

Proposed Huddle Development

Visual Impact Assessment

supporting the Scoping and Environmental Impact Reporting process

SEF No: 504342

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- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998);
- Have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998);
- Will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- Based on information provided to me by the project proponent, and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional judgement; and
- Undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study for which I am registered.

Hanlie Van Greunen
Landscape Technologist

Date

EXECUTIVE SUMMARY

Strategic Environmental Focus (Pty) Ltd (SEF) has been appointed, as an independent environmental assessment practitioner and visual specialist, by Huddle Investments (Pty) Ltd to undertake a level three Visual Impact Assessment (VIA) for the proposed Huddle Development.

This report addresses the expected visual impacts by the proposed development on the receiving environment and its visual receptors and also provides appropriate mitigation measures in order to reduce these impacts.

PROJECT DESCRIPTION

Huddle Park is located on portions of the farm Bedford and use to be used for two eighteen hole public golf courses covering a total area of approximately 183 hectares. Huddle Park is located in the eastern part of the City of Johannesburg next to the Royal Johannesburg Golf Course and in close proximity to the townships of Sandringham, Sydenham and Linksfield in the City of Johannesburg and the townships of Bedford Park and Senderwood in Ekurhuleni. Huddle Park is one of the largest remaining open spaces in the urban area of the City of Johannesburg, but it is underutilised in terms of its potential as a centrally located undeveloped portion of land.

The study area for this Visual Impact Assessment includes the entire Huddle Park Open Space System, consisting of the Huddle Development site, Huddle Park and the Royal Johannesburg and Kensington Golf Courses. The study area also includes surrounding neighbourhoods such as Senderwood, Bedford and Bedford Park to the east of the site, as well as Sandringham, Glensan, Fairmount Ridge, Glenkay, Fairvale and Sylwamonte to the west and north-west of the site. Linksfield Drive in the far south as well as the Harvey Municipal Nature Reserve are also included in the study area.

The proposed Huddle Development will primarily consist of dwelling houses, small pockets of cluster and higher density developments, a small neighbourhood shopping centre, with a maximum floor area of 10 000m², a private open space system, that provides for pedestrian linkages, and a private road system. The total area of the development is approximately 53 ha (Figure 1). The proposed site forms part of the existing Huddle Park Golf Course Site (Refer to Figure 1: Locality Map).

Electrical supply will be from the Alexandra substation (to the north) by way of an underground 11kV electrical cable (two alternatives are proposed). The proposed development will also connect to existing Egoli gas, municipal sewer and potable water connection points in close proximity to the site.

The following road upgrades are proposed to enable access to and around the new development:

- Club Street; Civin Drive and Linksfield Road: Signal optimisation is proposed to meet the high right turning demand on the south approach.
- Civin Drive and Chaucer Avenue and St Christopher Avenue: Signal optimisation is proposed to meet the high demand on the south approach.
- Club Street: Duelling of Club Street is proposed from Club/Chaucer/Linksfield intersection spanning 1050m to south of the Club/Huddle Golf Course access.
- Club street, Civin Drive and Linsfield Road: A second right turning lane is proposed on the south approach.
- Civin Drive and Chaucer Avenue and St Christopher Avenue: A short 60m receiving land is proposed on the north approach.

- Club Street, Donne Avenue and Access 3: A traffic signal accompanied by a short right turn lane on the north approach and left slip lane on the south approach are proposed.
- Club Street and St Andrews Road/Avenue: A traffic signal is proposed.
- Club Street, Civin Drive and Linksfild Road: Signal optimisation to accommodate additional traffic from the development on the west approach is proposed.
- Civin Drive and Chaucer Avenue and St Christopher Avenue: An extension to 120m of the proposed short 60m accepting lane on the north approach is proposed to accommodate future traffic.

RECEIVING ENVIRONMENT (VISUAL RESOURCE)

Huddle Park is one of the largest remaining open spaces in the urban area of the City of Johannesburg, with an extent of approximately 183 hectares of green open space and hosts a variety of floral and faunal species. A tributary of the upper Jukskei catchment runs west of the proposed Huddle Development site and is greatly altered to create a manmade wetland. The golf course (current land use) and the well-established tree population provide the study area with a park-like open space feel with rows of trees aligning the grassed fairways. It is important to mention, however, that vegetation in Huddle Park is dominated by exotic species such as *Acacia dealbata* (Silver Wattle), *Pinus patula* (Patula Pine) *Eucalyptus* (Blue Gum) and *Quercus* (Oak) species.

There are no existing structures present on the proposed Huddle Development site. Six structures of historical value have been identified on the adjacent Huddle Park Golf Course. These structures are not particularly aesthetically appealing and are not exceptional architectural examples, but date back to the mid 20th century. On a local scale, the Huddle Park Clubhouse does have a prominent stature overlooking a portion of the golf course.

The dense vegetation cover restricts one's view to open corridors along the fairways or roads and completely dominates the Huddle Open Space System. An intimate and strong sense of enclosure prevails as one travels through this landscape as vegetation provides an enveloping canopy of branches and leaves.

VISUAL ASPECTS

This section outlines aspects to be considered in order to establish the intensity of the impact that the proposed development would have on identified visual receptors. These aspects include:

- visual receptor sensitivity;
- visual exposure;
- viewing distance;
- visual absorption capacity of the landscape;
- visual contrast;
- critical views;
- visual value;
- sense of place; and
- obtrusive lighting.

IMPACT ASSESSMENT

The following impacts were identified and assessed according to the criteria ratings based on the Department of Environmental Affairs and Tourism's (DEAT) (1998) Guideline Document: EIA Regulations.

Construction Phase Impact

- Visual impact of construction of the development on visual receptors: Includes temporary views of vegetation clearance, construction activities including construction camps, material lay-down yards, stockpiles, cranes, scaffolding, delivery vehicles and temporary fencing.
- Visual impact of construction of the infrastructure upgrades on visual receptors: Includes temporary views of vegetation clearance along the servitudes (through open space areas), disruption of the urban environment along busy roads and side walks, material stockpiles, delivery vehicles, signage, lighting and guarding.

Operational Phase Impact

- Visual impact of operational activities on visual receptors: Permanent views of the Huddle Development which includes medium density residential buildings, retail buildings, boundary wall, new entrances and landscaped areas.
- Visual impact of operational activities on the visual resource: Includes impacts on the woodland character and sense of place of the site and surrounding leafy streetscapes.

Cumulative Impacts

- Loss of visual resources (Green Open Space); and
- Obtrusive lighting (interior and exterior lighting).

CONCLUSION

The site is moderately sloped and falls in a north-westerly direction which will limit views of the development, from the eastern residential areas such as Senderwood, Bedford and Bedford Park. Residents, Recreational Users and Motorists living or moving along Club Street will experience full views of the proposed Development. Most of the residences on Club Street are tucked away behind high security walls and mature gardens and are facing away from Club Street towards the smaller neighbourhood roads. Residents living on Linksfeld Drive in the far south as well as visitors of the Harvey Municipal Nature Reserve will experience elevated views of the development as they are located on a ridgeline 150m higher than the site. Other adjacent residents, such as people living in Edward Avenue and especially Margaret Rose Street will experience glimpses of the development through the existing dense vegetation of the Huddle Park Golf Course. Residents in higher lying areas towards the west and north-west, such as Sandringham (including Sandringham High School), Glensan, Fairmount Ridge, Glenkay, Fairvale and Sylwamonte may also experience elevated views of the development from vantage points higher than ground level (i.e. multiple story houses, flats, lookout points, etc.) (Figure 9: Visibility Map).

During the construction phase, parcels of exposed soil will define the construction areas of the different zones and will be a dominant feature. The construction site will appear disorganised and dispersed with construction equipment, material stockpiles and ancillary components. Large construction equipment may be used for the construction of complex buildings. Extensive earthworks will be necessary to grade the sites and possible dust clouds may be generated by the activities. Delivery vehicles and trucks will frequently deliver building material to the site.

During the operational phase the existing woodland character of the site will be altered by the removal of the existing vegetation (mostly exotic trees) and replaced by residential and mixed use development. New indigenous trees will be planted in landscaped areas and private gardens of the development to restore some of the lost character. Once the new vegetation is established the development will be more camouflaged and blend in better with its surroundings.

