

1 Need and Desirability Report

The 'need and desirability' of the project should be evaluated against the strategic context of the development proposal along with the broader societal needs and public interest. According to the DEA Guideline on Need and Desirability (DEA, 2017¹), the concept of 'need and desirability' relates to the *"nature, scale and location of development being proposed, as well as the wise use of land."* The concept of 'need and desirability' can be explained in terms of the broader meaning of its two components, need primarily referring to time, and desirability to place. It is acknowledged that 'need and desirability' are interrelated and the two components collectively should be considered in an integrated and holistic manner.

According to the DEA Guideline (DEA, 2017), the strategic context for the need and desirability of an activity can be reviewed considering what is envisioned for a specific area, specifically what has been proposed in a municipal Integrated Development Plan (IDP) and Spatial Development Framework (SDF). These planning tools provide direction as to the desired spatial form of a municipality. Similarly, municipal Environmental Management Frameworks (EMFs) also provide the desired spatial form in terms of the environmental context of an area. Furthermore, the DEA Guideline (DEA, 2017) states that the need and desirability of an activity should be evaluated against the principles of *"promoting justifiable economic and social development"* as well as the principles of *"securing ecological sustainable development and use of natural resources"* as set out in the bill of rights in the Constitution.

Table 1 and **Table 2** below aims to provide more detailed responses regarding the project specific responses to the questions raised in the Need and Desirability guidelines of DEA (2017) and the Western Cape Government: Department of Environmental Affairs and Development Planning (2013). The responses were compiled taking into consideration the Provincial Spatial planning framework, Municipal IDPs, SDFs strategy, Biodiversity plans and the outcome of the project screening phase during which No-Go areas were identified based on environmental and socio-economic considerations.

Table 1: Need (Timing) of the proposed project (based on the 2017 DEA and 2013 DEA&DP guidelines): Promoting justifiable economic and social development

Question	Response
1. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority i.e. is the proposed development in line with the projects and programmes identified as priorities within the Integrated Development Plan (IDP)?	Yes, there is an existing WWTW on the property. The development site is located on Erf 1205, which is zoned for Utility use. The development of utility service infrastructure (e.g. WWTW facilities) is a permissible land use for Utility Zoning. The south-eastern section of the property has already been transformed by an existing, operational WWTW. It is now proposed to upgrade the WWTW on the property. Objective 9 of the Western Cape PSDF (2009) was to minimise consumption of scarce environmental resources. Within this strategic objective, Policy RC20 states that <i>"Existing waste water treatment works (WWTWs) should be progressively improved and realised by means of regulatory measures and thereafter maintained so that the water quality of the rivers and water-bodies with which they are associated achieve minimum potable (drinking), contact, phosphate, nitrate and e-coli standards. This requires that they comply with the effluent quality requirements set out in their licenses"</i>

¹ DEA. 2017. Guideline on Need and Desirability, Integrated Environmental Management Guideline Series 9, Department of Environmental Affairs (DEA), Pretoria, South Africa.

