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ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN

Establishment of Approximately 427 Sectional Title Dwelling Units with Ancillary Outbuildings, Walvis Bay, Erongo Region of Namibia

Resubmitted December 2022

EAP / Consultant:

Proponent:

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1. OVERVIEW

1.1. Project Background

International Housing Solutions (or IHS) plans to build a new town housing scheme on Erf 5748 Walvis Bay, next to the Dunes Mall. The development will include approximately 427 sectional title dwelling units (two-bedroom units) with ancillary outbuildings (garages), as well as private parks and streets. IHS plans to build and sell townhouses on the local market. Due to the site's location and potential for pests such as flies and mosquitos, including odour, the Walvis Bay Municipality has requested an internal scoping report to assess and reduce the effects of odour, flies, and mosquitoes.

Housing is a national need, including in the Walvis Bay Local Municipality. The Walvis Bay Municipality Municipality's aims is to promote socioeconomic development through the eradication of backlogs associated with housing, as well as improve basic services within their area of jurisdiction. In order to meet the needs of the community within Walvis Bay, a new town housing complex is being proposed by the proponent, International Housing Solutions (or IHS), on Erf 5748 Walvis Bay. As per the development scope, a key performance indicator includes the provision of infrastructure and basic service through securing suitable land for human settlement projects. The provision of affordable housing units remains a high priority for the Municipality of Walvis Bay, and this will restore the dignity of previously disadvantaged Namibians by providing shelter and access to basic human rights as enshrined in the Constitution of Namibia.

The proposed development calls for the construction of primarily residential units, the laying out of streets, and the installation of extensive services. Below is a map showing the proposed development's location.

Figure 1: Locality map of Erf 5748 Walvis Bay (in red) in relation to the Dunes Mall and surrounding environment

1.2. Purpose of the EMP

According to Regulation 8 of the Environmental Management Act's (Act 7 of 2007) and its Regulations (2012), a draft Environmental Management Plan (EMP) is required and should be included as part of the scoping process.

A 'management plan' is defined as follows:

> *"…a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored."*

One of the most significant outcomes of the EA process is an EMP, which synthesizes all suggested mitigation and monitoring actions and assigns specific responsibilities along with a timeline. It establishes a connection between the effects noted during the Environmental Impact Assessment (EIA) Process and the environmental management needed during the project's actual implementation and operation. A person who violates the terms of this EMP may be subject to imprisonment and/or a fine because an EMP is a legally binding document. This EMP should be updated to reflect changes to the project, the environment, and any findings from compliance monitoring because it is a living document.

The goal of this document is to guide environmental management throughout the proposed development's life-cycle stages of pre-operation (planning and design), construction, operation, and decommissioning.

The following phases are addressed in this EMP:

- **Planning and design (Pre-operation)** - the period, prior to the commencement of the construction phase, during which preliminary legislative and administrative arrangements are carried out in preparation of the proposed activities;
- **Construction** – the period during which construction of the proposed services, roads and associated infrastructure will be ongoing;
- **Operation** - the period during which the proposed development, proposed services, roads, and associated infrastructure will be operational.
- **Decommissioning** – The proposed activities are expected to be a permanent activity and is thus not anticipated to be decommissioned in future. As such the decommissioning impacts for the proposed activity is not discussed.

1.3. Environmental Assessment Practitioner (EAP)

International Housing Solutions (or IHS) has appointed Erongo Consulting Group as independent environmental consultants to conduct the required Environmental Assessment (EA), which includes compiling an EMP for the proposed development. The EMP, along with the scoping EA report, will be submitted to the Walvis Municipality as supporting documents to the application for an Environmental Clearance Certificate (ECC). The EMP will also be used

by Contractors and the Proponent to guide them during the proposed operations to ensure that environmental impacts are minimized or avoided entirely.

1.4. Legal Requirements

Section 8 (j) of the EIA Regulations requires that the contents of the EMP meet the requirements. Throughout the project life cycle, the EMP must address the potential environmental impacts of the proposed activity on the environment. It must also include a system for evaluating the effectiveness of monitoring and management arrangements after they have been implemented. The Municipality of Walvis Bay is thus responsible for ensuring that the proposed activity, as well as the EIA process, adhere to the EMA's principles, and must ensure that any contractors appointed by them do the same.

Table 1: Summary of Legal legislation relevant to the IHS Housing Project

LEGISLATION/ GUIDELINE	RELEVANT PROVISIONS	IMPLICATIONS FOR THIS PROJECT
Namibian Constitution First Amendment Act 34 of 1998	- "The State shall actively promote… maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future" (Article 95(l)).	- Ecological sustainability should inform and guide this EA and the proposed development.
Environmental Management Act EMA (No 7 of 2007)	- Requires that projects with significant environmental impact are subject to an environmental assessment process (Section 27). - Details principles that are to guide all EAs.	- The EMA and its regulations should inform and guide this EA process.
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878)	- Details requirements for public consultation within a given environmental assessment process (GN 30 S21). - Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).	
Forestry Act 12 of 2001 Nature Conservation Ordinance 4 of 1975	- Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22(1)). - Prohibits the removal of and transport of various protected plant species.	- Even though the Directorate of Forestry has no jurisdiction within townlands, these provisions will be used as a guideline for conservation of vegetation.
Labour Act 11 of 2007	- Details requirements regarding minimum wage and working conditions (S39-47).	- The Walvis Bay Municipality and Proponent should ensure that all contractors involved during the construction, operation and maintenance of the proposed
Health and Safety Regulations	Details various requirements regarding	

