# APPENDIX K - NEED AND DESIRABILITY

This Appendix provides a description of the rationale and motivation for the proposed development. It outlines key aspects of the 'need and desirability' of the proposal, as required by the EIA Regulations.

According to the DEADP's Guidelines on Need and Desirability, the concept of need and desirability can be explained as *need* refers to *time* and *desirability* to *place* – i.e., is this the right time and place for locating the type of land use being proposed? Need and desirability can be equated to *wise use of land* – i.e., the question of what the most sustainable use of land is.

It is believed that through the adequate consideration of need and desirability throughout the environmental process, it will ensure that the "best practicable environmental option" is pursued.

The table below is based on the Guideline for Need and Desirability (DEA, 2014) and sets out the key considerations motivating the need and desirability of the project proposal.

| Guideline | EAP Response |
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| ▪ How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?<br>▪ How were the following ecological integrity considerations taken into account:<br>• Threatened Ecosystems,<br>• Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure,<br>• Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs"),<br>• Conservation targets,<br>• Ecological drivers of the ecosystem,<br>• Environmental attributes and management proposals contained in relevant Environmental Management Frameworks,<br>• Environmental attributes and management proposals contained in relevant Spatial Development Framework, and<br>• Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.). | The following specialist study was commissioned as part of this Basic Assessment Process:<br>• Freshwater Impact Assessment<br><br>The proposal for the enlargement of an existing dam. The proposed enlarged dam will extend into existing crops, farm roads and a very small portion of disturbed land that has been fallow for several years. Little to no natural vegetation will be lost.<br><br>The proposed enlarged dam is unlikely to have an impact on any animal species.<br><br>The aquatic assessment found the Modderas River to be moderately to largely modified, with moderate ecological importance and sensitivity. Enlarging the Modderas Dam (200,000 m³ to 310,000 m³) and decommissioning Dam D2 (31,000 m³) could have some negative impacts. The potential aquatic ecosystem impacts associated with the proposed dam enlargement are:<br>• Modified flow in the watercourse downstream of the dam.<br>• Disturbance and modification of the aquatic habitat within the dam basin of the enlarged dam.<br>• Short-term water quality impacts during the construction works.<br>• Indirect impacts on aquatic biota.<br><br>According to the 2023 Biodiversity Spatial Plan for the Breede Valley Municipal Area (CapeNature, 2023), the enlarged dam site is overlain by fragments of Critical Biodiversity Areas (i.e. CBA 1 and CBA 2: Terrestrial). The areas marked as CBAs are located within the Full Supply Level (FSL) area of the existing dam, on the embankment of the existing dam and a small fragment upstream of the dam, overlapping the FSL area. The reasons for these CBAs maybe due to the historically identified vegetation that may have occurred on site. The proposed expansion will result in little to no loss of natural vegetation.<br><br>It should also be noted that the proposed site does not form part of any ecological corridors and it is surrounded by cultivated land. The proposed dam will not impact on natural connectivity or any significant natural habitats. It should be noted that there is a Private Nature Reserve identified as a Protected Area to the east of the dam. The proposal will have no impact on this nature reserve. The dam is separated from the Nature Reserve by existing crops. The construction of the larger dam will not result in any movement within the Nature Reserve.<br><br>According to the National Freshwater Ecosystem Priority Areas map (NFEPA) layers, the existing dam is marked as an artificial wetland with some natural wetland areas surrounding the dam. These wetland areas are shown within the dam, on the dam wall and along the watercourse entering and exiting the existing dam. According to the Frehswater Specialist, |