The following is a summary of the significance of the anticipated visual impacts:

Construction Phase Impacts

Visual impact of construction of the development on visual receptors

Construction activities generally appear to be disorganised and unsightly. In the case of Huddle Park the sloping topography and existing dense vegetation of the golf course, between the development and residences on the southern, western and north-western perimeters, will reduce the visual impact caused by construction activities to a degree. The high walls, mature gardens and orientation of residences along Club Street will reduce the visual impact experienced by residents to the east of Huddle Park. The moderate Visual Absorption Capacity (VAC) of the landscape as well as the sheer viewing distance will reduce the impact caused to residents in higher lying neighbourhoods as well as recreational users of the Harvey Municipal Nature Reserve. The significance of the impact caused by construction activities without mitigation is therefore regarded to be medium. Implementation of appropriate mitigation measures (as discussed in Section 7.1.1) will decrease the **significance** of the impact to **low-medium**.

Visual impact of construction of infrastructure upgrades on visual receptors

Infrastructure upgrades, especially for linear services laid underground, are generally unsightly and inconvenient. Areas to be uncovered can leave scars on the landscape for long periods until rehabilitated successfully. In the case of the Huddle Development, infrastructure upgrades will have a negative visual impact on all residences overlooking the affected servitudes (green open space) as well as on Residents, Recreational Users and Motorists that live or move along the affected road (Club Street). The impact on Residents that overlook servitudes will be reduced by the fact that the aesthetic value of relevant servitudes is already compromised by overhead powerlines. The high security walls, mature gardens and the orientation of residences along Club Street will reduce the visual impact on these Residents to a degree. The significance of the impact caused by construction of infrastructure upgrades without mitigation is therefore regarded to be medium. Implementation of appropriate mitigation measures (as discussed in Section 7.1.2) will decrease the **significance** of the impact to **low-medium**.

Operational Phase Impacts

Visual impact of operational activities on visual receptors

The proposed development (retail and residential) will represent visual contrast with the adjacent Huddle Park (built versus non-built) while the retail component will also represent visual contrast with the surrounding residential neighbourhoods (change of land use). However, the sloping topography and existing dense vegetation within the Huddle Park Golf Course, between the development and residences on southern, western and north-western perimeters will reduce visual impact caused by the development to a degree. The high walls, mature gardens and orientation of residences along Club Street will reduce the visual impact experienced by Residents to the east of Huddle Park. The moderate VAC of the landscape as well as the sheer viewing distance will reduce the impact caused to residents in higher lying neighbourhoods as well as Recreational Users of the Harvey Municipal Nature Reserve. The significance of the impact caused by the proposed development and associated upgrades without mitigation is therefore regarded to be medium to high. Implementation of appropriate mitigation measures (as discussed in Section 7.2.1) will decrease the **significance** of the impact to **low-medium**.

Visual impact of operational activities on the visual resource

The proposed development will reduce Green Open Space in the local area. The development will also have a negative affect on the woodland character of the site and surrounding streetscapes through the removal of mature trees and other vegetation. Successful rehabilitation and landscaping can restore the lost woodland character to an extent, but the green open space taken up by the development footprint will forever be lost. The significance of the impact caused by the proposed development and associated upgrades without mitigation is therefore regarded to be medium. Implementation of appropriate mitigation measures (as discussed in Section 7.2.1) will decrease the **significance** of the impact to **low-medium**.

Cumulative Impacts

Loss of visual resources (Green Open Space)

Due to the high visual quality associated with Green Open Space in urban residential suburbs as well as the ever-expanding urban development that is taking place throughout Johannesburg and other South African cities, there is a need to preserve the few urban green spaces that are left. Therefore, the significance of the impact that the proposed development would have without mitigation, is regarded to be high. Implementation of appropriate mitigation measures (as discussed in Section 7.2.1) will decrease the **significance** of the impact to **medium- high**.

Obtrusive Lighting

Due to the contribution of obtrusive lighting by the proposed development in conjunction with existing lighting of the surrounding suburbs the significance of this impact without mitigation, is regarded to be medium. Implementation of appropriate mitigation measures (as discussed in Section 7.3.2) will decrease the **significance** of the impact to **low-medium**.

IMPACT STATEMENT

The finding of the Visual Impact Assessment undertaken for the proposed Huddle Development is that the study area and surrounding region will be visually impacted upon in the long-term. Potential visual impacts may be experienced by Residents in surrounding neighbourhoods, Motorists travelling along Club Street as well as visitors to the Harvey Municipal Nature Reserve.

Due to the topography (gradual slope from north to west) and the existing dense vegetation (not to be impacted on by the proposed development) of the remainder of Huddle Park Golf Course, direct views from adjacent visual receptors would be limited. Residents in adjacent higher lying neighbourhoods as well as visitors to the Harvey Municipal Nature Reserve would therefore be more sensitive to visual impacts from the development than some residents living closer by.

Notwithstanding the above, the moderate VAC of the area and proposed post-development landscaping measures will allow the development to blend in with the local context. It was therefore found that the visual impact of the proposed development on visual receptors (during the construction and operational phases) would not be significant. With regards to the cumulative impact of losing urban Green Open Space) to development in a city wide and national context, the impact was found to be significant, but did not constitute a fatal flaw.

In light of the above, and considering all factors (including the anticipated post mitigation impact significance ratings (ranging from low-medium to medium-high), it is the opinion of the author that that the proposed Huddle Development is acceptable from a visual perspective, and the development as proposed is supported, pending the implementation of mitigation measures as recommended.

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GLOSSARY OF TERMS

Landscape characterisation/ character	This covers the gathering of information during the desktop study and field survey work relating to the existing elements, features, and extent of the landscape (character). It includes the analysis and evaluation of the above and the supporting illustration and documentary evidence.
Landscape condition	Refers to the state of the landscape of the area making up the site and that of the study area in general. Factors affecting the condition of the landscape can include the level maintenance and management of individual landscape elements such as buildings, woodlands etc and the degree of disturbance of landscape elements by non-characteristics elements such as invasive tree species in a grassland or car wrecks in a field.
Landscape impact	Changes to the physical landscape resulting from the development that include; the removal of existing landscape elements and features, the addition of new elements associated with the development and altering of existing landscape elements or features in such a way as to have a detrimental affect on the value of the landscape.
Sense of place	That distinctive quality that makes a particular place memorable to the visitor, which can be interpreted in terms of the visual character of the landscape. A more emotive sense of place is that of local identity and attachment for a place “which begins as undifferentiated space [and] becomes place as we get to know it better and endow it with value” (Tuan 1977).
Viewer exposure	The extent to which viewers are exposed to views of the landscape in which the proposed development will be located. Viewer exposure considers the visibility of the site, the viewing conditions, the viewing distance, the number of viewers affected the activity of the viewers (tourists or workers) and the duration of the views.
Viewer sensitivity	The assessment of the receptivity of viewer groups to the visible landscape elements and visual character and their perception of visual quality and value. The sensitivity of viewer groups depends on their activity and awareness within the affected landscape, their preferences, preconceptions and their opinions.
Visual absorption capacity (VAC)	The inherent ability of a landscape to accept change or modification to the landscape character and/or visual character without diminishment of the visual quality or value, or the loss of visual amenity. A high VAC rating implies a high ability to absorb visual impacts while a low VAC implies a low ability to absorb or conceal visual impacts.
Visual amenity	The notable features such as hills or mountains or distinctive vegetation cover such as forests and fields of colour that can be identified in the landscape and described. Also included are recognised views and viewpoints, vistas, areas of scenic beauty and are-as that are protected in part for their visual value.
Visual intrusion	The level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape.
Visual character	This addresses the viewer response to the landscape elements and the relationship between these elements that can be interpreted in terms of aesthetic characteristics such as pattern, scale, diversity, continuity and dominance.
Visual contour	The outer perimeter of the visual envelope determined from the site of the development. The two dimensional representation on plan of the horizon contour.