GN 156/1997 (GG 1617)	health and safety of labourers.	project comply with the provisions of these legal instruments.
Public Health Act 36 of 1919	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	
National Heritage Act 27 of 2004	Section 48(1) states that "A person may apply to the [National Heritage] Council [NHC] for a permit to carry out works or activities in relation to a protected place or protected object".	Any heritage resources (e.g. human remains etc.) discovered during construction requires a permit from the NHC for relocation.
Burial Place Ordinance 27 of 1966	Prohibits the desecration or disturbance of graves and regulates how bodies may be unearthed or dug up.	Regulates the exhumation of graves.
***Water* Resources Management *Act* 11 of 2013.**	To provide for the management, protection, development, use and conservation of water resources; to provide for the regulation and monitoring of water services and to provide for incidental matters.	The protection of ground and surface water resources should be a priority. The main threats will most likely be concrete and hydrocarbon spills during construction and hydrocarbon spills during operation and maintenance.
Namibia Water Corporation Act 12 of 1997	To establish the Namibia Water Corporation Limited; to regulate its powers, duties and functions; to provide for a more efficient use and control of water resources; and to provide for incidental matters.	
Urban and Regional Planning Act (No. 5 of 2018).	- Subdivision of land situated in any area to which an approved Town Planning Scheme applies must be consistent with that scheme (S31).	- The proposed use of the project site must be consistent with the Walvis Bay Town Planning Scheme
Road Ordinance 1972 (Ordinance 17 0f 1972)	- Width of proclaimed roads and road reserve boundaries (S3.1) - Control of traffic on urban trunk and main roads (S27.1) - Rails, tracks, bridges, wires, cables, subways or culverts across or under proclaimed roads (S36.1) - Infringements and obstructions on and interference with proclaimed roads. (S37.1) - Distance from proclaimed roads at which fences are erected (S38)	- The limitations applicable on RA proclaimed roads should inform the proposed layout and zonings where applicable.
Walvis Bay Zoning Scheme.	This statutory document provides land use regulations and development.	Land uses and developments should be in accordance with the Walvis Bay Zoning Scheme
Integrated Urban Spatial Development Framework (IUSDF) of Walvis Bay	Provides future land use planning within the Walvis Bay district.	The IUSDF was utilized to see if the proposed activity is in accordance with the future planning of Walvis Bay.
Walvis Bay Climate Strategic	Provides action plans on how Town	To promote two-storey developments,

Action Plan	Planning can help mitigate climate change	reduce urban sprawl and land competition. Encourage EIA studies with regards to rezoning.
Walvis Bay Biodiversity Report of 2008. (WBBR:2008)	Provides a comprehensive summary and map of sensitive Biodiversity Areas and Zoning in the Walvis Bay district.	To ensure that the proposed activity is not located close to any Biodiversity Area or Zoning.
Sustainable Urban Energy Planning: A handbook for cities and towns in developing countries (SUEP:2004)	Provides a comprehensive list and case studies to implement energy saving measures.	Implementing energy-efficiency and carbon mitigation measures. Conserve natural resources with city planning.
Walvis Bay Public Open Space Policy	Sets criteria of parameters for development of parks (POS) in Walvis Bay	

1.5. Assumptions and Limitations

This EMP has been written with the following assumptions and limitations in mind:

This EMP was created based on the scoping-level Environmental Impact Assessment (EIA) for the proposed development. There were no additional specialist studies included in the evaluation; and

The mitigation measures recommended in this EMP document are based on the risks/impacts identified in the scoping report based on the project description and site investigation. If the project's scope changes, the risks must be reassessed and mitigation measures implemented accordingly.

1.6. Report Structure

This EMP lays out the management actions for the proposed development activities. The EMP addresses the following phases:

- **Planning and design (Pre-construction)** - the period, prior to the commencement of the construction phase, during which preliminary legislative and administrative arrangements are carried out in preparation of the proposed activities;
- **Construction** – the period during which construction of the proposed services, roads and associated infrastructure will be ongoing;
- **Operation** - the period during which the development, proposed services, roads and associated infrastructure will be operational.
- **Decommissioning** – The proposed activities are expected to be a permanent activity and is thus not anticipated to be decommissioned in future. As such the decommissioning impacts for the proposed activity are not discussed.

2. ROLES AND RESPONSIBILITIES

International Housing Solutions (the Proponent) is ultimately accountable for the EMP's implementation. The Proponent may delegate this responsibility at any time, from the planning and design phase to the operation and maintenance phase and the decommissioning phase (if considered). The following key individuals have been delegated responsibility for the effective implementation of this EMP, which may be fulfilled by the same person:

- Proponent's Representative; and
- Environmental Control Officer

2.1. Proponent's Representative

If IHS, the proponent, does not personally manage all aspects of the planning and design, construction, operation and maintenance, and decommissioning activities referred to in this EMP, they should delegate this responsibility to a suitably qualified individual referred to in this plan as the Proponent's Representative (PR). The Proponent may decide to have one person serve as a PR for both phases. Alternatively, the Proponent may choose to assign a separate PR to each component, such as planning and design, construction, operation, and maintenance.

