	S	L	3	<ul style="list-style-type: none"> Demarcated construction servitude to be fenced off and to be screened with appropriate material. Prosper access control, in negotiation with the landowner, to be employed. Provision to be made for animal movement to watering points. 	1
	Air	<ul style="list-style-type: none"> Dust from use of dirt roads, transportation of fill and spoil material and from bare areas 	S	M	2	<ul style="list-style-type: none"> Dirt roads to be watered down. Vehicles transporting soil must be covered 	1

BASIC ASSESSMENT REPORT

Alternative	Feature / Aspect	Impact	Impact Assessment			Mitigation	S
			D	L	S		
	Noise	<ul style="list-style-type: none"> Noise associated with construction activities (e.g. vehicle movement, trenching, generators). 	S	L	2	<ul style="list-style-type: none"> The provisions of SABS 1200A will apply to all areas within audible distance of residents. Construction activities generating output levels of 85 dB or more will be confined to the normal working hours. 	1
	Aesthetics	<ul style="list-style-type: none"> Impacts to visual quality of the area through poor housekeeping and construction-related activities 	S	L	3	<ul style="list-style-type: none"> Demarcated construction servitude to be screened off with appropriate material. 	2
	Safety and Security	<ul style="list-style-type: none"> Danger trench collapse. Uncontrolled access Criminal activities associated with construction 	S	M	2	<ul style="list-style-type: none"> Demarcated construction servitude to be fenced off. Compliance with Occupational Health and Safety Act (Act No. 85 of 1993). Contractor to provide an Occupational Health and Safety Management Plan to the Construction Manager for approval prior to the commencement of works in terms of the Construction Regulations (2003). All trenches must be clearly marked in order to alert people to the potential hazard. Barrier tape to be erected around open trenches. Depending on geotechnical conditions, trenches to be shored. All existing and new gates used for access to the site to be managed in accordance with the agreement with the specific landowner. Two-way radios to be used, due to poor reception of cell phones in area. Proper supervision of employees at all times. Employees to be clearly identifiable. 	1
	Waste	<ul style="list-style-type: none"> Use of veld for ablution purposes. Land, air and water pollution through poor waste management practises 	S	M	2	<ul style="list-style-type: none"> Sufficient ablution facilities to be provided at the Construction Camps and along construction sites. Ablution facilities to be maintained. Waste skips to be provided at the construction camp and on site. Skips to be cleaned weekly, and waste to be disposed off at a registered waste disposal site (e.g. Groothoek waste disposal site) 	1
	Construction camp	<ul style="list-style-type: none"> Siting of construction camp – visually obtrusive, vegetation clearing, poaching, security. Improper storage of material. 	S	M	2	<ul style="list-style-type: none"> Selection of construction camp to be undertaken in consultation with Environmental Control Officer (ECO) and landowner. Site selection to avoid sensitive environmental features, such as 1:100 year floodline, ridges, and areas with protected trees. Site plan of construction camp to be prepared, which must be approved by the ECO. Camp site to be demarcated and to be screened off. No accommodation to be provided at camp, apart from security. Appropriate storage facilities for fuel, paint, cement bags, and other material with a potential to cause harm to the environment 	1