Visual contrast	<p>The degree to which the physical characteristics of the proposed development differ from that of the landscape elements and the visual character. The characteristics affected typically include:</p> <ul style="list-style-type: none"> • Volumetric aspects such as size, form, outline and perceived density; • Characteristics associated with balance and proportion such scale, diversity, dominance, continuity; • Surface characteristics such as colour, texture, reflectivity; and • Luminescence or lighting.
Visual impact	<p>Changes to the visual character of available views resulting from the development that include: obstruction of existing views; removal of screening elements thereby exposing viewers to unsightly views; the introduction of new elements into the view shed experienced by visual receptors and intrusion of foreign elements into the view shed of landscape features thereby detracting from the visual amenity of the area.</p>
Visual impact assessment	<p>A specialist study to determine the visual effects of a proposed development on the surrounding environment. The primary goal of this specialist study is to identify potential risk sources resulting from the project that may impact on the visual environment of the study area, and to assess their significance. These impacts include landscape impacts and visual impacts.</p>
Visual magnitude	<p>Product of the vertical and horizontal angles of an object to describe quantitatively the visual dimension of an object. (Iverson, 1985). The visual magnitude is best described in terms of visual arcs with a one-minute arc usually considered as being the minimum resolution detectable by the human eye (equivalent to observing a 29mm ball at a distance of one hundred metres).</p>
Visual quality	<p>An assessment of the aesthetic excellence of the visual resources of an area. This should not be confused with the value of these resources where an area of low visual quality may still be accorded a high value. Typical indicators used to assess visual quality are vividness, intactness and unity.</p>
Visual receptors	<p>Includes viewer groups such as the local community, residents, workers, the broader public and visitors to the area, as well as public or community areas from which the development is visible. The existing visual amenity enjoyed by the viewers can be considered a visual receptor such that changes to the visual amenity would affect the viewers.</p>
Visual resource	<p>Visual resource is an encompassing term relating to the visible landscape and its recognisable elements, which through their co-existence; result in a particular landscape character.</p>
Visual Value	<p>Visual value relates to those attributes of the landscape or elements in the landscape to which people attach values that, though not visually perceivable, still contribute to the value of the visual resource. These visual values are derived from ecological, historical, social and/or cultural importance and are described in terms of their uniqueness, scarcity, and naturalness and/or conservation status. The importance of visual value of a landscape or an element in the landscape is measured against its value on an international, national or local level.</p>

PROPOSED HUDDLE DEVELOPMENT VISUAL IMPACT ASSESSMENT SUPPORTING THE SCOPING AND ENVIRONMENTAL IMPACT REPORTING PROCESS

1. INTRODUCTION

Strategic Environmental Focus (Pty) Ltd (SEF) has been appointed, as an independent environmental assessment practitioner and visual specialist, by Huddle Investments (Pty) Ltd to undertake a level three Visual Impact Assessment (VIA) for the proposed Huddle Development.

This report addresses the expected visual impacts by the proposed development on the receiving environment and its visual receptors and also provides appropriate mitigation measures in order to reduce these impacts.

1.1. Study Area

The study area for this Visual Impact Assessment (VIA) includes the entire Huddle Park Open Space System, consisting of the Huddle Development site, Huddle Park and the Royal Johannesburg and Kensington Golf Courses. The study area also includes surrounding neighbourhoods such as Senderwood, Bedford and Bedford Park to the east of the site, as well as Sandringham, Glensan, Fairmount Ridge, Glenkay, Fairvale and Sylwamonte to the west and north-west of the site. Linksfield Drive in the far south as well as the Harvey Municipal Nature Reserve are also included in the study area.

The Huddle Development site is sandwiched between Club Street (east) and the existing Huddle Park Golf Course (west and south). The site gradually falls from north to west (Figure 1: Locality Map).

2. STUDY APPROACH

2.1. Information Base

This assessment is based on information from the following sources:

- Topographical maps and GIS generated data sourced from the Surveyor General, Surveys and Mapping in Mowbray, Cape Town and SEFGIS (2005);
- Aerial photography obtained from Google Earth;
- Observations made and photographs taken during site visits;
- Conceptual layout map received from the client;
- Professional judgement based on experience gained from similar projects; and
- Literature research on similar projects.

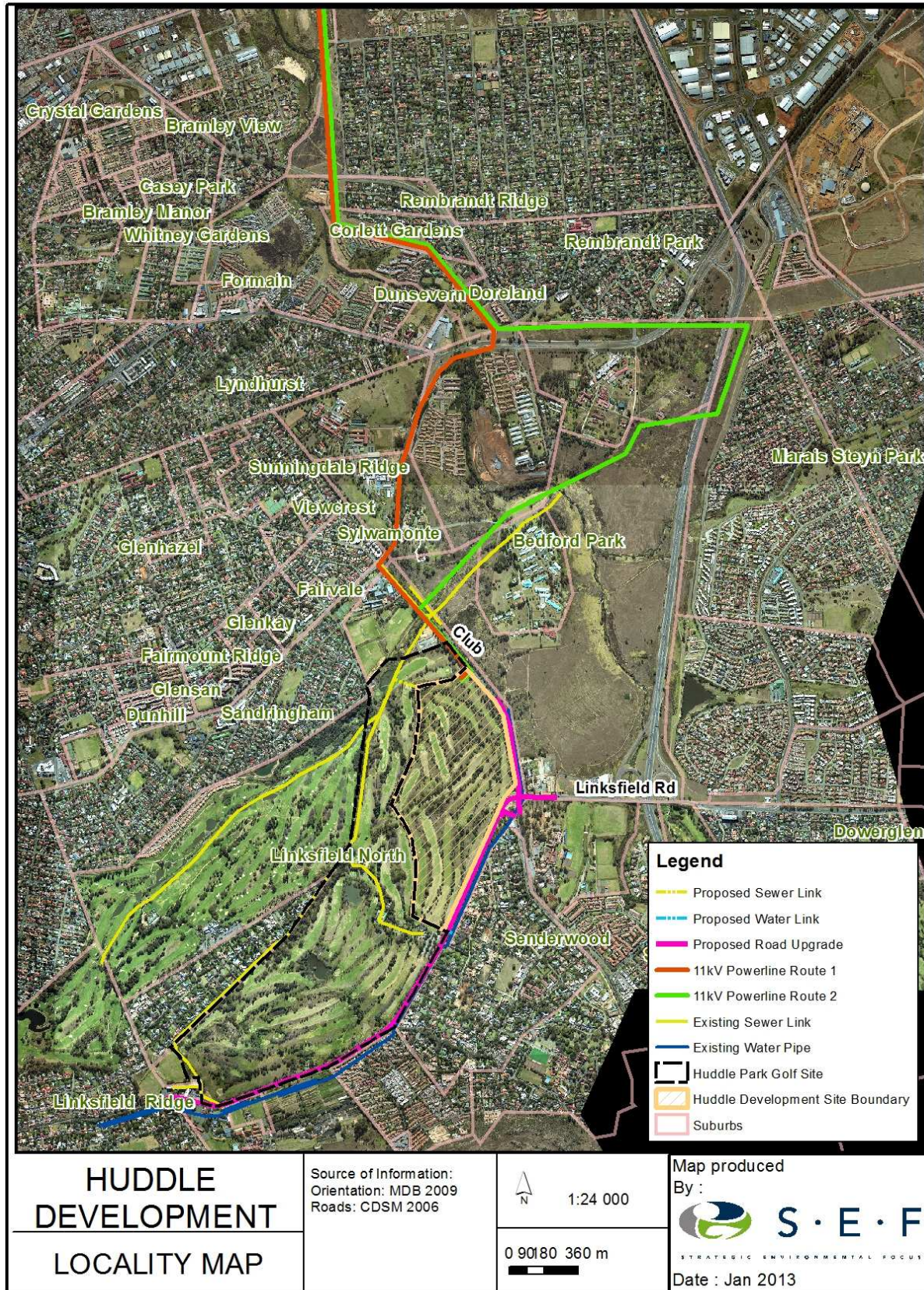


Figure 1: Locality Map

2.2. Terms of Reference

The terms of reference for the Level 3 Visual Impact Assessment (VIA) for the study area have been summarised below (adapted from Oberholzer, 2005):

- Identification of potential visual issues raised in the scoping phase, and site visit;
- Description of the receiving environment and the proposed project;
- Establishment of view catchment area, view corridors, viewpoints and receptors;
- Indication of potential visual impacts using established criteria;
- Assessing the potential lighting impacts at night;
- Describe alternatives, mitigation measures and monitoring programmes; and
- Review by independent, experienced visual specialist.

2.3. Methodology

In order to address the objectives of the terms of reference the following study method has been used:

- Provide a **project overview** which focuses on the project components and activities from a visual point of view.
- Determine the **landscape character** of the study area, as well as surrounding areas, in terms of:
 - Topography;
 - Hydrology;
 - Land use;
 - Vegetation Cover; and
 - Build Environment.

- Determine the **visual character and quality** of the study area.
- Identify **visual receptors** and their **sensitivity**.

To assist in determining visual receptor sensitivity a commonly used rating system was utilised. This is a generic classification of visual receptors and enables the visual impact specialist to establish a logical visual receptor sensitivity rating for viewers who will be involved in different activities without engaging in extensive public surveys.

- Determine the **viewshed** of the proposed development by utilising Digital Elevation Model (DEM) with 20m contour intervals analysed by the Geographic Information System (GIS), algorithms available in ArcView software.
- Outline aspects which will determine the **intensity** of the impact that the proposed project will have on visual receptors including the following:
 - Visual Exposure;
 - Viewing Distance;
 - Visual Receptor Sensitivity;
 - Critical Views;

- Visual Absorption Capacity;
 - Visual Contrast;
 - Visual Value;
 - Sense of Place; and
 - Obtrusive lighting.
- Evaluate **visual impact**, on identified receptors and the visual resource, against impact criteria ratings based on DEAT's (1998) Guideline Document: EIA Regulations. The assessment will consider impacts arising from the construction and operational phases of the proposed project both before and after the implementation of appropriate mitigation measures.
 - Recommend mitigation as appropriate.