Table 2: Responsibilities assigned to the Proponent's Representative for planning and design, construction, operation and maintenance phases

Responsibility	Project Phase
- **Managing the implementation of this EMP and updating and maintaining it when necessary**	Throughout the lifetime of the project
- **Management and monitoring of individuals and/or equipment on-site in terms of compliance with this EMP**	Throughout the lifetime of the project
- **Issuing fines for contravening EMP provisions**	Throughout the lifetime of the project

2.2. Environmental Control Officer

The Proponent should delegate to a designated person, referred to in this EMP as the Environmental Control Officer, the responsibility of overseeing the implementation of the entire EMP on the ground, from the planning and design phase to the operation and maintenance phase (ECO). The Proponent may choose to assign this role to a single individual for both phases, or to separate individual ECOs to oversee EMP implementation during each phase.

The ECOs will be in charge of the following tasks:

- Managing and facilitating communication regarding this EMP between the Proponent, PR, and Interested and Affected Parties (I&APs);

- Conducting site inspections of all areas with regard to the implementation of this EMP (monitor and audit the implementation of the EMP); the recommended minimum frequency is monthly during construction and bi-annually during operation.
- advising the PR to remove any individuals or equipment that does not adhere to the terms of this EMP;
- Making suggestions to the PR regarding the imposition of fines for EMP violations; and
- Conducting an annual review of the EMP and suggesting updates or new additions.

3. ENVIRONMENTAL MANAGEMENT PLAN ACTIONS

3.1. Key Potential environmental impacts to be managed

The key potential impacts listed below have been determined by project phase based on the EA. The Scoping Report and the following presentation include the complete impact description.

Table 3: Summary of key potential environmental impacts per project phase

	Project Phase	Potential impacts identified in the Environmental Assessment
1.	Pre-Construction	Biodiversity
2.	Construction	Biodiversity, surface and groundwater contamination, soil erosion and safety, archaeological, health and safety, dust, noise, waste, and social impacts.
3.	Operation	Traffic, soil, surface and groundwater, odour, pests – mosquitoes, flies, odour, noise, dust, waste, and social impacts – complaints from nearby residents

The goal of the EMP's management actions is to avoid potential impacts whenever possible. Where impacts cannot be avoided, measures are put in place to mitigate their severity.

The following tables present management actions recommended to manage the potential impacts rated in the EA conducted for the proposed development. The management actions were organized according to the three project phases:

- Planning and design phase (pre-construction);
- Construction;
- Operation and maintenance phase management actions.

The responsible persons at International Housing Solutions (the Proponent) should thoroughly evaluate these commitments and acknowledge their commitment to the specific management actions outlined in the table of the following subchapters.

3.2 Phase 1: Planning and Design Management Actions

Before any on-site activities start, the management requirements outlined below must be fulfilled while the necessary preliminary legislative and administrative arrangements are made in anticipation of the proposed on-site activities.

Table 4: Planning and design management actions

Aspect	Management Requirement
Human Resources / Labour Recruitment	The following provisions designed to maximise the use of local labour should be included within tenders concerning the construction activities: - Provision stating that all unskilled labour should be sourced from local communities. - Specific recruitment procedures ensuring local firms enjoy preference during tender adjudication. - Provisions promoting gender equality pertaining to recruitment.
EMP Implementation	- The proponent should appoint a Proponent's Representative (PR) that will act as their on-site implementing agent. - This person should be responsible to ensure that the Proponent's responsibilities are executed in compliance with relevant legislation and this EMP.

3.3 Phase 2: Construction Phase Management Actions

The management actions for the construction phase during which the construction activities will take place are listed below.

Table 5: Construction phase management actions

Environmental Feature	Impact	Management Actions	Responsibility
Monitoring	EMP non-compliance	- The ECO or the Proponent / Proponents Representative should monitor the implementation of this EMP. - The Proponents Representative should inspect the site throughout the construction phase at least on a monthly basis. - Bi-annual audits should be conducted of site activities by an external ECO.	IHS/ Proponent, Contractors
Waste Management	Visual impact and soil contamination	- The construction site should always be kept tidy. - All domestic and general waste produced daily should be cleaned and contained daily. - No waste may be buried or burned. - Waste containers (bins) should be emptied regularly and removed from site to the nearest municipal waste disposal site. - All recyclable waste needs to be taken to the nearest recycling depot. - A sufficient number of separate waste containers (bins) for	- IHS/ Proponent, Contractors