Question	Response
	The PDSF further states that methods of sanitation which promote water resource protection (ground and surface water) should be implemented in all areas, but that the City of Cape Town in particular should prioritise the maintenance and rehabilitation of their WWTWs. The proposed upgrade and expansion of the Macassar WWTW will increase the treatment capacity, and improve the overall functioning and operational efficiency of the WWTW. The upgrades will be done in accordance with all relevant norms, standards and best practise guidelines in order to ensure the protection of water resources and human health. The treated effluent that will be discharged to the Eerste River will be treated to the water quality standards (General Limit values, with Special Limit value for phosphate and ammonia) specified by the Department of Water & Sanitation, in order to ensure that the WWTW remains compliant with its Water Use License. It is expected that the proposed new WWTW facilities will improve the overall quality of the final effluent that is currently discharged to the Eerste River. The proposed project is therefore aligned with the 2009 PSDF. The more recent and latest PSDF (2014) highlights that investment in infrastructure (including maintenance and upgrading of existing infrastructure) is needed to bring about the desired urban spatial transitions envisaged in the PSDF. The proposed expansion of the Macassar WWTW will indirectly support/ facilitate further development in the upstream sewage catchment – as continued development in these areas is dependent on the availability of sufficient wastewater treatment capacity. The proposed development is thus aligned with the 2014 PSDF.
2. Should development, or if applicable, expansion of the town/ area concerned in terms of this land use (associated with the activity being applied for) occur at this point in time?	The City of Cape Town IDP (2022-2027) states that the City intends to invest in the maintenance and expansion of essential utility services (including water and sanitation infrastructure), in order to improve services and the quality of life of all citizens, as well as to support development and encourage local and foreign investors to invest in other economic infrastructure (stated as part of Strategic Focus Area). The proposed project is thus firmly aligned with the strategic objectives of the local IDP.
3. Does the community/ area need the activity and the associated land use concerned (is it a societal priority)?	Yes. On the 07 July 2016, the Department of Environmental Affairs and Development Planning issued an Environmental Authorisation (EA) to the City of Cape Town approving the proposed upgrade and expansion of the Macassar Wastewater Treatment Works (WWTW) and associated infrastructure on the basis that they were necessary to continue to provide essential wastewater treatment services to the surrounding community. The main purpose of the new proposed project is to implement the aforementioned authorised upgrade of the WWTW, the construction of which has already commenced. However, due to the time that has passed since the approval in 2016, new design engineers have been appointed to finalise the detailed design. The design engineers have identified

Question	Response
	alternative technology options that will enable the works to run more efficiently and improve the quality of the effluent being discharged to the estuary.
4. Are there necessary services with appropriate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?	The upgrade has been authorised on the 07 July 2016, The Department of Environmental Affairs and Development Planning issued an Environmental Authorisation (EA) to the City of Cape Town approving the proposed upgrade and expansion of the Macassar Wastewater Treatment Works (WWTW) and associated infrastructure on the basis that they were necessary to continue to provide essential wastewater treatment services to the surrounding community. The main purpose of the new proposed project is to implement the aforementioned authorised upgrade of the WWTW, the construction of which has already commenced. However, due to the time that has passed since the approval in 2016, new design engineers have been appointed to finalise the detailed design. The design engineers have identified alternative technology options that will enable the works to run more efficiently and improve the quality of the effluent being discharged to the estuary. The current Eskom power supply available for the Macassar WWTW is sufficient.
5. Is this development provided for in the infrastructure planning of the municipality, and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services)?	The upgrades to the Macassar WWTW are specifically provided for in the local IDP, for the 2022-2027 financial years, as described above. Most power will come from the existing municipal supply but there will also be generators for back up. This project is on the mayoral agenda.
6. Is this project part of a national programme to address an issue of national concern or importance?	The proposed development is in support of, and will contribute to the national Strategic Integrated Project (SIP) 18: Water and Sanitation Infrastructure, as stated in the Infrastructure Development Act, Act 23 of 2014. SIP 18 focusses on the rehabilitation and upgrading of existing water and sanitation infrastructure or the construction of new facilities. "Sewage works" are included in the Schedule of facilities designated as Strategic Integrated Projects (refer to Section 7(1)(a) of the Infrastructure Development Act).
7. Do location factors favour this land use (associated with the activity applied for) at this place?	Yes, the proposed development will fall within the boundaries of the existing Macassar WWTW on land zoned for Utility Use. The eastern section of the property has already been transformed by the existing WWTW. The footprint of the new design and outlet infrastructure is less than the footprint of the existing infrastructure and for practical reasons will be developed within the already disturbed areas.
8. Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? Will the development complement the local socio-economic initiatives (such as local	The proposed development will increase the treatment capacity of the WWTW and will improve the quality of the final treated effluent that is discharged to the lower Eerste River. This has been addressed in the authorisation process of 2016 and will remain the same. The improved quality of the effluent discharge may help to limit any further deterioration in the water quality of the lower Eerste River and Eerste River Estuary, which may offer benefits to surrounding and