2.4. Assumptions and Limitations

This assessment has been undertaken during the conceptual stage of the project and is based on information available at the time. The following assumptions and limitations are applicable:

- An exact commencement date for construction is unknown. Construction will commence as soon as the necessary authorisations have been obtained.
- The construction period is expected to continue for approximately four years in which the bulk of construction activities will occur in the first two years.
- It is expected that the 53 ha Huddle Development will primarily consist of a residential component, of various densities with a maximum height of four storeys. As well as a retail / business portion, with a maximum height of three storeys.
- The location, size and number of the construction camps are unknown at this stage. It is assumed that a large construction camp will be located near the retail / business development zone. During the construction of the residential units separate, smaller construction camps may be established.
- Construction of the Huddle Development is expected to coincide with the proposed infrastructure upgrades. Construction activities will therefore occur sporadically over a large area.
- The residential component is expected to be constructed as soon as the retail / business portion approaches completion.
- The boundary wall / fence treatment is unknown at this stage, so solid walls will be used for this assessment.
- The site is dominated by exotic species and indigenous vegetation will be protected where possible.
- The existing vegetation in the adjacent Huddle Park Golf Course (especially around the wetland area) is not to be removed.

2.5. Level of Confidence

The level of confidence assigned to the findings of this assessment is based on:

- The level of information available and/or understanding of the study area (rated 3); and
- The information available and/or knowledge and experience of the project (rated 3).

The findings in this VIA are rated with a confidence level of 9. This rating indicates that the author's confidence in the accuracy of the findings is high (see Table below).

Table 1: Confidence level chart and description

CONFIDENCE LEVEL CHART				
		Information, knowledge and experience of the project		
		3b	2b	1b
Information, and knowledge of the study area	3a	9	6	3
	2a	6	4	2
	1a	3	2	1

- 3a – A high level of information is available of the study area in the form of recent aerial photographs, GIS data, documented background information and a thorough knowledge base could be established during site visits, surveys etc. The study area is readily accessible.
- 2a – A moderate level of information is available of the study area in the form of aerial photographs GIS data and documented background information and a moderate knowledge base could be established during site visits, surveys etc. Accessibility to the study area is acceptable for the level of assessment.
- 1a – Limited information is available of the study area and a poor knowledge base could be established during site visits and/or surveys, or no site visit and/or surveys were carried out.
- 3b – A high level of information and knowledge is available of the project in the form of up-to-date and detailed engineering/architectural drawings, site layout plans etc. and the visual impact assessor is well experienced in this type of project and level of assessment.
- 2b – A moderate level of information and knowledge is available of the project in the form of conceptual engineering/architectural drawings, site layout plans etc. and/or the visual impact assessor is moderately experienced in this type of project and level of assessment.
- 1b – Limited information and knowledge is available of the project in the form of conceptual engineering/architectural drawings, site layout plans etc. and/or the visual impact assessor has a low experience level in this type of project and level of assessment. (Adapted from Oberholzer, 2005)

3. PROJECT DESCRIPTION

3.1. Overview of the Project

Huddle Park is located on portions of the farm Bedford and use to be used for two eighteen hole public golf courses covering a total area of approximately 183 hectares. Huddle Park is located in the eastern part of the City of Johannesburg next to the Royal Johannesburg Golf Course and in close proximity to the townships of Sandringham, Sydenham and Linksfield in the City of Johannesburg and the townships of Bedford Park and Senderwood in Ekurhuleni. Huddle Park is one of the largest remaining open spaces in the urban area of the City of Johannesburg, but it is underutilised in terms of its potential as a centrally located undeveloped portion of land.

The proposed 53 ha Huddle Development (approximately 28.8% of the existing Huddle Park area) will primarily consist of a residential component (Residential 1 and 3) with a portion of commercial / business development together with areas of private open space (Figure 2: Zoning Map).

Electrical supply for the proposed development will be from the Alexandra substation (to the north) by way of an underground 11kV electrical cable (two alternatives are proposed). The proposed development will connect to existing Egoli gas, municipal sewer and potable water connection points in close proximity to the site. A series of road upgrades are also proposed to enable access to and around the development.

3.2. Regional Context

Huddle Park is located in close proximity to the N3 freeway (Eastern Bypass) / Linksfield Road interchange which provides excellent regional access to all parts of the metropolitan area and Tshwane and, via the R21 and R24, to the East Rand and the O R Tambo Airport. Furthermore, unlike many other parts of the metropolitan area, excellent east west routes exist, which link the site to other major routes such as the M1 freeway and Louis Botha Avenue. The site is therefore located within easy driving distance of a large number of major places of employment including Johannesburg CBD, Sandton CBD, Bedfordview Town Centre, the industrial areas of Kempton Park, Edenvale, Germiston and the southern industrial areas of Johannesburg.

3.3. Local Context

Huddle Park, with an extent of approximately 183 hectares, is one of the largest remaining open spaces in the urban area of the City of Johannesburg and hosts a variety of floral and faunal species. The park consists of two eighteen hole golf courses of which a section in the north eastern corner (the proposed site) is currently under-utilised.

A tributary of the Jukskei River intercepts Huddle Park and runs from west to east. A wetland system were identified in the vicinity of this watercourse. The surrounding land use is a predominantly residential urban environment (consisting mainly of lower density residential developments on erven varying in size between 1000m² and 4000m², pockets of higher density residential developments) and supports land uses such as a number of small shopping centres and a large number of schools.

The Harvey Municipal Nature Reserve is situated approximately 500 meters south of Huddle Park on a ridgeline and is approximately 150 meters higher in altitude than the site. The Reserve is 30.1ha in extent and listed as a protected area in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).

Refer to Figure 3 for a graphic representation of the proposed development in its local residential urban context.



Figure 2: Zoning Map



Figure 3: Local Context

3.4. Project Components and Activities

The development will be discussed in two phases; the construction phase and the operational phase which refers to the development after four years from completion.

Construction Phase: All the construction related activities on site, until the contractor leaves the site.

Operational Phase: All activities, including the operation and maintenance of the proposed development.

3.4.1. Construction Phase

Due to the fact that this assessment was performed during the conceptual stage of the project, a large portion of the information regarding the construction phase was assumed. These assumptions are discussed in section 2.4 and are based on information from similar projects and the author's experience regarding assessment of this type of development.

Construction activities will fluctuate in intensity during the construction phase of the Huddle Development and associated infrastructure upgrades. The appearance of the construction site will progressively develop from the initial site clearance and earthworks to the final completed facility. The construction phase is estimated to continue for approximately 2-4 years.

All proposed infrastructure and road upgrades are expected to take place during the first two years. Construction of these upgrades (especially the road upgrades) will involve a large amount of earthworks (diggings) done by heavy machinery for continuous linear sections. These upgrades will not only cause discomfort for road users but will also appear to be disorganised and unsightly.

Each development zone is anticipated to undergo the following chronological construction activities with minor deviations. Refer to Figure 4 for an example of a typical commercial construction site. Please take note that this illustration is of a large commercial building site, with no mitigation screening, where the impact is much greater than it would be in the case of the Huddle Development.

The following activities can be expected during the construction phase:

- Establishment of construction camp;
- Clearing site from vegetation;
- Grading the site to building requirements;
- Off-loading and stockpiling of building material;
- Construction of buildings, roads and infrastructure;
- Removing building rubble and cleaning remainder of site; and
- Landscaping of open spaces.



Figure 4: Example of typical commercial construction site

3.4.2. Operational Phase

The development is estimated to be completed over a four year period. The completed development will consist of the following components:

- **Residential estate**, 46.1 Ha in extent, which will include the following zones:
 - Residential 1; includes 314 high income, properties with one dwelling per stand (single / double storey);
 - Residential 3; includes 143 middle income units of duplex type town houses (double storey);
 - Private open space / landscaped areas (
 - Figure 5: Huddle Development Open Space Character and **Opportunities**); and
 - A private road system that provides access to the individual erven within the estate.
- **Community orientated retail** (business zone), 10 Ha in extent and 2 to 3 storeys high, which will include the following services:
 - Food outlets and restaurants;
 - Speciality shops;
 - Appropriately scaled offices; and
 - Public parking.
- **Road upgrades:** The residential estate will have access control and will only be accessible to residents and authorised visitors, while the public will have full access to the business zone. The following road upgrades are proposed to enable access to and around the new development:
- Club Street; Civin Drive and Linksfield Road: Signal optimisation is proposed to meet the high right turning demand on the south approach.
- Civin Drive and Chaucer Avenue and St Christopher Avenue: Signal optimisation is proposed to meet the high demand on the south approach.
- Club Street: Duelling of Club Street is proposed from Club/Chaucer/Linksfield intersection spanning 1050m to south of the Club/Huddle Golf Course access.
- Club street, Civin Drive and Linsfield Road: A second right turning lane is proposed on the south approach.
- Civin Drive and Chaucer Avenue and St Christopher Avenue: A short 60m receiving land is proposed on the north approach.
- Club Street, Donne Avenue and Access 3: A traffic signal accompanied by a short right turn lane on the north approach and left slip lane on the south approach are proposed.
- Club Street and St Andrews Road/Avenue: A traffic signal is proposed.
- Club Street, Civin Drive and Linksfield Road: Signal optimisation to accommodate additional traffic from the development on the west approach is proposed.
- Civin Drive and Chaucer Avenue and St Christopher Avenue: An extension to 120m of the proposed short 60m accepting lane on the north approach is proposed to accommodate future traffic.