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| | the study area is not within a FEPA River Sub-catchment. There are seep wetlands upstream of the dam that are mapped as natural FEPA Wetlands.<br><br>According to the Screening Report, the site is not intersecting with any EMF areas. |
| ▪ How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy?<br>▪ How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts? | The project team has attempted to firstly avoid negative impacts by locating a site with minimal ecological impacts, minimal loss of agricultural land and adequate from a dam design perspective. Where the impacts could not be avoided, further studies were commissioned to determine the level of impact and if the impact could be mitigated.<br><br>To date, the following mitigation measures have been recommended for implementation should the application be approved:<br>• The area immediately to the east of Dam D2 which is to be decommissioned comprises a wider riparian and seep area associated with the smaller tributary of the Modderas River. With decommissioning of the dam, it is important the disturbance of these areas be avoided and that the dam basin simply be filled with soil that is free of alien vegetation seed.<br>• • With regards to the implementation of the EWR in the lower Modderas Tributary, it is recommended that the smaller tributary that drains past Dam D2 be utilised to meet the environmental flow requirement as recommended. In the decommissioning of Dam D2, the dam should simply be left as is but no longer store water (i.e divert water to it and abstract from it). Only the natural rainfall and runoff into the dam should be retained in the dam and allowed to seep out. There is quite a bit of natural vegetation in and around the dam that it would be best to not disturb.<br>• A programme should be put in place for the ongoing removal and control of invasive alien vegetation along the river corridors and in the wetland areas within the property, and in particular within the Modderas Tributary that is proposed to provide for the EWR downstream of Modderas Dam. Removal of invasive vegetation and revegetation of the aquatic habitats could be informed by an adopted Maintenance Management Plan (MMP) for the property.<br>• The construction works at the dam should take place during the driest months of the year to prevent any flow and water quality (sedimentation) impacts and should be carried out in conjunction with an approved EMP that addresses aspects such as prevention and containment of any contaminated runoff and chemical spills from the construction site; provision of ablution facilities at the construction site that are at least 30m from the watercourse, and mitigation of excessive sedimentation arising from the works.<br>• Disturbance of the natural vegetation cover upstream of the dam and immediately downstream of the dam within the watercourse should be avoided. Any disturbed areas that are located immediately outside of the dam basin should be rehabilitated by reshaping the area to resemble that of the surrounding natural landscape and where necessary, these areas should be planted with suitable local indigenous vegetation.<br>• The disturbed areas at the dam should also be monitored for the growth of invasive alien vegetation and any recruitment of alien plants should be removed. Longer-term maintenance activities associated with the operation of the dam should follow an adopted MMP for the property. |

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| | • No stocking of the dam with alien fish should be allowed. Any stocking of the dam would need to get prior approval from CapeNature.<br>• *Indigenous vegetation observed along the watercourse that is suitable for revegetation of cleared areas includes Psoralea pinnata, Searsia angustifolia, Morella serrata, Olea europaea subsp. africana, Podocarpus elongatus, Melianthus major, Pteridium aquilinum, Salvia chamelaeagnea, Elegia capensis, Zantedeschia aethiopica, Carpha glomerata, Juncus capensis, Ficinia nodosa, Cyprus textilis and Isolepis prolifera.*<br>• An Environmental Control Officer (ECO) must be appointed to oversee the construction phase (including the implementation of the EMPr and any applicable conditions of the Environmental Authorisation).<br>• All mitigation measures detailed in the EMPr (Appendix H) must be adhered. |
| ▪ What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste? | Very little to no waste or pollution will be generated by this proposal. |
| ▪ How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts? | The proposed development entails the storage of enlistment water for irrigation purposes. No non-renewable resources will be required. |
| ▪ How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system considering carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the | Use of non-renewable resources, such as electricity and water, will be limited. Water efficient irrigation and efficient irrigation scheduling will be used, which will reduce the irrigation water demands.<br><br>The proposed enlarged dam will be filled with enlisted water. Enlarging the dam will provide buffer storage for water security without requiring new abstraction, as the farm has an existing lawful use (ELU) of 421,470 m³ (surface and groundwater combined).<br><br>The storage of water will increase water surety for the Applicant which is critical for the cultivation of permanent crops. |

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| use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?<br>▪ Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e., de-materialised growth)? (Note sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)<br>▪ 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?).<br>▪ Do the proposed location, type and scale of development promote a reduced dependency on resources? | Ensuring water availability is important especially during times of drought and water restrictions. Due to climate change, this is inevitable and will occur more regularly.<br><br>It should be noted that this water use allocation is regarded as an Existing Lawful Water Use in terms of the taking of water. The storage of additional water is a new use and will require a Water Use License. |
| ▪ How will the ecological impacts resulting from this development impact on people's environmental right in terms following:<br>o Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?<br>o Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?<br>o Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services | The proposed project will not unduly impact on people's environmental rights. Agriculture is standard practice within the area and therefore little impact will be caused to people's health and wellbeing (in terms of noise, odours, visual character, and sense of place) as a result of this activity. The location of the site also limits the impacts that the activity will have on people as the site is located outside any towns. No negative socio-economic impacts are therefore expected should this proposal be approved.<br><br>The proposal will have no impact on the nearby Nature Reserve. The dam is separated from the Nature Reserve by existing crops. The construction of the larger dam will not result in any movement within the Nature Reserve.<br><br>This water use will not have any impact on other water users. All existing enlistment water use allocations as managed by the Tulbagh WUA,. The water to fill the dam will be taken according to the enlistment allocation and it will be managed and controlled by the Tulbagh WUA.<br><br>By storing the water and thereby increasing assurance of water supply for irrigation, the full agricultural potential of the farm can be achieved, which benefits the farmer and farm workers. A more economically productive agricultural unit will contribute positively to the Gross Domestic Product of the country and the economic development of the region. |