BASIC ASSESSMENT REPORT

Alternative	Feature / Aspect	Impact	Impact Assessment			Mitigation	S
			D	L	S		
	Socio-economic aspects	<ul style="list-style-type: none"> Damages to property, including structures, fencing, gates, animals. Establishment of temporary construction servitude. Loss of income (e.g. temporary loss of agricultural land, influence to eco-tourism activities) due to construction-related activities Influx of job seekers. Use of local labourers and suppliers, as far as possible (positive impact) 	S	L	3	<ul style="list-style-type: none"> Compensation for registration of construction servitude. Construction-related damages to be repaired by Contractor. Establish employment strategy 	1
	Infrastructure and Services	<ul style="list-style-type: none"> Damage to existing river crossings at the Rietspruit main stem and eastern tributary. Temporary interruption of water supply from Exxaro pipeline to allow for tie-in of de-bottlenecking section of gravity main. Influence to traffic along roads (R510 and dirt road to Wovenfontein). Damage to dirt road to Wovenfontein through use by heavy vehicles. Use of R510 and major road network by trucks delivering pipe material. 	S	L	3	<ul style="list-style-type: none"> Safeguarding of existing river crossings. Construction-related damages to be repaired by Contractor. Interruption of water supply from Exxaro line to be as short as possible. Landowners and users to be notified well in advance of interruption. Traffic safety measures to be employed. Ensure that landowners have proper access to their properties. Discuss disruptions with roads authority and landowner. Make provision for traffic along affected public and private roads. Dirt roads to be monitored and repaired. Limpopo Department of Roads and Public Transport to be notified of any disruptions be trucks delivering pipe material. 	1
S2	Soil	<ul style="list-style-type: none"> Loss of topsoil. Blasting-related impacts. 	S	M	2	<ul style="list-style-type: none"> Stabilisation of cleared areas to prevent and control erosion will be actively managed. The method chosen (e.g. watering, planting, retaining structures, commercial anti-erosion compounds) will be selected according to the site-specific conditions. In areas to be affected by construction activities a minimum of 300mm of topsoil should be removed and stockpiled separately. Permit to be sought for proposed borrow pits, in terms of the Minerals and Petroleum Resources Development Act (No. 28 of 2002). Blasting to be undertaken in such a manner as to control impacts to existing Wovenfontein reservoirs. 	1
	Flora	<ul style="list-style-type: none"> Damage to / removal of protected trees and medicinal plants. Encroachment by exotic species 	S	M	2	<ul style="list-style-type: none"> Marking of all protected trees within construction footprint. These trees must not be damaged except if they fall within the direct right of way of the pump station structure. Permit(s) to be obtained under the National Forests Act (No. 84 of 1998) if protected trees are to be cut, disturbed, damaged, destroyed or removed. Control of alien invasive species in line with the requirements of the Conservation of Agricultural Resources Act will be undertaken. 	1
	Fauna	<ul style="list-style-type: none"> Poaching. Harm from construction activities 	S	U	2	<ul style="list-style-type: none"> Demarcated construction area to be fenced off and to be screened with appropriate material. Prosper access control, in negotiation with the landowner, to be employed. 	1
	Air	<ul style="list-style-type: none"> Dust from use of dirt roads, transportation of fill and spoil material and from bare areas. 	S	M	2	<ul style="list-style-type: none"> Dirt roads to be watered down. Vehicles transporting soil must be covered. 	1

BASIC ASSESSMENT REPORT

Alternative	Feature / Aspect	Impact	Impact Assessment			Mitigation	S
			D	L	S		
	Noise	<ul style="list-style-type: none"> Noise associated with construction activities (e.g. vehicle movement, trenching, generators) 	S	M	2	<ul style="list-style-type: none"> The provisions of SABS 1200A will apply to all areas within audible distance of residents. Construction activities generating output levels of 85 dB or more will be confined to the normal working hours. 	1
	Aesthetics	<ul style="list-style-type: none"> Impacts to visual quality of the area through poor housekeeping and construction-related activities. 	S	M	2	<ul style="list-style-type: none"> Demarcated construction site to be screened off with appropriate material. 	1
	Safety and Security	<ul style="list-style-type: none"> Uncontrolled access Criminal activities associated with construction 	S	U	2	<ul style="list-style-type: none"> Demarcated construction site to be fenced off. Compliance with Occupational Health and Safety Act (Act No. 85 of 1993). Contractor to provide an Occupational Health and Safety Management Plan to the Construction Manager for approval prior to the commencement of works in terms of the Construction Regulations (2003). All excavations must be clearly marked in order to alert people to the potential hazard. Barrier tape to be erected around open trenches. Depending on geotechnical conditions, excavations to be shored. All existing and new gates used for access to the site to be managed in accordance with the agreement with the specific landowner. Two-way radios to be used, due to poor reception of cell phones in area. Proper supervision of employees at all times. Employees to be clearly identifiable. 	1
	Waste	<ul style="list-style-type: none"> Use of veld for ablution purposes. Land, air and water pollution through poor waste management practises 	S	M	2	<ul style="list-style-type: none"> Sufficient ablution facilities to be provided at the Construction Camps and at construction site. Ablution facilities to be maintained. Waste skips to be provided at the construction camp and on site. Skips to be cleaned weekly, and waste to be disposed off at a registered waste disposal site (e.g. Groothoek waste disposal site). 	1
	Construction camp	<ul style="list-style-type: none"> Siting of construction camp – visually obtrusive, vegetation clearing, poaching, security. Improper storage of material 	S	M	2	<ul style="list-style-type: none"> Selection of construction camp to be undertaken in consultation with Environmental Control Officer (ECO) and landowner. Site selection to avoid sensitive environmental features, such as 1:100 year floodline, ridges, and areas with protected trees. Site plan of construction camp to be prepared, which must be approved by the ECO. Camp site to be demarcated and to be screened off. No accommodation to be provided at camp, apart from security. Appropriate storage facilities for fuel, paint, cement bags, and other material with a potential to cause harm to the environment. 	1
	Socio-economic aspects -	<ul style="list-style-type: none"> Damages to property, including structures, fencing, gates, animals Influx of job seekers. Use of local labourers and suppliers, as far as possible (positive impact) 	S	U	2	<ul style="list-style-type: none"> Construction-related damages to be repaired by Contractor. Establish employment strategy 	1