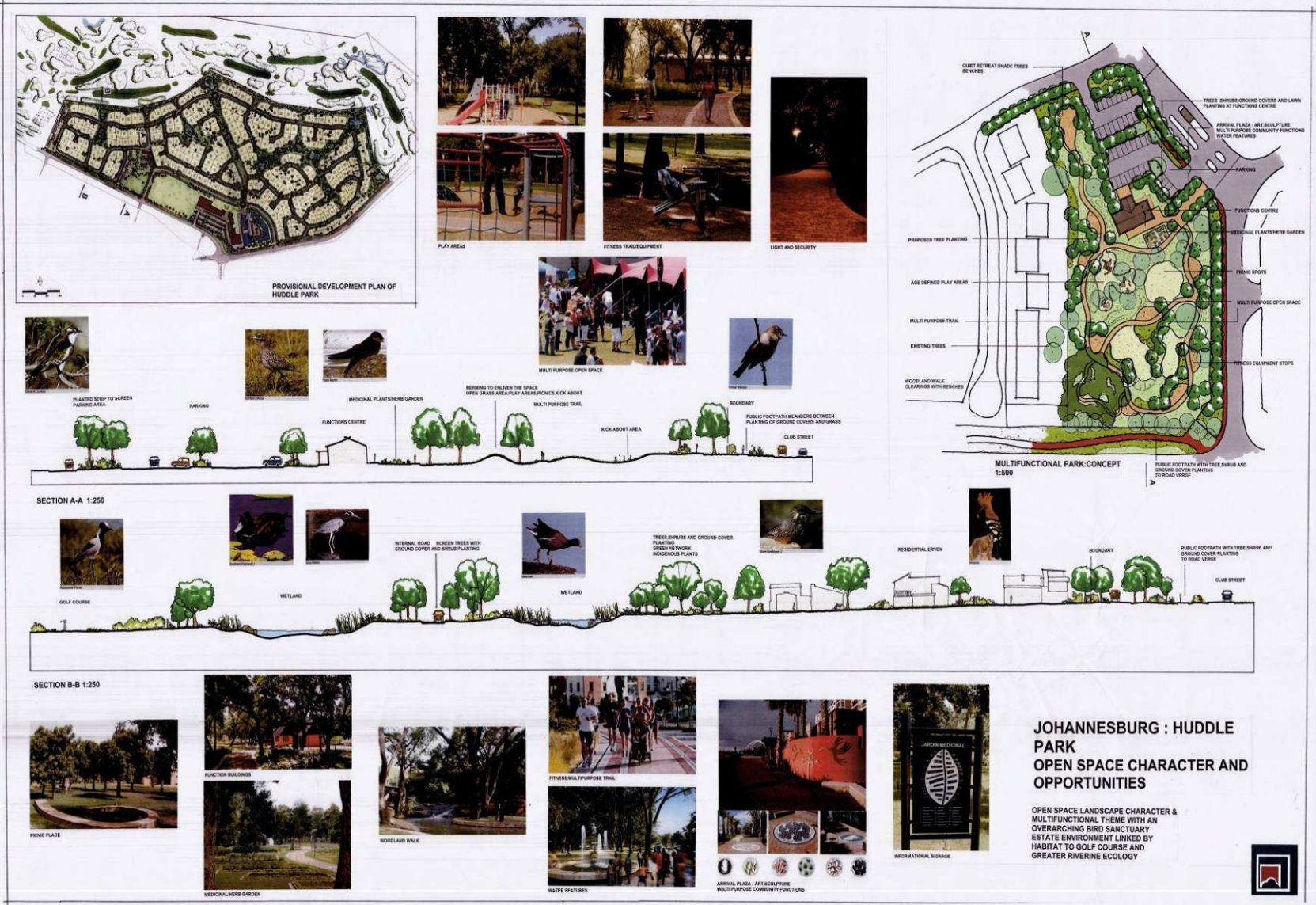


Figure 5: Huddle Development Open Space Character and Opportunities

4. RECEIVING ENVIRONMENT (VISUAL RESOURCE)

Visual impacts generally occur as a result of changes to the landscape (development). A distinction, however, should be made between impacts on the visual resource and impacts on the visual receptor (viewer). This section deals with potential impacts on the visual resource or physical landscape that may result in changes to the landscape character, visual character and/or visual quality, while the latter are impacts on the viewers of the landscape and their viewing experience (as discussed in section 5).

4.1. Landscape Character

Landscape Character can be classified as elements, components and features within a landscape that individually and collectively define the landscape's characteristics. These characteristics include the following (APPENDIX 1: Site Photos):

4.1.1. Topography

The topography of the site can be described as moderately sloped. The site falls in a north-westerly direction, which will limit views of the development to residents on Club Street and to the eastern residential areas such as Senderwood, Bedford and Bedford Park. Residents living on Linksfield Drive in the far south as well as visitors to the Harvey Municipal Nature Reserve will experience views of the development as they are located on a ridgeline approximately 150m higher than the site. Other adjacent residents, such as people living in Edward Avenue, Margaret Rose Street and the Sandringham High School, will experience views of the development through the existing dense vegetation of the Huddle Park Golf Course. Residents in higher areas towards the west and north-west, such as Sandringham, Glensan, Fairmount Ridge, Glenkay, Fairvale and Sylwamonte will also experience elevated views of the development from vantage points higher than ground level (i.e. multiple story houses, flats, lookout points etc.). A large area of fairly level vacant land is situated to the north of the development.

4.1.2. Hydrology

A tributary of the upper Jukskei catchment runs to the west of Huddle Park. A Wetland Delineation and Functional Assessment Study conducted in 2008 identified two wetland units namely; Valley Bottom and Hillslope Seepage. As such a 30m buffer was placed on the wetland boundaries. The proposed development footprint has been designed to remain outside of this wetland area and associated buffer, except for the south-western corner where the site encroaches slightly into the buffer zone.

4.1.3. Vegetation Cover

A well-established tree population provides the Huddle Park with a park-like open space feel with rows of trees aligning the grassed fairways. Huddle Park and surrounding streetscapes can be described as an urban-woodland recognised for the dense tree canopy and lush green appearance. It is important to mention that vegetation in Huddle Park is dominated by exotic species such as *Acacia dealbata* (Silver Wattle), *Pinus patula* (Patula Pine) *Eucalyptus* (Blue Gum) and *Quercus* (Oak) species.

4.1.4. Land Use

The proposed Huddle Development will be situated on a portion of the Huddle Park Golf Course. The central co-ordinates of the site are: 26°08' 54.05 " S and 28°07' 19.64" E. The adjacent Huddle Park Golf and Recreation facility, bordering the southern and western boundary of the site, is zoned "Recreational" while the site is currently zoned "Public Open Space". Other adjacent land uses include residential areas, schools and commercial facilities. No main roads or Eskom powerlines traverse the site (Figure 8: Huddle Park Existing Site Features).

4.1.5. Built Environment

There are no existing structures present on the proposed site. Six structures of historical value have been identified within Huddle Park by a Heritage specialist. The identified structures are not particularly aesthetically appealing and are not exceptional architectural examples, but date back to the mid 20th century. The structures are:

- Clubhouse;
- Worker compound;
- Former main entrance building to the compound;
- Sheds and workshops;
- Electrical transformer building; and
- A historic drainage canal (Naudé, 2005).

These structures are nearly insignificant from a visual point of view and do not contribute to the regional landscape character. On a local scale, the clubhouse does have a prominent stature overlooking a portion of the golf course. The clubhouse was built to be the central gathering point for golfers and can be seen as a unique feature, with strong visual contrast, that adds value to the landscape character. The proposed development will reduce the visual contrast of the clubhouse with the surrounding landscape and therefore also reduce the value that it currently adds (as prominent feature).