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| applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?<br>o Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?<br>o Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?<br>o Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area? | To arrive at the preferred alternative, a Dam Engineer, a the Water Use License Consultant, a Freshwater Specialist and an EAP were appointed as part of the pre-application phase to provide their constraints and conditions (within their respective areas of expertise). This iterative process was followed to identify any issues that could potentially result in fatal flaws with the proposed project and to find ways to avoid any significant environmental impacts.<br>There are no wetlands or natural watercourses that will be affected by the proposed development. |
| ▪ What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?:<br>o The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area,<br>o Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.),<br>o Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and<br>o Municipal Economic Development Strategy ("LED Strategy"). | The site is zoned for agriculture and it is an operational farming enterprise which is successfully farmed. The site is surrounded by agricultural land/operating farms consisting of crops, farm dams, farm worker housing and homesteads. The proposed development will therefore be consistent with the existing land use on the farm as well as the surrounding areas. |
| ▪ Considering the socio-economic context, what will the socio-economic impacts be of the development (and its | Although the proposed activity will offer a relatively small benefit to society in general and may not be considered a societal priority, it will still have a positive benefit for the local community. The positive impacts for the community include |

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| separate elements/aspects), and specifically also on the socio-economic objectives of the area?<br>○ Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs? | job security for those already employed, additional job opportunities (permanent and seasonal), opportunity for farm workers to develop new skills and local economic development. In addition, farm workers have access to housing, education, medical supplies, transport and training.<br><br>The enlargement of the Modderas Dam will provide better surety in terms of water availability for the irrigation of the existing crops. A better water availability will increase the harvesting yield of the crops and thus provide a secure income that will ensure a profitable farming business. The direct and indirect positive impacts resulting from the proposed activity can be safeguarded through the implementation of best-farming practises and compliance with any recommendations made by the Department of Agriculture. |
| ▪ How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts? | No significant cultural or heritage impacts will result from the proposed dam expansion. The site is located on an operational farm located within an agricultural area – the sense of place and history of the area will not be affected by the expansion of an existing irrigation dam. |
| ▪ How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities? | Those already employed on the farm will have increased job security, there will be additional permanent and seasonal job opportunities and the economic development of the area will benefit. There will be an increase in agricultural produce since the agricultural potential of the farming unit will be improved and this in turn will boost the GDP. |
| ▪ Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term? | A total combined area of 66,5ha will be irrigated on the property. The storage dam will only provide buffer storage (security) that will be filled during winter to ensure that the required water demand during summer can be met. The Modderas Dam will ensure that water will always be available for irrigation.<br><br>To provide more surety of water for the irrigation of permanent crops during summer, it is proposed to increase the storage capacity of the existing Modderas Dam. The property, namely Portion 1 of farm Roode Zands Kloof 66, Tulbagh, is developed to full capacity in terms of existing crops. Current climate change and drought conditions have necessitated the need for water surety. It was therefore proposed to decommission Dam 2 with capacity of 31 000m³. and to add the capacity to the Modderas Dam. Since the Modderas Dam will be enlarged to include the storage capacity of Dam 2, it was decided to create more storage in terms of the taking of surface water that was confirmed as ELU.<br><br>A better water availability will increase the harvesting yield of the crops and thus provide a secure income, especially during times of drought, that will ensure a profitable farming business. |
| ▪ In terms of location, describe how the placement of the proposed development will: | By storing water the assurance of water supply for irrigation is secured, especially during times of drought and water restrictions, and this will allow the Applicant to improve and maintain his agricultural production. This is to the benefit of |