		hazardous and domestic / general waste must be provided on site. - Construction workers should be sensitized to dispose of waste in a responsible manner and not to litter. - No waste may remain on site after the completion of the project.	
Hazardous Waste	Soil groundwater contamination	- All heavy construction vehicles and equipment on site should be provided with a drip tray. - All heavy construction vehicles should be maintained regularly to prevent oil leakages. - Maintenance and washing of construction vehicles - Repairs and maintenance should take place only at a designated workshop area	IHS/ Proponent, Contractors
Wastewater	Groundwater contamination	- Use of the toilets instead of the veld must be strictly adhered to. - If grey water can be collected from ablution facilities at the contractors' camp it should be recycled and: o Used for dust suppression; o Used to water vegetable gardens or to support a small nursery in local communities (as and when agreed upon by such communities); and/or o Used to clean equipment. o All run off materials such as wastewater and other potential contaminants should be contained on site and disposed of in accordance with municipal wastewater discharge standards, so that they do not o reach to ground or surface water systems. - Wastewater (excluding sewage) should be drained into lined / impermeable catch pits, big enough for daily / weekly usage without overflowing. - Water from these catch pits should be removed from site to the nearest wastewater treatment facility by an approved wastewater removal company.	- IHS/ Proponent, Contractors
Shallow wetlands / groundwater occurrences	Groundwater / wetlands quality	- Ensure all dewatered groundwater is discharged to the closest drainage line; or back to the downstream environment via artificial discharge points (i.e., swales or attenuation ponds).	- IHS/ Proponent, Contractors
Soil	Soil contamination	- The following spill control preventative measures should be put in place to manage soil contamination:	- IHS/ Proponent, Contractors

		- An impermeable liner should be laid down (particularly beneath cement mixers) on the site area in order to prevent contaminants from reaching to surrounding soils and eventually groundwater systems. - Potential contaminants such wastewater should be contained on site and disposed of in accordance with municipal wastewater discharge standards so that they do not contaminate surrounding soils. - Contaminants such as hydrocarbons should be stored, handled, and managed appropriately. These must be collected on site and disposed at an appropriate facility that is licenced to receive such waste. - Soil contamination should be monitored on site daily by PR and monthly by ECO. - ECO(s) should ensure that a sufficient number of drip trays are available on-site and that these are utilised in the event of leakage from construction trucks or vehicles. - Contaminated soils onsite that may have resulted from leakage/spillage construction vehicles or equipment should be removed to a depth dependent on the size of the spill and replaced with clean soil. - The contaminated soil should be removed and disposed at a designated landfill site suitable to receive contaminated soil and a waste manifest should be kept as proof thereof. - Visual soil assessment for signs of contamination at vehicle holding, parking and activity areas. - Place oil drip trays under parked construction vehicles and hydraulic equipment at the site.	
Soil	Soil interflow processes Soil structure and land capability Soil quality	- Only excavate areas applicable to the project area. - Backfill the material in the same order it was excavated to reduce contamination of deeper soils with shallow oxidised soils. - Cover excavated soils with a temporary liner to prevent contamination. - Keep the site clean of all general and domestic wastes. - All development footprint areas to remain as small as possible and vegetation clearing to be limited to what is essential.	- IHS/ Proponent, Contractors

		- Exposed soils to be protected using a suitable covering or revegetating. - Existing roads should be used as far as practical to gain access to the site. - Have emergency fuel & oil spill kits on site.	
Biodiversity	Loss of Biodiversity	- Trees with a trunk size of 150 mm and bigger should be surveyed, marked with paint (readily visible), and protected. - The Proponent should only remove trees/plants within the actual footprint of the specific project activities. Trees/ plants that are not within the footprint should be left to preserve biodiversity in the area. - If cleared, the numbers of protected, endemic and near endemic species removed should be documented. - Trees and plants protected under the Forest Act No 12 of 2001 are not to be removed without a valid permit from the local Department of Forestry. -	- IHS/ Proponent, Contractors
Dust and noise	Nuisance impacts	The contractor(s) should supress dust associated with construction activities by using a reasonable amount of water. - If feasible, wastewater should be treated to an acceptable water quality level, so that it can be used for dust suppression, if needed. - Noise levels during construction activities should be kept within the allowable standards for urban areas. - Noise levels should adhere to the SANS restrictions on noise. - Work hours should be restricted to between 08h00 and 17h00 due to the use of heavy equipment, power tools and the movement of heavy vehicles. - Noisy equipment should be shut down when not in use (when not needed) to avoid unnecessary noise on site. - Workers performing noisy tasks should be rotated regularly (work on shifts) to avoid exposing them to excessive noise for a long period of time in a day. - Workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure. - Workers should ensure that they	IHS/ Proponent, Contractors

		wear the necessary PPE at all times on work sites.	
Odour, Mosquitoes, flies	Nuisance impacts	**Pipeline** - The proponent should lay a closed pipeline +/- 1,9km from the sewerage station to the current exit point, this should resolve most of the problems (Flies, mosquitos and smell) - The pipeline route to be kept in the existing channel – because it will have a continuous fall up to the discharge point.	IHS/ Proponent, Contractors
		Boundary Wall The Proponent should ensure that: - the boundary wall on the south western boundary will be increased to about 2.1 metres - Purpose: to enhance the dispersion of smelly air upwards into wind resulting in dilution and dispersion of the odour, and hopefully less complaints from neighbors and future residents	
Wetlands	Inadequate Remediation	**Bulk Earthworks** **The Contractor should ensure that:** - all wetlands on Erf 5747 and 5748 will be filled as a result of the extensive bulk earthworks required as required as part of the development - should there be any excess soil materials resulting from the bulk earthwork process, this can be utilized to fill ponds immediately surrounding the site	- IHS/ Proponent, Contractors
		Plant Willow Trees The Contractor should: - Plant Willow Trees to dry up the surrounding ponds. - In addition to the drying out of the ponds – the Willows will also fulfill the function of Phytoremediation. - The value of Phytoremediation should not be underestimated from an environmental perspective. - The process will remediate the contaminated soil, sediments, groundwater and surface water by degrading organic and other toxins and chemicals. 6 mechanisms are present during remediation: - **Phytoextraction** – uptake and translocation of contaminants into plant tissue. - **Phytovolatilization** – transfer of	