Question	Response
economic development (LED) initiatives), or skills development programmes?	downstream water users, land users, landowners and land occupants. The maximisation of local labour (expected to be approximately 600 construction job opportunities over four years) during the construction phase of the project. The use of small and emerging contractors will be specified in the construction contracts which will further include training and skills development." The cost of staff employed has been estimated based on market-related rates of employment for the various job descriptions and the requirement of the number of personnel based on the classification of the WWTW." (In the life cycle costing the value estimated for permanent staffing was roughly R 207 million, over a period of 20 years).
9. What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	The construction phase of the development will be associated with dust, noise, visual impact and increased traffic as a result of construction activities on site. The proposed WWTW facilities are expected to improve the quality of the final treated effluent that is currently discharged to the Eerste River, which may offer a positive benefit to the river/estuarine system and to surrounding/ downstream land- and water-users. This has been addressed in the authorisation process of 2016. Specific mitigation measures pertaining environmental health and safety are identified for inclusion into the Environmental Management Plan (EMPr).
10. What measures were taken to ensure the participation of all interested and affected parties? What measures were taken to ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge?	The Public Participation Process is undertaken in terms of the 2014 NEMA EIA Regulations, as amended and includes activities such as I&AP identification, a newspaper advert, a hard copy of the draft BAR in the Macassar Library, written notification and placement of site notices as confirmed during the pre-application meeting of 11/09/23.
11. Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources for the proposed development alternative?)	The development is a practicable environmental option for the site in question. The footprint of the new design and outlet infrastructure is less than the footprint of the existing infrastructure and for practical reasons will be developed within the already disturbed areas. A portion of the proposed new inlet works, and access road will result in the disturbance/ transformation of an area (± 0.2 ha) of good quality strandveld vegetation, within the Endangered Cape Flats Dune Strandveld vegetation. The loss of this vegetation type is not desirable, however given the relatively small area of strandveld that will be lost, its location directly adjacent to an existing unsurfaced road (i.e. the area is already susceptible to edge effects) and the absence of any plant species of conservation concern, the loss of this area is not regarded as a fatal flaw. Development within this area of strandveld vegetation is therefore regarded as a practicable option, particularly given the need for the WWTW expansion and the negative impacts that may arise should the WWTW not be upgraded/expanded.

Question	Response
12. What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)?	The upgrade has been authorised on the 07 July 2016, The Department of Environmental Affairs and Development Planning issued an Environmental Authorisation (EA) to the City of Cape Town approving the proposed upgrade and expansion of the Macassar Wastewater Treatment Works (WWTW) and associated infrastructure on the basis that they were necessary to continue to provide essential wastewater treatment services to the surrounding community. The main purpose of the new proposed project is to implement the aforementioned authorised upgrade of the WWTW, the construction of which has already commenced. However, due to the time that has passed since the approval in 2016, new design engineers have been appointed to finalise the detailed design. The design engineers have identified alternative technology options that will enable the works to run more efficiently and improve the quality of the effluent being discharged to the estuary. The maximisation of local labour (expected to be approximately 600 construction job opportunities over four years) during the construction phase of the project. The use of small and emerging contractors will be specified in the construction contracts which will further include training and skills development." The cost of staff employed has been estimated based on market-related rates of employment for the various job descriptions and the requirement of the number of personnel based on the classification of the WWTW." (In the life cycle costing the value estimated for permanent staffing was roughly R 207 million, over a period of 20 years). The WWTW addresses sanitation and hygiene needs, particularly for women and girls, to prevent health issues and improve overall well-being. By removing harmful pathogens and contaminants, wastewater treatment significantly reduces the risk of waterborne diseases such as cholera. The upgrade and expansion of Macassar WWTW will allow for the effective treatment of wastewater. This may help reduce the prevalence of waterborne diseases, which can indirectly impact HIV transmission. Improved sanitation and hygiene reduce the overall disease burden, making communities healthier and less vulnerable to infections. Currently women are actively involved in the planning, design, and decision-making processes of wastewater treatment projects. This ensures that their specific needs and perspectives are considered, leading to more effective The proposed project will aim at promoting gender equality by providing equal employment opportunities in the construction, operation, and maintenance of wastewater treatment facilities. This will help empower women economically and socially.
13. Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	The EMPr describes all reasonable and feasible mitigation measures and addresses long-term environmental management actions that are guided by the findings and recommendations of the specialists during the Basic