4.2. Visual Character

Visual character relates to the human perception and the observer's response to the relationships between and composition of the landscape, the land uses and identifiable elements in the landscape. The description of the visual character includes an assessment of the scenic attractiveness regarding those landscape attributes that have aesthetic value and contribute significantly to the visual quality of the views, vistas and/or viewpoints of the study area.

4.2.1. Visual Character of the site

The site has a mature, urban-woodland character recognised for its dense tree cover and viridity (Figure 6). The dense vegetation cover restricts one's view to open corridors along the fairways or roads and completely dominates Huddle Park. An intimate and strong sense of enclosure prevails as one travels through the landscape. Vegetation screens most of the buildings and provides an enveloping canopy of branches and leaves.

4.2.2. Visual Character of the surrounding neighbourhoods

Huddle Park is almost surrounded by old residential neighbourhoods of a low density with mature gardens – many of which are enclosed with high security walls. Pockets of higher density areas are situated west of Huddle Park in areas such as Bedford Park and Sandringham. Many streets (like Club Street) are lined with mature trees where the road user experiences a green corridor feeling when travelling down the road (Figure 7: View along Club Street).



Figure 6: Visual Character of Huddle Park

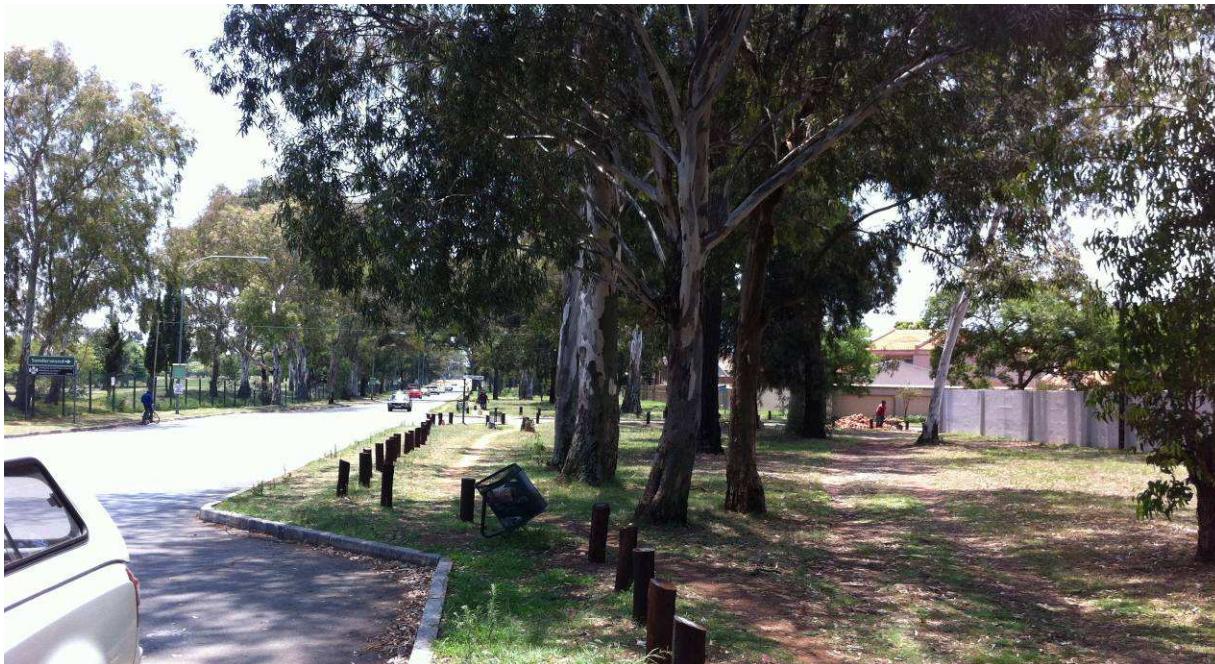


Figure 7: View along Club Street

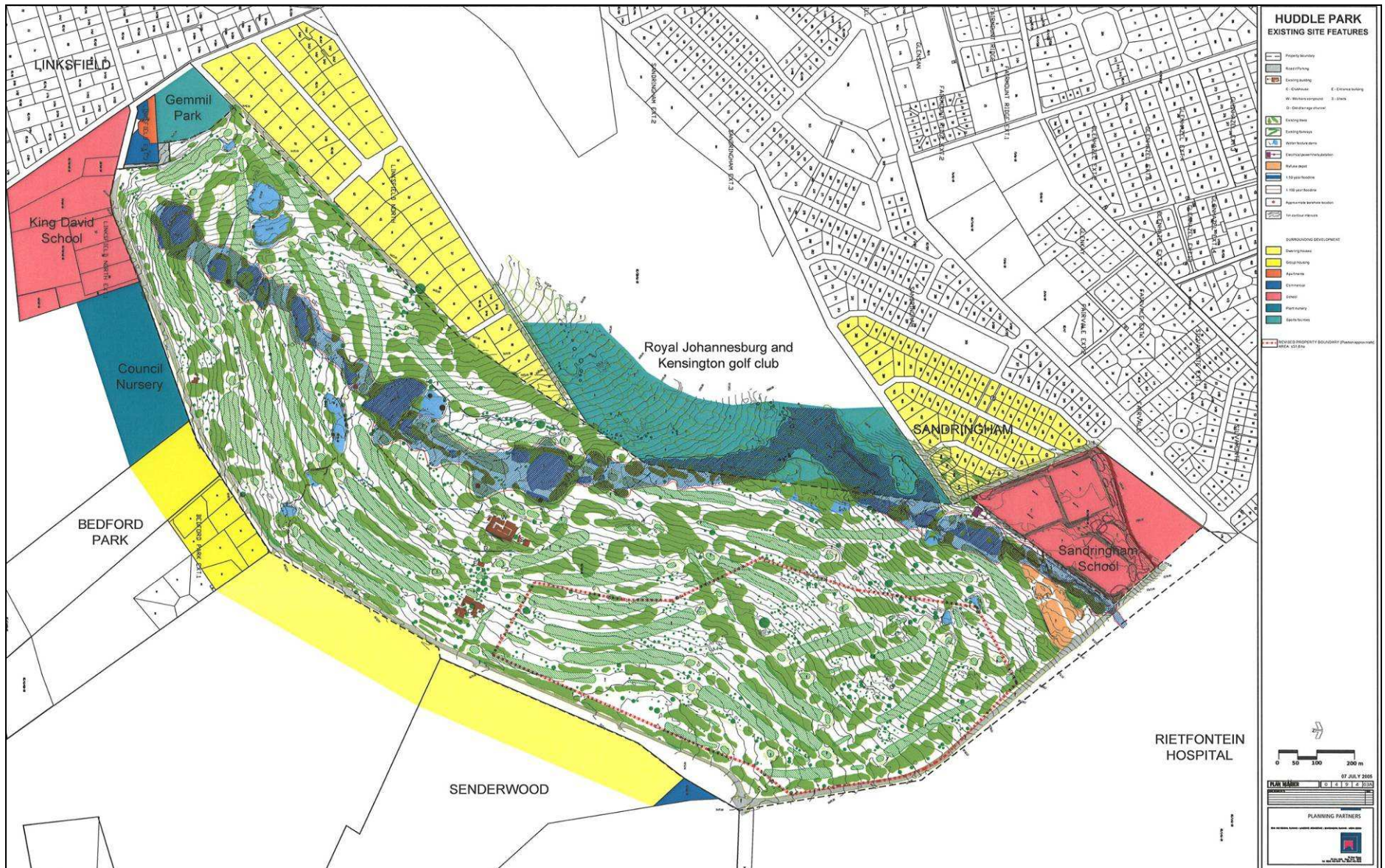


Figure 8: Huddle Park Existing Site Features

4.3. Visual Quality

Visual quality is a qualitative evaluation of the composition of landscape components and their influence on scenic attractiveness (FHWA, 1981). Several factors contribute to the visual quality of the landscape and are grouped under the following three main categories that are internationally accepted indicators of visual quality (Table 2).

Table 2: Criteria of Visual Quality (FHWA, 1981)

INDICATOR	CRITERIA
Vividness	The memorability of the visual impression received from contrasting landscape elements as they combine to form a striking and distinctive visual pattern.
Intactness	The integrity of visual order in the natural and man-built landscape, and the extent to which the landscape is free from visual encroachment.
Unity	The degree to which the visual resources of the landscape join together to form a coherent, harmonious visual pattern. Unity refers to the compositional harmony of inter-compatibility between landscape elements.