		contaminants to air via plant transpiration. - **Rhizosphere degradation** – breakdown of contaminants in soil surrounding roots by microbes. - **Phytodegradation** – breakdown of contaminants in plant tissue. - **Phytostabilization** – stabilization of contaminants in soil through absorption – plant roots - **Hydraulic control** – Interception and transpiration of large quantities of water to control migration of contaminants. Phytoremediation will in the long have a very positive outcome with relation to Flies, Mosquitos and smell – since the area will be remediated.	
Health and Safety	Health and safety impacts	- The contractor(s) should ensure that all personnel are provided with personal protective equipment (PPE), such as coveralls, gloves, safety boots, safety glasses and hard hats at all times. - Workers should ensure that they wear the PPE at all times on work sites. - No workers should be allowed to drink alcohol during working hours. - No workers should be allowed on site if under the influence of alcohol. - An appropriate location should be indicated on the site for the parking of construction and operation vehicles. - No unauthorised access should be allowed to the construction sites.	- IHS/ Proponent, Contractors
Construction labourers	General health and safety	- The Proponent should ensure that locals from the surrounding areas are employed for any unskilled labour. - Construction labourers should not be recruited on- site. - A suitable number of portable toilets (i.e., easily transportable) should be available on site. - Separate ablutions should be available for men and women and should clearly be indicated as such. - Sewage waste needs to be removed on a regular basis to the nearest approved sewage disposal site. - Workers responsible for cleaning the toilets should be provided with latex gloves and masks.	- IHS/ Proponent, Contractors

		- No workers may reside on-site for the entire duration of the construction period. Only a security guard will be allowed to sleep on-site (if there will be any). - The Proponent or contractor should draft a Communication Plan, which should outline as a minimum the following: o How stakeholders, who require ongoing communicationn for the duration of the construction period, will be identified and recorded and who will manage and update these records. o How these stakeholders will be consulted on an ongoing basis. o Provision should be made for a grievance mechanism o outlining how concerns will be lodged/recorded and how feedback will be delivered, inclusive of further steps of arbitration in the event that feedback is deemed unsatisfactory. o Stakeholders need to be informed of the communication plan once drafted to ensure they are aware of the relevant communication channels.	
Water	Groundwater contamination	- No wastewater / effluent should be allowed to leave the site premises without proper control. - These should be disposed of in accordance with municipal wastewater discharge standards. - Regular maintenance and monitoring of construction equipment and vehicles should be done to detect early spills or leakages - An emergency plan should be available for major / minor spills at the construction site during operation activities (with consideration of air, groundwater, soil, and surface water).	- IHS/ Proponent, Contractors

		- Groundwater impact awareness training should be provided to the employees involved in this phase.	
The Green Spaces and Landscaping	Scheme Design	The proponent should make sure that: - The Green spaces and landscaping will be provisioned for in Site Development Plan which will also assist in creating an environmentally friendly habitat	- IHS/ Proponent, Contractors
Noise	Nuisance impacts	- Work hours should be restricted to between 08h00 and 17h00 where construction involving the use of heavy equipment, power tools and the movement of heavy vehicles is less than 500 m from residential areas. If an exception to this provision is required, all residents within the 500 m radius should be given 1 week's written notice.	- IHS/ Proponent, Contractors
Rehabilitation	Visual impact	- Upon completion of the construction phase consultations should be held with the local community/property owner(s) regarding the post-construction use of remaining excavated areas (if applicable). - In the event that no post-construction uses are requested, all excavated/degraded areas need to be rehabilitated as follows: - Excavated areas may only be backfilled with clean or inert fill. No material of hazardous nature (e.g., sand removed with an oil spill) may be dumped as backfill. - Rehabilitated excavated areas need to match the contours of the existing landscape. - The rehabilitated area should not be higher (or lower) than nearby drainage channels. - This ensures the efficiency of revegetation and reduces the chances of potential erosion. - Topsoil is to be spread across excavated areas evenly. -	- IHS/ Proponent, Contractors
Topsoil	Loss of topsoil and associated opportunity costs	- When excavations are carried out, topsoil should be stockpiled in a demarcated area. - Stockpiled topsoil should be used to rehabilitate post-construction	- IHS/ Proponent, Contractors

		degraded areas and/or other nearby degraded areas if such an area is located a reasonable distance from the stockpile.	

3.4 Phase 4: Operational Phase Management Actions

The table below presents the management action for operational phase.