Question	Response
	Assessment Phase. The EMPr addresses the potential environmental impacts and mitigation measures of the proposed activity on the environment throughout the project life cycle.
14. How was a risk-averse and cautions approach applied in terms of socio-economic impacts?	Potential socio-economic related risks will be mitigated through a proactive public participation process. Public Participation Process is undertaken in terms of the 2014 NEMA EIA Regulations and will culminate in a Public Participation Comments and Response Report.

Table 2: Desirability (placing) of the proposed project (based on the 2017 DEA Guideline and 2013 DEA&DP Guideline): Securing ecological sustainable development and use of natural resources

Question	Response
1. Is the development the best practicable environmental option for this land/ site?	Yes, the upgrade has been authorised on the 07 July 2016, The Department of Environmental Affairs and Development Planning issued an Environmental Authorisation (EA) to the City of Cape Town approving the proposed upgrade and expansion of the Macassar Wastewater Treatment Works (WWTW) and associated infrastructure on the basis that they were necessary to continue to provide essential wastewater treatment services to the surrounding community. The main purpose of the new proposed project is to implement the aforementioned authorised upgrade of the WWTW, the construction of which has already commenced. However, due to the time that has passed since the approval in 2016, new design engineers have been appointed to finalise the detailed design. The design engineers have identified alternative technology options that will enable the works to run more efficiently and improve the quality of the effluent being discharged to the estuary.
2. How will this development use and/or impact on non-renewable and renewable natural resources and the ecosystem of which they are part?	The anticipated use of both natural renewable and non-renewable resources is not significant given the nature of the development.
3. Would the approval of this application compromise the integrity of the existing approved Municipal IDP and SDF as agreed to by the relevant authorities?	Objective 9 of the Western Cape PSDF (2009) was to minimise consumption of scarce environmental resources. Within this strategic objective, Policy RC20 states that “<i>Existing wastewater treatment works (WWTWs) should be progressively improved and realised by means of regulatory measures and thereafter maintained so that the water quality of the rivers and water-bodies with which they are associated achieve minimum potable (drinking), contact, phosphate, nitrate and e-coli standards. This requires that they comply with the effluent quality requirements set out in their licenses</i>” The PDSF further states that methods of sanitation which promote water resource protection (ground and surface water) should be implemented in all areas, but that the City of Cape Town in particular should prioritise the maintenance and rehabilitation of their WWTWs. The proposed upgrade and expansion of the Macassar WWTW will increase the treatment capacity and improve the

Question	Response
	overall functioning and operational efficiency of the WWTW. The upgrades will be done in accordance with all relevant norms, standards and best practise guidelines in order to ensure the protection of water resources and human health. The treated effluent that will be discharged to the Eerste River will be treated to the water quality standards (General Limit values, with Special Limit value for phosphate and ammonia) specified by the Department of Water & Sanitation, in order to ensure that the WWTW remains compliant with its Water Use License. It is expected that the proposed new WWTW facilities will improve the overall quality of the final effluent that is currently discharged to the Eerste River. The proposed project is therefore aligned with the 2009 PSDF. The more recent PSDF (2014) highlights that investment in infrastructure (including maintenance and upgrading of existing infrastructure) is needed to bring about the desired urban spatial transitions envisaged in the PSDF. The proposed expansion of the Macassar WWTW will indirectly support/facilitate further development in the upstream sewage catchment – as continued development in these areas is dependent on the availability of sufficient wastewater treatment capacity. The proposed development is thus aligned with the 2014 PSDF.
4. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in Environmental Management Frameworks (EMFs)), and if so, can it be justified in terms of sustainability considerations?	The Helderberg District Plan (2012) includes an integrated Environmental Management Framework (EMF) developed in terms of the National Environmental Management Act ('NEMA'). <u>This is the only EMF available at the time of compilation of this BAR.</u> The EMF has not been formally adopted by the Department, but the relevant priorities of the EMF are never-the-less discussed below. The EMF indicates that the Macassar WWTW and the proposed development site is located within the following Environmental Impact Management Zones: The Coastal Protection Zone (seaward of the coastal edge line delineated by the City of Cape Town) The development of bulk infrastructure (including WWTWs) is regarded as undesirable within the Coastal Protection Zone. However, “<i>Essential activities required for the environmental management of the coastal area</i>” are desirable. The proposed development will increase the capacity of the Macassar WWTW, improve the quality of the discharge released to the Eerste River and prevent future sewage overflows/ spills – in this way the proposed development may protect the surrounding environment from pollution and may thus support the environmental management of the surrounding coastal area. Coastal Flood Risk Area These are areas that “<i>...have been developed in the past, but which have been identified as being vulnerable to flooding.... In all cases a precautionary approach must be adopted and emergency planning</i>