The landscape is allocated a rating from an evaluation scale of 1 to 7 and divided by 3 to get an average. The evaluation scale is as follows: Very Low =1; Low =2; Moderately Low =3; Moderate =4; Moderately High =5; High =6; Very High =7;

The entire study area (including the adjacent golf course) is assessed against each indicator separately. The evaluation is summarised in the Table below.

Table 3: Visual Quality of the regional landscape

VIVIDNESS	INTACTNESS	UNITY	VISUAL QUALITY
4	5	5	$4 + 5 + 5 / 3 = 4.6$ 4.6 = Moderately High

The visual quality of the regional landscape is considered **moderately high**.

5. VISUAL ASPECTS

This section outlines aspects to be considered in order to establish the intensity of the impact that the proposed development would have on identified visual receptors. These aspects include: visual receptor sensitivity, visual exposure, viewing distance, visual absorption capacity of the landscape, visual contrast, critical views, visual value, sense of place and obtrusive lighting.

5.1. Visual Receptor Sensitivity

The identified visual receptors within the study area will visually experience the proposed development in different ways. Alteration to their existing views is therefore identified as part of the receiving and affected environment. The viewers are grouped according to their sensitivity and similarity in views and activity.

To determine viewer sensitivity a commonly used rating system (Error! Reference source not found.), is utilised. This is a generic classification of viewers and enables the visual impact specialist to establish a logical and consistent viewer sensitivity rating for visual receptors who are involved in different activities without engaging in extensive public surveys.

Table 4: Visual Receptor Sensitivity

VISUAL RECEPTOR SENSITIVITY	DEFINITION (BASED ON THE GLVIA 2 ND ED PP90-91)
Exceptional	Views from major tourist or recreational attractions or viewpoints promoted for or related to appreciation of the landscape, or from important landscape features.
High	Users of all outdoor recreational facilities including public and local roads or tourist routes whose attention or interest may be focussed on the landscape; Communities where the development results in changes in the landscape setting or valued views enjoyed by the community; Residents with views affected by the development.
Moderate	People engaged in outdoor sport or recreation (other than appreciation of the landscape).
Low	People at their place of work or focussed on other work or activity; Views from urbanised areas, commercial buildings or industrial zones; and People travelling through or passing the affected landscape on transport routes.
Negligible (Uncommon)	Views from heavily industrialised or blighted areas.

Based on the above Table, the sensitivity of the identified viewer groups of the Huddle Development can be described as follows:

- **Residents** within the study area are classified as visual receptors of **high** sensitivity due to their sustained visual exposure to the proposed development as well as their attentive, long-term interest in their living environment.
- **Recreational Users** involved in outdoor recreational activities (golfers, runners, walkers) are classified as visual receptors of **high** sensitivity. They utilise the landscape for enjoyment purposes and are aware of the qualities of the landscape which often include the visual quality that is associated with the landscape.
- **Motorists** are classified as visual receptors of **low** sensitivity due to their momentary view and experience of the proposed development. As a road user's speed increases, the sharpness of lateral vision declines and the road user tends to focus on the line of travel (USDOT, 1981). This adds weight to the assumption that under normal conditions motorist will show low levels of sensitivity as their attention is focused on the road.

5.2. Visual Exposure

The visual envelope demarcates the zone of visual influence (ZVI) and includes the area within which views to the proposed development are expected to be of concern. The visual envelope for the study area is limited to an 8 km radius around the location of the proposed development, which is considered an adequate distance to assess the significance of the potential visual impact.

In order to assess the extent of visual exposure in the area, a Geographical Information System (GIS) was utilised. A viewshed analysis was created by utilising a Digital Elevation Model (DEM) with 20m contour intervals and a maximum height of 3 storeys (Figure 9: Visibility Map) to show the:

- Areas within the visual envelope that may experience views of the proposed development; and
- Degree of visibility in terms of the percentage of the proposed development that will be visible from a specific location.

Based on the graphical representation of Figure 9, the receptors that will experience visibility towards the site include Residents, Recreational Users and Motorists as visual receptors.

Residents: The significance of the views of the site increases as the elevation increases and the site becomes more visible. The majority of the residential receptors within a 2km range will have limited visibility of the development and its impact. This is mainly due to the topography of the site (fall from north to south-west, towards the watercourse) as well as the existing dense vegetation of the Huddle Park Golf Course. Where vegetation is to be removed (along Club Street) residences are mostly tucked away behind high security walls and mature gardens. Most of the residences along Club Street are also facing away from Club Street towards the smaller neighbourhood roads. Therefore, although Residents are classified as highly sensitive visual receptors the intensity of the impact that will be experienced by residents in the study area is considered to be *medium*.

Recreational Users: Golfers and other visitors of the Huddle Park Golf and Recreational Club will experience direct views of the development, especially from the golf course, club house and driving range area. Visitors to the Harvey Municipal Nature Reserve will experience elevated views (birds-eye views) of the development. Runners and hikers will also experience full views of the development when moving along Club Street and partially screened views from Edward Avenue and Margret Rose Street. Due to their high sensitivity the intensity of the impact that will be experienced by Recreational Users in the study area is considered to be *high*.

Motorists: Motorists travelling on Club Street will have a full view of the development due to the removal of a row of mature trees in order to widen the road to become a dual carriageway. The trees to be removed, many of which are exotic species, will be replaced by indigenous trees. Due to their low sensitivity the intensity of the impact that will be experienced by Motorists in the study area is considered to be *low*.

No visual receptors were identified in the area of vacant land situated north of the site.

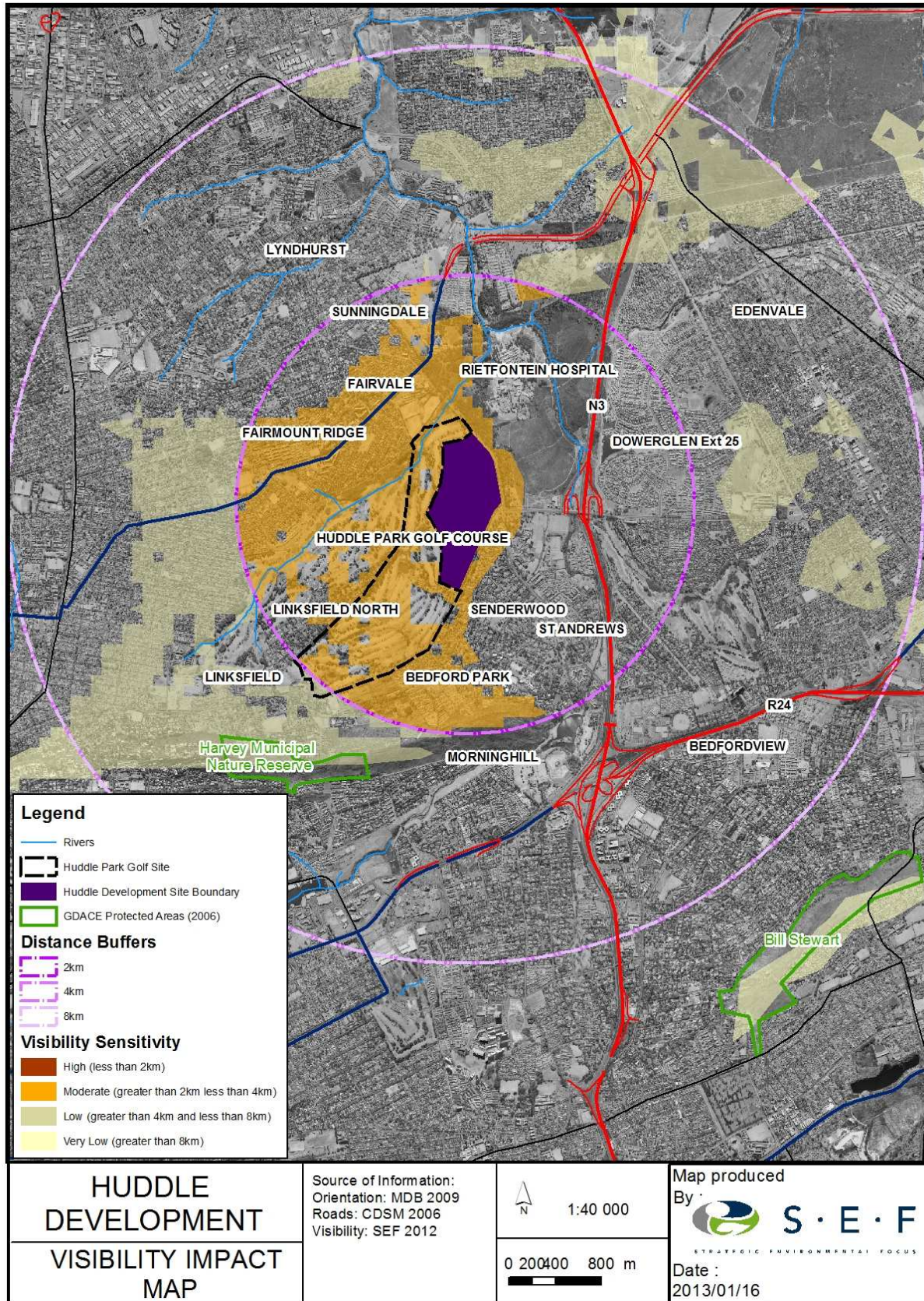


Figure 9: Visibility Map

5.3. Viewing Distance

According to Hull and Bishop (1988), the visual impact of an object in the landscape diminishes at an exponential rate as the distance between the observer and the object increases.