Table 6: Operational phase management actions

Environmental Feature	Impact	Management Actions	Responsibility
EMP Training	Lack of EMP awareness and the implications thereof	• All contractors appointed for maintenance work on the respective housing units, streets and services infrastructure must ensure that all personnel are aware of necessary health, safety, and environmental considerations applicable to their respective work.	• IHS / Proponent
Water	Water usage	- Promote water saving within the development such encouraging the installation of water saving taps and showerheads.	- IHS / Proponent
	Surface and groundwater contamination	- Ensure that surface run-off water accumulating on-site are channeled and captured through a proper storm water management system to be treated in an appropriate manner before disposal into the environment.	- IHS / Proponent
Aesthetics	Visual impacts	The proponent should address the following: - The incorporation of indigenous vegetation into the development. - Making use of natural paint colours. - To mark the area with appropriate road warning signs (e.g., the road curves to the left/right)	- IHS / Proponent
Waste	Environmental Pollution	- Waste is to be managed in accordance with the regulations of the Municipality of Walvis Bay which relates to waste management. - The recycling of waste should be promoted amongst residents and business within the development.	- IHS / Proponent
Hazardous Waste	Environmental, soil, surface, and groundwater pollution	- Prevent the uncontrolled release of hazardous materials to the environment. - Engineering management controls to be implemented to minimize the risk. - Implement prevention and control measures for the use, handling,	- IHS / Proponent

		and storage of hazardous materials. - Ensure the active use and provision of PPE to employees on site.	
Electricity	Energy management	- Electricity is to be obtained from an approved electrical supplier such as ErongoRed to ensure efficiency of generation and use as well as sustainability of supply.	- IHS / Proponent
Noise	Noise impact	- The proponent should consult with the view to incorporate the relevant local / national / international guidelines to manage the generation of traffic noise in the development area.	- IHS / Proponent
Emissions	Air Pollution	- Implement measures to reduce emissions that may be harmful or cause pollution. - Regular monitoring of emissions.	- IHS / Proponent
Groundwater	Reduced soil infiltration Oil and fuel spills -soil contamination Sewer leakage- groundwater quality	- Ensure the sewer system is monitored for leakages. - Routine visual inspections of sewer infrastructure and resident parking areas for signs of soil contamination. - Emergency fuel & oil spill kits should be available on-site during maintenance activities by contractors.	- IHS / Proponent
	Saturated zone (aquifer zone) / groundwater table	- Ensure all housing facilities laydown areas are lined, to reduce poor quality seepage from the activity which takes place top side. - Good housekeeping. - Waste classification of all wastes to be generated and stored on the sites. Proper handling and storage should be implemented in terms of the wastes generated. - Care should be taken to ensure that areas designated for waste handling /storage are properly lined, and routine inspections of all sewer and stormwater systems should be undertaken.	- IHS / Proponent
Community Complaints	Lack of pest management awareness and the implications thereof	- IHS will institute a communication platform through the Body Corporate, whereby residents of the development will be requested to channel any complaints or queries. The Body Corporate will then engage directly with the Municipality on behalf of the development where applicable.	- IHS / Proponent

3.5 Recommendations for Pest Monitoring

It is proposed that a monitoring programme be implemented to continuously monitor the pest at the site.

The monitoring programme is divided into two phases:

- **Phase 1:** Monitoring during any expansion and construction activities (temporary monitoring); and
- **Phase 2:** Permanent monitoring surrounding higher risk infrastructure (long term or for a period after the activity).

3.5.1 Phase 1 monitoring

It is proposed that during the construction phase (or any expansion activity at the site) monitoring focuses on active excavation and equipment / heavy machinery. Regular visual inspections of these areas need to be undertaken. Moreover, placement and monitoring of drip trays underneath parked construction vehicles will help to determine which vehicles need to be repaired/taken off-site to prevent contamination while in service. Any unused equipment should also be parked on an impermeable surface within a bunded area.

3.5.2 Phase 2 monitoring

For the generally proposed expansions, monitoring should focus on the pipeline, permanent sewer and stormwater infrastructure (i.e., hydraulic monitoring). Regular visual assessments of the infrastructure, parking and service areas should be adequate to monitor for obvious signs of pollution into the environment. The identified area has been identified as high risk as such regular visual assessments of the infrastructure, pipeline, parking and service areas should be undertaken to monitor for obvious signs of pollution into the environment.

EMP Compliance Monitoring

The following site monitoring procedures must be carried out in order to mitigate and minimize the aforementioned environmental effects:

- Keep track of whether the EMP's provisions have been followed.
- Non-compliance must be noted, discussed, and promptly remedied during weekly site meetings.
- If complaints are received about specific non-compliance issues, such as pest-related issues (mosquitoes, flies, and odour), communication should be maintained with the parties who are upset until the issues are resolved.

4 CONCLUSIONS

Erongo Consulting Group is confident that the proposed activities, as outlined in the scoping report, may be granted a CONSENT by the Walvis Bay Municipality based on the recommendation made in this Environmental Management Plan (EMP), provided that the EMP is implemented and that all legal requirements pertaining to this development are met.

DUNES ESTATE - MITIGATION & IMPACT MANAGEMENT FRAMEWORK (IHS)

PROJECT PHASE	MITIGATION MEASURE	DESCRIPTION	IMPACT
Pre-Construction	**Closed Pipeline**	Lay a two-kilometre 315mm closed pipeline from the source of the Sewage Plant's semi-purified water overflow outlet to the bird sanctuary wetland. It is proposed that the exiting water channel be utilised as it has a continuous fall up to the discharge point and would have a minimal environmental impact during construction. The diagram below illustrates the proposed pipeline location. 	Once the pipeline has been installed and the excess semi-purified water is diverted further into the dunes, the odour issue will subside, and the resultant fly and mosquito issue will reduce significantly. As a result of the above, the numbers of complaints currently being received from neighbouring residential areas by the Municipality will also reduce in time.
Construction	**Willow Trees**	Plant willow trees along the Southwestern boundary of Erf 5748. Willow trees absorb a large amount of water and will also fulfil the function of Phytoremediation (the process that remediates the contaminated soil, sediments, groundwater and surface water by degrading organic and other toxins and chemicals).	Six mechanisms are present during this remediation process: 1. Phytoextraction – uptake and translocation of contaminants into plant tissue. 2. Phytovolatilization – transfer of contaminants to air via plant transpiration. 3. Rhizosphere degradation – breakdown of contaminants in soil surrounding roots by microbes.