Question	Response
	<i>for flood and storm events undertaken”.</i> Other Ecological Support Area (OESA) These are transformed areas with conservation importance, required for the connectivity and viability of surrounding CBAs and protected areas. Development of bulk service infrastructure (including WWTWs) is not desirable in OESAs Cultural & Recreational Resource Zone = Structuring Open Spaces Waste disposal activities (including WWTW) are regarded as undesirable in these areas. Although the development of WWTW infrastructure within the coastal protection zone, EOSAs and Structuring Open Spaces is regarded as undesirable in terms of the EMF, it should be noted that the bulk of the proposed development will take place within the footprint of the existing WWTW and within historical WWTW ponds which are already highly modified.
5. How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/ natural environment)?	The Department of Environmental Affairs and Development Planning issued an Environmental Authorisation (EA) to the City of Cape Town approving the proposed upgrade and expansion of the Macassar Wastewater Treatment Works (WWTW) and associated infrastructure on the basis that they were necessary to continue to provide essential wastewater treatment services to the surrounding community. The main purpose of the new proposed project is to implement the aforementioned authorised upgrade of the WWTW, the construction of which has already commenced. Aquatic features that are likely to be impacted by the proposed upgrade to the Macassar WWTW are the lower Eerste River and Estuary and some largely artificial wetland areas associated with past activities at the WWTW. The lower river and estuary are considered to be in a severely modified ecological state as a result of flow modification and water quality impacts arising from the discharge of treated wastewater from several WWTWs in the Kuils and Eerste River Catchment as well as storm water runoff. There is also an interbasin transfer of water into the upper Eerste River for irrigation purposes in the lower Eerste River. The remaining natural vegetation on site is Cape Flats Dune Strandveld, which is gazetted as Endangered on a national basis. At least two plant Species of Conservation Concern (SoCC), and probably at least one Redlisted animal are present in the proposed development area. Ideally a biodiversity offset would be required, to help minimise the unavoidable High negative ecological impacts of the proposed development, even though High negative impacts are supposed to present a No Go (Red Flag) scenario in terms of offsets (Dept. of Forestry, Fisheries & Environment 2022). Refer to all specialist studies (Appendix G) and mitigations measures captured in the EMPr (Appendix H).
6. How will the development impact on people's health and wellbeing (e.g. in terms	There are no foreseen impacts on people's health and well-being.

Question	Response
of noise, odours, visual character and sense of place, etc.)?	
7. What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)	Assumptions, Limitations and Gaps in Knowledge for the proposed project have been elaborated on in section J of the Basic Assessment Report.
8. How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	There are two heritage concerns for the proposed project. The first is the possibility that buried fossils may be exposed and destroyed during excavations for the new infrastructure. The locations of such fossils cannot be predicted from the surface and will require monitoring. The second issue is the alteration of the natural landscape which has aesthetic and scientific significance. Little can be done to avoid his impact and the development has already been focused largely on the most disturbed areas. The remaining impacts are deemed acceptable in the light of the considerable socio-economic benefits to be derived from the project. A full Impact Assessment was done according to the comment from Heriatge Western Cape.