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| ○ result in the creation of residential and employment opportunities in close proximity to or integrated with each other,<br>○ reduce the need for transport of people and goods,<br>○ result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport),<br>○ compliment other uses in the area,<br>○ be in line with the planning for the area,<br>○ for urban related development, make use of underutilised land available within the urban edge,<br>○ optimise the use of existing resources and infrastructure, consider opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement), discourage "urban sprawl" and contribute to compaction/densification,<br>○ contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,<br>○ encourage environmentally sustainable land development practices and processes,<br>○ consider special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.),<br>○ result in investment in the settlement or area in question that will generate the highest socioeconomic returns (i.e. an area with high economic potential),<br>○ impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area, and | the farmer and farm workers as well as the local communities.<br><br>The water to be stored or used to fill the dam is water that has been allocated and confirmed to be an existing lawful water use, no new water will be taken and thus no significant additional pressure on the system is anticipated. |

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| ○ in terms of the nature, scale and location of the development, promote or act as a catalyst to create a more integrated settlement? | |
| ▪ How were a risk-averse and cautious approach applied in terms of socio-economic impacts?:<br>○ What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?<br>○ What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?<br>○ Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development (and its alternatives)? | The proposed development entails the storage of ELU water, i.e. existing allocated water, and storing it for irrigation purposes on a working farm. This will not result in any negative socio-economic impacts. |
| ▪ How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:<br>○ Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?<br>○ Positive impacts. What measures were taken to enhance positive impacts? | Due to the localised nature of the proposed development and the relatively small scale, it is anticipated that this application will have no impact on the existing rights of surrounding properties. In addition, the water to be taken is a lawful use and should not impact on downstream users.<br><br>I&APs and Stakeholders have had the opportunity to consider the proposal and submit comment, thereby ensuring that all people's needs, rights and concerns relating to the application, are addressed throughout this process. |
| ▪ Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)? | The anticipated ecological impacts will not result in significant negative socio-economic impacts or vice versa.<br><br>No new water will be taken for storage but existing lawful enlisted water will be used to fill the dam. This should not significantly affect downstream users.<br><br>Storage of water will also ensure water security, especially during times of drought. This will have a positive impact on the crop production which in turn will be advantageous for the farmer, farm workers and local community. |

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| | The Modderas Dam is an instream dam on the lower Modderas Tributary of the Klein Berg River. The tributary contributes less than 1% of the flow to the Klein Berg River. The enlargement dam would likely, however, be a greater than 1 MAR dam, which implies it will likely not spill every year, only in wetter-than-average years. Environmental flow mitigation will be necessary to maintain the downstream watercourse. There is a tributary that joins the Modderas River downstream of the dam, which contributes about 40% of the flow in the lower river. The dam to be decommissioned (Dam D2) receives water from a diversion from this tributary. There is thus potential to ensure the EWR contribution for the lower river is from the tributary. There is a small instream dam on this stream. Although it is on the adjacent property, this may reduce the ability to utilise this watercourse to mitigate the flow impact and implement the recommended environmental flow requirement. |
| ▪ What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations? | The proposed development entails the construction of an enlarged dam for water storage for irrigation purposes. The proposal will result in job security for those already employed on the working farm and increase in incomes for the farmer and possibly the farm workers. |
| ▪ 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)? | Those already employed on the farm will have increased job security.<br><br>The potential aquatic ecosystem impacts associated with the proposed dam enlargement are:<br>• Modify flow in the watercourse downstream of the dam<br>• Disturbance and modification of aquatic habitat within the dam basin of the enlarged dam<br>• Short-term water quality impacts during the construction works<br>• Indirect impact on aquatic biota.<br><br>The Modderas Dam is an instream dam on the lower Modderas Tributary of the Klein Berg River. The tributary contributes less than 1% of the flow to the Klein Berg River. The enlargement dam would likely however be a greater than 1 MAR dam which implies it will likely not spill every year, only in wetter-than-average years. Environmental flow mitigation will be necessary to maintain the downstream watercourse. There is a tributary that joins the Modderas River downstream of the dam which contributes about 40% of the flow in the lower river. The dam to be decommissioned (Dam D2) receives water from a diversion from this tributary. There is thus potential to rather ensure the EWR contribution for the lower river is from the tributary. There is a small instream dam on this stream but it is on the adjacent property that may reduce the ability to utilise this watercourse to mitigate the flow impact and implementation of the recommended environmental flow requirement.<br><br>With regards to the proposed decommissioning of Dam D2, the dam has long been in existence. The embankment of the dam and the adjacent area comprise largely natural vegetation cover. The area immediately to the east of the dam also comprises a wider riparian and seep area associated with the smaller tributary of the Modderas River. With the decommissioning of the dam, it is important the disturbance of these areas be avoided and that the dam basin simply be filled with soil that is free of alien vegetation seed. |