			4. Phytodegradation – breakdown of contaminants in plant tissue. 5. Phytostabilization – stabilization of contaminants in soil through absorption – plant roots 6. Hydraulic control – Interception and transpiration of large quantities of water to control migration of contaminants. Phytoremediation will in the long term have a very positive outcome with relation to the odour, fly and mosquito challenge.
Construction	**Wetland Reduction**	All wetlands on Erf 5747 and 5748 will be filled as a result of the extensive bulk earthworks required as part of the development. Should there be any excess soil materials resulting from the bulk earthwork process, this can be utilised to fill ponds immediately surrounding the site.	This will significantly reduce the current wetland footprint in the area and reduce the breeding grounds for flies and mosquitos.
Construction	**Boundary Wall**	The boundary wall on the Southwestern boundary will be increased to 2.1meters.	This will assist with the initial odour for the units on this boundary edge
Post Construction	**Scheme Design**	The green spaces and landscaping provisioned for in the Site Development Plan will also assist in creating an environmentally friendly habitat.	This will significantly reduce the current wetland footprint in the area and reduce the breeding grounds for flies and mosquitos.
Operational	**Community Communication Platform**	IHS will institute a communication platform through the Body Corporate whereby residents of the development will be requested to channel any complaints or queries. The Body Corporate will then engage directly with the Municipality on behalf of the development where applicable. IHS already have a similar platform in place on their other developments where owners/tenants can request assistance or submit queries (e.g., maintenance requests) vis their smartphones which has proved very successful.	IHS cannot stop residents of the development contacting the Municipality directly but by implementing the proposed communication platform, the Body Corporate will use its best endeavours to facilitate this process which will assist in reducing the number of direct Municipality contacts. The numbers of complaints currently being received from neighbouring residential areas by the Municipality is also expected to reduce significantly overtime as a result of the pipeline extension.

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WINDHOEK ONGWEDIVA SWAKOPMUND KEETMANSHOOP

Our Reference: **IHS Housing – Walvis Bay**
Your Reference: **Proposed Mitigation Action – Municipal Sewer Effluent Disposal**

30 November 2022

To whom it may concern

PROPOSED ENVIROMENTAL MITIGATION ACTION

Erongo Consulting Group conducted an Environmental Impact Assessment (EIA) for the proposed development of sectional title dwelling units on erf 575 in Walvis Bay. According to the EIA, mitigation measures are required to reduce the odor, mosquitoes and flies resulting from the current sewer effluent disposal method of the municipal waste water treatment plant.

All the treated sewer effluent from the municipal waste water treatment plant (WWTP) are currently dispose just north of the WWTP from where it mainly flows inland via an earth drain to a main pond between the dunes. However, vast volumes still seep through the earth drain to form several small local ponds all along the north eastern side of the earth drain. Addition to the seepage water, the earth drain occasionally get block with sand which cause an overflow to the northern side of the earth drain which feeds the small local ponds. The resultant effect is that the small local ponds create a favorable environment for mosquitos, flies, reeds and also birds.

The proposed mitigation action is to install a 315Ø uPVC pipe from the WWTP discharge point to the main pond where the earth drain is currently discharging. The treated effluent will gravity flow, similar to the earth drain, to the main pond through the proposed pipeline that will be installed in a straight line or follow the existing earth drain pending on environment factors as illustrated in Annexure A. This will eliminate all seepage water from the current earth drain and any possibility of flow blockage to the main pond. All small local ponds close to the proposed development on erf 575 will be eliminated which will reduce the odor, mosquitoes and flies to an acceptable level. The main inland pond will still provide a favorable environment for all aquatic birds of the existing wetland resulted from the current effluent disposal method.

Do not hesitate to contact us if you require any additional information.

Yours faithfully

DJ Kotze
for ELEMENT CONSULTING ENGINEERS

Annexure A : Proposed Mitigation Action Sketch

PROPOSED MITIGATION ACTION

INTERNATIONAL HOUSING SOLUTIONS NAMIBIA (PROPRIETARY) LIMITED

REGISTRATION NUMBER 2017/0529

22 November 2022

Walvis Bay Municipality
2GR4+JMJ
Walvis Bay
Namibia

Attention: David Uushona
Dear Sir,

Development of approximately 427 residential single-storey townhouses on Erf 5748 Walvis Bay

We refer to the proposed Dunes Estate opportunity pertaining specifically to the development of approximately 427 residential units on the land situated on Erf 5748 Walvis Bay, Namibia by International Housing Solutions ("IHS") ("Proposed Scheme").

IHS have been mandated to deliver affordable housing in Sub-Saharan Africa and to date have delivered in excess of 2,000 residential units across Namibia. We confirm hereby that our Investment Committee has approved the development of the said Proposed Scheme, for a total cost of around N$110,000,000.