BASIC ASSESSMENT REPORT

Alternative	Feature / Aspect	Impact	Impact Assessment			Mitigation	S
			D	L	S		
	Infrastructure and Services	<ul style="list-style-type: none"> Provision of electricity supply to pumpstation. Temporary interruption of water supply from Exxaro pipeline to allow for commissioning of pump station. Influence to traffic along dirt road to Wovenfontein Electrical infrastructure (i.e. distribution line, substation) will be required to feed pumpstation. The impacts associated with the electrical infrastructure will include adverse affects to <i>inter alia</i> visual, socio-economic, faunal, and floral features. Cumulative impact of electrical infrastructure required to feed the pumpstation and the existing overhead power lines in greater area. 	S	M	3	<ul style="list-style-type: none"> Construction-related damages to be repaired by Contractor. Any interruption of water supply from Exxaro line to be as short as possible. Landowners and users to be notified well in advance of any interruption. Traffic safety measures to be employed. Ensure that landowners have proper access to their properties. Discuss disruptions with roads authority and landowner. Make provision for traffic along affected public and private roads. Dirt roads to be monitored and repaired. 	2

OPERATIONAL PHASE

Alternative	Feature / Aspect	Impact	Impact Assessment			Mitigation	S
			D	L	S		
S1	Watercourses	<ul style="list-style-type: none"> De-stabilisation of encased pipeline at river crossing or tie-ins at riverbanks. Erosion during scouring 	L	M	3	<ul style="list-style-type: none"> Regular inspection of pipeline and river crossings. Possible failure of encasing of gabion-walls to be repaired. Erosion protection at outlet of scour valve. 	1
	Flora	<ul style="list-style-type: none"> Spreading of exotic vegetation. 	M	L	2	<ul style="list-style-type: none"> On-going programme to eradicate exotic vegetation. 	1
	Fauna	<ul style="list-style-type: none"> Obstruction of movement of aquatic biota at river crossings 	L	L	3	<ul style="list-style-type: none"> Provision for fish movement (e.g. fish ladder) at encased pipeline. 	1
	Socio-economic aspects	<ul style="list-style-type: none"> Loss of land with registration of permanent servitude 	P	C	3	<ul style="list-style-type: none"> Compensation for loss of land with registration of permanent servitude. 	1
	Aesthetics	<ul style="list-style-type: none"> Visual impacts associated with aboveground infrastructure (i.e. access/valve chambers at approximately 500m intervals along the route; pipeline markers) 	L	C	2	<ul style="list-style-type: none"> Aboveground infrastructure to be located at points where there is a minimal environmental impact, as far as possible. Aboveground infrastructure to blend in with the natural environment (e.g. suitable cladding or painting with natural colours), as far as possible. 	1
	Infrastructure and Services	<ul style="list-style-type: none"> Temporary interruption of water supply from Exxaro pipeline to allow for tie-in of de-bottlenecking section with MCWAP Phase 1 pipeline Continual use of maintenance road will lead to erosion and damage to road surface 	L	M	2	<ul style="list-style-type: none"> Any interruption of water supply from Exxaro line to be as short as possible. Landowners and users to be notified well in advance of any interruption. Dirt roads to be monitored and repaired when necessary. 	1
	Operation & Maintenance	<ul style="list-style-type: none"> Construction-related impacts for any maintenance related work to pipeline infrastructure. 	S	M	2	<ul style="list-style-type: none"> Standard environmental best practices relating to construction work contained in EMP to be implemented during maintenance work. 	1
	Flora	<ul style="list-style-type: none"> Spreading of exotic vegetation 	L	M	2	<ul style="list-style-type: none"> On-going programme to eradicate exotic vegetation. 	1