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| | It is proposed that Dam D2 is left as is which would prevent disturbance to adjacent natural areas.<br><br>With regards to the implementation of the EWR in the lower Modderas Tributary, it is recommended that the smaller tributary that drains past Dam D2 be utilised to meet the environmental flow requirement as recommended. In the decommissioning of Dam D2, the dam should simply be left as is but no longer store water (i.e divert water to it and abstract from it). Only the natural rainfall and runoff into the dam should be retained in the dam and allowed to seep out. There is quite a bit of natural vegetation in and around the dam that it would be best to not disturb.<br>There should also be ongoing removal and control of invasive alien vegetation along the river corridors and in the wetland areas within the property, and in particular within the Modderas Tributary that is proposed to provide for the EWR downstream of Modderas Dam. Removal of invasive vegetation and revegetation of the aquatic habitats could be informed by an adopted Maintenance Management Plan (MMP) for the property.<br><br>The construction works at the dam should take place during the driest months of the year to prevent any flow and water quality (sedimentation) impacts and should be carried out in conjunction with an approved EMP that addresses aspects such as prevention and containment of any contaminated runoff and chemical spills from the construction site; provision of ablution facilities at the construction site that are at least 30m from the watercourse, and mitigation of excessive sedimentation arising from the works.<br><br>Disturbance of the natural vegetation cover upstream of the dam and immediately downstream of the dam within the watercourse should be avoided. Any disturbed areas that are located immediately outside of the dam basin should be rehabilitated by reshaping the area to resemble that of the surrounding natural landscape and where necessary, these areas should be planted with suitable local indigenous vegetation.<br><br>The disturbed areas at the dam should also be monitored for the growth of invasive alien vegetation and any recruitment of alien plants should be removed. Longer-term maintenance activities associated with the operation of the dam should follow an adopted MMP for the property.<br><br>No stocking of the dam with alien fish should be allowed. Any stocking of the dam would need to get prior approval from CapeNature.<br><br>**Significance of impacts after mitigation**: With the implementation of environmental water requirements in the Mooderas River, as well as the recommended rehabilitation of the aquatic habitats on the property, the significance of the impact could be reduced to being of **Low negative** significance. |
| ▪ Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered? | The preferred alternative is considered the best practicable environmental option. |

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| ▪ What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination? | The proposed development entails the storage of enlisted water for irrigation purposes. Those already employed on the farm will have increased job security and storing water will allow the farmer to increase his produce and ensure water security during drier times. |
| ▪ 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?<br>▪ What measures were taken to ensure that the interests, needs and values of all interested and affected parties were considered, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge? | The Applicant is accountable for the potential impacts of the activities and is responsible for managing these impacts throughout the development's life cycle. The Applicant must implement the EMPr and ensure that both the EMPr and the Environmental Authorisation are always complied with. The Applicant is also responsible for ensuring that all other environmental and water related legislation is complied with.<br><br>An EMPr for the construction and operational phases of the proposed development has been compiled (**Appendix H**) which specifies the responsibilities for the potential environmental issues throughout the life of the development.<br><br>A Public Participation Process (PPP) has been undertaken as part of this Basic Assessment Process as detailed in Section F of the BAR. Various methods were employed to notify potential Interested and Affected Parties of the proposed project, including site notices, advertisements in newspapers and written notifications of all adjacent landowners and occupiers. |
| ▪ Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)? | The PPP involves the engagement with local councillors, farming associations and the Irrigation Boards. The local community will have opportunities to raise any concerns they may have, and these concerns will be addressed throughout the process, where reasonably possible and where the concerns are within the scope of this application. |
| ▪ What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected? | An EMPr has been compiled to address health and safety concerns. An Environmental Control Officer (ECO) must be appointed to monitor compliance. This will be a condition of the environmental authorisation, should the application be approved. |