At the time of approving the Proposed Scheme our understanding was that Erf 5748 was already zoned for General Business use, with a primary right to residential use.

During our final due diligence process when our professional team presented the Proposed Scheme to the Municipality, it came to light that the Municipality was concerned about the impact of odours, flies and mosquitos stemming from the nearby Municipal sewer plant and requested a revised/updated Environmental Management Plan (EMP).

During the last year, IHS has spent considerable resources to try and comply with the Municipality's request but has not been able to obtain approval yet. In our efforts to expediate resolution we had an audience with Mr Quintin Simon, who facilitated the meeting held in the Municipal offices on the Thursday 10 November 2022.

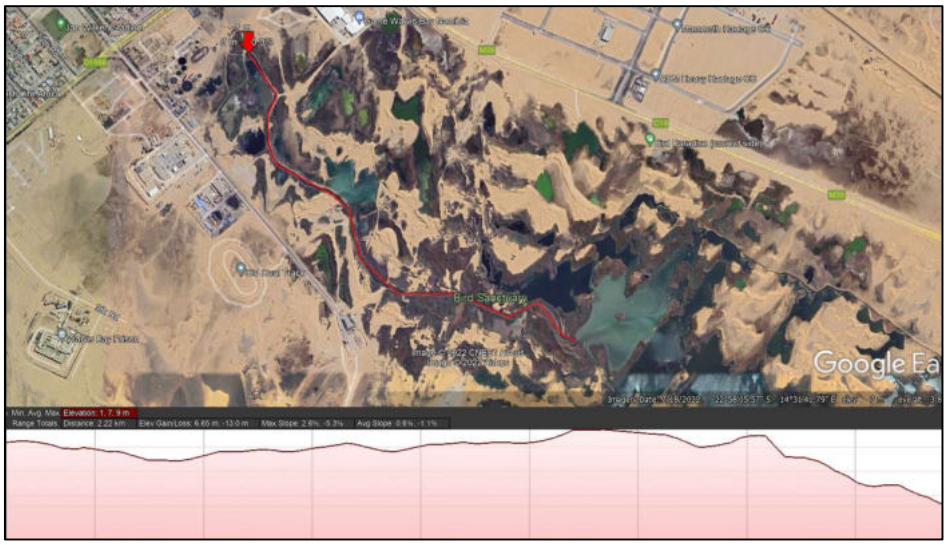
Through obtaining a better understanding at this meeting and further inquiry from our project engineers, we have ascertained that by extending the current sewage plant's semi-purified effluent pipe with about two kilometres to discharge into the bird sanctuary wetland instead of the dunes surrounding the sewage plant, will resolve all concerns the Municipality has with the Proposed Scheme and also with neighbouring residential areas from which complaints have apparently been received in recent times.

The engineers' advice is that the whole dune area between the sewage plant and Dunes Mall will dry out, and leave the area relatively odour, fly, and mosquito free in time, once the pipe is extended as suggested.

A such, IHS would like to propose the following mitigants to assist in addressing the odour, fly and mosquito challenge:

Off-Site mitigation measures:

- Lay a two-kilometre 315mm closed pipeline from the source of the Sewage Plant's semi-purified water overflow outlet to the bird sanctuary wetland, utilising the exiting water channel as illustrated in the diagram below. Once the pipeline has been installed and the excess semi-purified water is diverted further into the dunes, the odour issue will subside, and the resultant fly issue will reduce significantly.



- Plant Willow trees along the Southwestern boundary of Erf 5748. Willow trees absorb a large amount of water, therefore once the overflow water has been diverted further into the dunes, the trees will assist in absorbing the residual water which will significantly reduce the mosquito breeding habitat.

On-Site mitigation measures:

- All wetlands on Erf 5747 and 5748 will be filled as part of the Proposed Scheme therefore significantly reducing current wetland footprint in the area.
- Increase the Southwestern boundary wall to 2.1meters to assist with the initial odour for the units on this boundary edge.
- The green spaces and landscaping already provisioned for in the Site Development Plan will also assist in creating an environmentally friendly habitat.
- Should there be any excess soil materials as a result of the extensive bulk earthworks required on the Proposed Scheme, this can be used to fill ponds immediately surrounding the site.
- IHS will institute a platform through the Body Corporate whereby residents of the development will be requested to channel any complaints or queries. The Body Corporate will then engage directly with the

Municipality on behalf of the development where applicable. IHS already have a similar platform in place on their other developments where owners/tenants can request assistance or submit queries (e.g. maintenance requests) vis their smartphones which has proved very successful.

We trust that the above mitigation measures will be sufficient in addressing the Municipality's concerns and make a positive impact, not only for the Proposed Scheme, but on neighbouring properties who are currently being impacted by the odour, fly and mosquito problem.

Given our urgency to proceed with the Proposed Scheme, we hope to obtain in-principal confirmation from the Municipality with this letter, that they will agree to the suggested response and that once formalised through a revised and submitted EMP, will lead to the Consent Use approval.

We look forward to further engagement with the Municipality to proceed with the Proposed Scheme, at their nearest convenience due to the time pressures on our limited investment timeframe.

Yours faithfully

Henk Snyman
Country Manager - Namibia