BASIC ASSESSMENT REPORT

Alternative	Feature / Aspect	Impact	Impact Assessment			Mitigation	S
			D	L	S		
S2	Flora	<ul style="list-style-type: none"> Spreading of exotic vegetation 	L	M	2	<ul style="list-style-type: none"> On-going programme to eradicate exotic vegetation. 	1
	Noise	<ul style="list-style-type: none"> Noise associated with the operation of the pump station. 	L	L	2	<ul style="list-style-type: none"> Noise dissipation measures to be employed at pump station. 	1
	Aesthetics	<ul style="list-style-type: none"> Visual impacts associated with new structure for pump station 	P	L	2	<ul style="list-style-type: none"> Pump station to blend in with the natural environment (e.g. suitable cladding or painting with natural colours), as far as possible. 	1
	Infrastructure and Services	<ul style="list-style-type: none"> Continual use of maintenance road will lead to erosion and damage to road surface. Cumulative impact of electrical infrastructure required to feed the pumpstation and the existing overhead power lines in greater area. 	L	M	2	<ul style="list-style-type: none"> Dirt roads to be monitored and repaired when necessary. 	1
	Operation & Maintenance	<ul style="list-style-type: none"> Construction-related impacts for any maintenance related work to pipeline infrastructure. More resource-intensive than de-bottlenecking pipeline (i.e. option S1). Potential risk of failure, which will jeopardise water provision to users. 	S	M	2	<ul style="list-style-type: none"> Standard environmental best practices relating to construction work contained in EMP to be implemented during maintenance work. Control measures to be put into place to detect possible sources of failure. 	1

DECOMMISSIONING AND CLOSURE PHASE

Alternative	Feature / Aspect	Impact	Impact Assessment			Mitigation	S
			D	L	S		
S1	Watercourses	<ul style="list-style-type: none"> Should the encased pipeline crossings be removed, the characteristics of the watercourse (i.e. flow, habitat, water quality and aquatic biota) could potentially be adversely affected. 	S	L	3	<ul style="list-style-type: none"> Affected sections of Rietspruit's channel, banks and riparian habitat to be adequately reinstated and rehabilitated. 	1
	Aesthetics	<ul style="list-style-type: none"> Impacts to visual quality of the area during the demolition of aboveground structures. 	S	M	2	<ul style="list-style-type: none"> Waste material to be properly stored, collected, transported and disposed of. 	1
	Waste	<ul style="list-style-type: none"> Improper disposal of waste material generated during the demolition of structures. 	S	M	2	<ul style="list-style-type: none"> Waste to be recycled or to be disposed off at a registered waste disposal site (e.g. Groothoek waste disposal site). 	1
	Aesthetics	<ul style="list-style-type: none"> Impacts to visual quality of the area during the demolition of pump station structure. 	S	M	2	<ul style="list-style-type: none"> Waste material to be properly stored, collected, transported and disposed of. 	1
	Waste	<ul style="list-style-type: none"> Improper disposal of waste material generated during the demolition of structures. 	S	M	2	<ul style="list-style-type: none"> Waste to be recycled or to be disposed off at a registered waste disposal site (e.g. Groothoek waste disposal site). 	1