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| ▪ Describe how the development will impact on job creation in terms of, amongst other aspects:<br>o the number of temporary versus permanent jobs that will be created,<br>o whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area), the distance from where labourers will have to travel, the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits), and<br>o the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs in the short and medium term, but impact on 1000 permanent agricultural jobs, etc.). | By storing more water, water security is ensured and agricultural production will be improved and secured during drier periods. With an increase in the agricultural potential of the farming unit, existing jobs will be secured, and some new job opportunities may be created.<br><br>There will be an opportunity for farm workers to learn new skills. The required skills are available in the area and jobs will mainly go to those living on the farm or on neighbouring farms. The Applicant will assist with travel to and from the farm wherever reasonably possible. |
| ▪ What measures were taken to ensure:<br>o that there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment, and<br>o that actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures? | The authority consultation process carried out by the EAP will assist in coordinating the policies, legislation and mandates of the various state departments/organs of state. This will be done as per the requirements of DEA&DP'S circular EADP 0028/2014: one environmental management system.<br><br>In terms of the Agreement for the One Environmental System (section 50A of the NEMA and sections 41 (5) and 163 A of the NWA) the process for a Water Use License Application (WULA) and EIA will be aligned and integrated with respect to the fixed synchronised timeframes, as prescribed in the EIA Regulations 2014, as amended and the 2017 WULA Regulations (GN R. 267 of 24 March 2017). The EIA process taken cognisance of this and will be carried out accordingly. |
| ▪ What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage? | The EIA process, including the public participation, is a means of managing potential impacts on environmental resources and determining whether the proposed use of resources is in the public interest.<br><br>In addition, potential freshwater constraints and impacts were evaluated in the Freshwater Impact Assessment. |
| ▪ Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left? | Mitigation measures are realistic and will not be a burden. |
| ▪ What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental | The following mitigation and management measures must be conditions of approval:<br><br>• An Environmental Control Officer (ECO) must be appointed to oversee the construction phase (including the implementation of the EMPr and any applicable conditions of the environmental authorisation). |

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| damage or adverse health effects will be borne by those responsible for harming the environment? | • ECO should conduct at least 1 site visit per month.<br>• All mitigation measures detailed in the EMPr (**Appendix H**) must be adhered.<br>• With regards to the implementation of the EWR in the lower Modderas Tributary, it is recommended that the smaller tributary that drains past Dam D2 be utilised to meet the environmental flow requirement as recommended. In the decommissioning of Dam D2, the dam should simply be left as is but no longer store water (i.e divert water to it and abstract from it). Only the natural rainfall and runoff into the dam should be retained in the dam and allowed to seep out. There is quite a bit of natural vegetation in and around the dam that it would be best to not disturb.<br>• There should also be ongoing removal and control of invasive alien vegetation along the river corridors and in the wetland areas within the property, and in particular within the Modderas Tributary that is proposed to provide for the EWR downstream of Modderas Dam. Removal of invasive vegetation and revegetation of the aquatic habitats could be informed by an adopted Maintenance Management Plan (MMP) for the property.<br>• The construction works at the dam should take place during the driest months of the year to prevent any flow and water quality (sedimentation) impacts and should be carried out in conjunction with an approved EMP that addresses aspects such as prevention and containment of any contaminated runoff and chemical spills from the construction site; provision of ablution facilities at the construction site that are at least 30m from the watercourse, and mitigation of excessive sedimentation arising from the works.<br>• Disturbance of the natural vegetation cover upstream of the dam and immediately downstream of the dam within the watercourse should be avoided. Any disturbed areas that are located immediately outside of the dam basin should be rehabilitated by reshaping the area to resemble that of the surrounding natural landscape and where necessary, these areas should be planted with suitable local indigenous vegetation.<br>• The disturbed areas at the dam should also be monitored for the growth of invasive alien vegetation and any recruitment of alien plants should be removed. Longer-term maintenance activities associated with the operation of the dam should follow an adopted MMP for the property. |
| ▪ Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations? | The current preferred alternative is considered acceptable from an environmental perspective for the following reasons:<br>• The application is for the expansion of an existing dam and not a new development area.<br>• The development site comprises previously disturbed areas and planted cultivation lands.<br>• The development will not impact on any corridors or natural connectivity.<br>• The development will not result in the formation of unsustainable habitat fragments.<br>• The development will not impact on any plant species of conservational concern.<br>• It is highly unlikely that any animal species of conservation concern are found on the disturbed site. |
| ▪ Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area? | The agricultural potential of the area is linked to the incomes of the farmers and farm workers. By securing water supply for irrigation which enables the farmer to increase agricultural production, the farmer and farm workers benefit as well as the local community. |

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