This would imply that the visual impact at 400 meters would be approximately half of the impact as viewed from 200 meters away. At 1600 meters the impact would be at one eighth and at 3200 meters the impact would be at one sixteenth of the impact at 200 meters (Figure 10: Viewing Distance Chart).

Visual receptors, within 2km of the site, would therefore experience the highest visual impact, however, due to the topography and vegetation of the study area (as discussed in section 4) ground level views of the development would be limited for Residents. Motorists and Recreational Users will experience direct views of the development along Club Street. The significance of the impact also increases with elevation and although situated further away, the visual impact from elevated vantage points in the adjacent higher lying residential areas (to the north-west and west) and the Harvey Municipal Nature Reserve (to the south) will be slightly higher. The *intensity* of the impact, based on viewing distance, will therefore be *medium*.

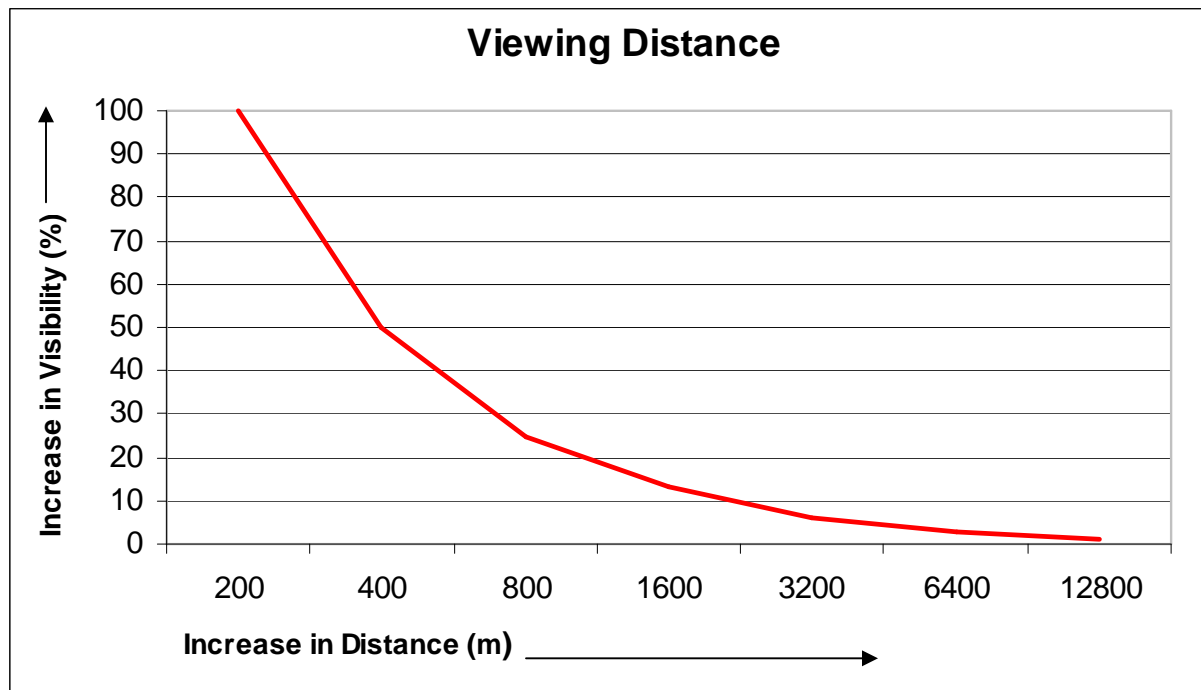


Figure 10: Viewing Distance Chart

5.4. Visual Absorption Capacity

Visual Absorption Capacity (VAC) is the inherent ability of a landscape to accept change or modification to the landscape character and/or visual character without diminishment of the visual quality or value, or the loss of visual amenity. A high VAC rating implies a high ability to absorb visual impacts while a low VAC implies a low ability to absorb or conceal visual impacts.

From a local perspective the VAC of the study area is considered to be moderate as Huddle Park will provide some screening capacity for the proposed development. Vegetation outside the proposed site's boundary will provide VAC from western and southern vantage points. Mature street trees will be removed along Club Street in order to make way for the proposed road upgrades. This will lower the VAC from eastern and northern vantage points. The felled trees will be replaced and the VAC will therefore improve over time. From a regional perspective the VAC is considered to be moderate due to the nature of the proposed development (residential with a small retail element) and the existing land use. The **intensity** of the impact, based on VAC, will therefore be **medium**.

5.5. Visual Contrast

Visual Contrast (VC) is determined by the degree to which a development and its activities affect the visual quality of a landscape by the visual contrast created between the project and its existing landscape.

There will be a high level of visual contrast between the proposed development and the rest of Huddle Park (i.e. built versus green open space). With regards to other surrounding areas a low level of visual contrast will be experienced in terms of the residential component as the surrounding areas mostly consist of residential neighbourhoods. A higher level of visual contrast will be experienced in terms of the retail component as buildings and other elements such as gates, walls and landscaping will be of a larger scale. The **intensity** of the impact, based on visual contrast will therefore be **medium-high**.

5.6. Critical Views

The identified critical views include elevated views from the Harvey Municipal Nature Reserve and higher lying residential areas such as Sandringham (especially from Sandringham High School), Glensan, Fairmount Ridge, Glenkay, Fairvale and Sylwamonte. Full views will also be experienced from Club Street and partially screened views will be visible from Edward Avenue and Margaret Rose Street. Due to the moderate VAC of the landscape and the high VC the intensity of the **impact** that the proposed development will have, the critical views will be **medium-high**.

5.7. Visual Value

Visual value relates to those attributes of the landscape or elements in the landscape to which people attach values, though not visually perceivable, still contribute to the value of the visual resource. These visual values are derived from ecological, historical, social and/or cultural importance and are described in terms of their uniqueness, scarcity, naturalness and/or conservation.

The clubhouse is identified as a building with historical importance. It does not have exceptional architectural appeal but it is indicative of the history of the Huddle Park Golf Course. The proposed development, will partially obscure the clubhouse to motorists travelling southwards in Club Street, however, motorists will be focusing on the road and their sensitivity towards this visual impact will be low.

The woodland character of the site as well as the green corridor effect that exists in Club Street also adds to the visual value to the study area. Although it will take time to mature, post-development landscaping measures will aspire to replace the tree canopy throughout the development as well as the green corridor along Club Street.

The **intensity** of the impact, based on visual value of the clubhouse, woodland character of the site and green corridor effect down Club Street will therefore be **low to medium**.

5.8. Sense of Place

Observers develop a sense of place through knowledge and experience of a particular area. Huddle Park with its intimate woodland character and lush green appearance is one of the largest remaining urban open space systems in Johannesburg and is viewed by local residents as a natural asset and place of refuge. Visual receptors (mostly Recreational Users and local Residents) will experience a strong sense of place on the proposed site and along adjacent leafy streetscapes. The **intensity** of the impact, based on sense of place will therefore be **high**.

5.9. Obtrusive Lighting

Obtrusive lighting occurs when a light source intrudes on, or interrupts a visual receptors' normal night time activity to detrimental effect (Figure 11). Obtrusive lighting can be described in terms of light trespass, which is a result of poor lighting design causing glare and light spillage to a degree where it may disturb neighbouring visual receptors.

Residential and Recreational receptors of the Huddle Development includes residents directly adjacent to the site as well as residents in higher lying residential areas such as Sandringham, Glensan, Fairmount Ridge, Glenkay, Fairvale and Sylwamonte. These receptors will be exposed to an increase in obtrusive lighting caused by the development at night. Light caused by the development includes internal and external lighting of proposed residences, security lighting on the development perimeter wall as well as street lighting of internal roads. The business / retail zone and associated access road will also be lit at night for security and safety reasons. The obtrusive lighting caused by the development, in conjunction with the existing lighting of the urban context, will have a cumulative impact on surrounding Residents. The **intensity** of this impact will be **medium** since Residents are already exposed to obtrusive lighting and will only experience a moderate increase.

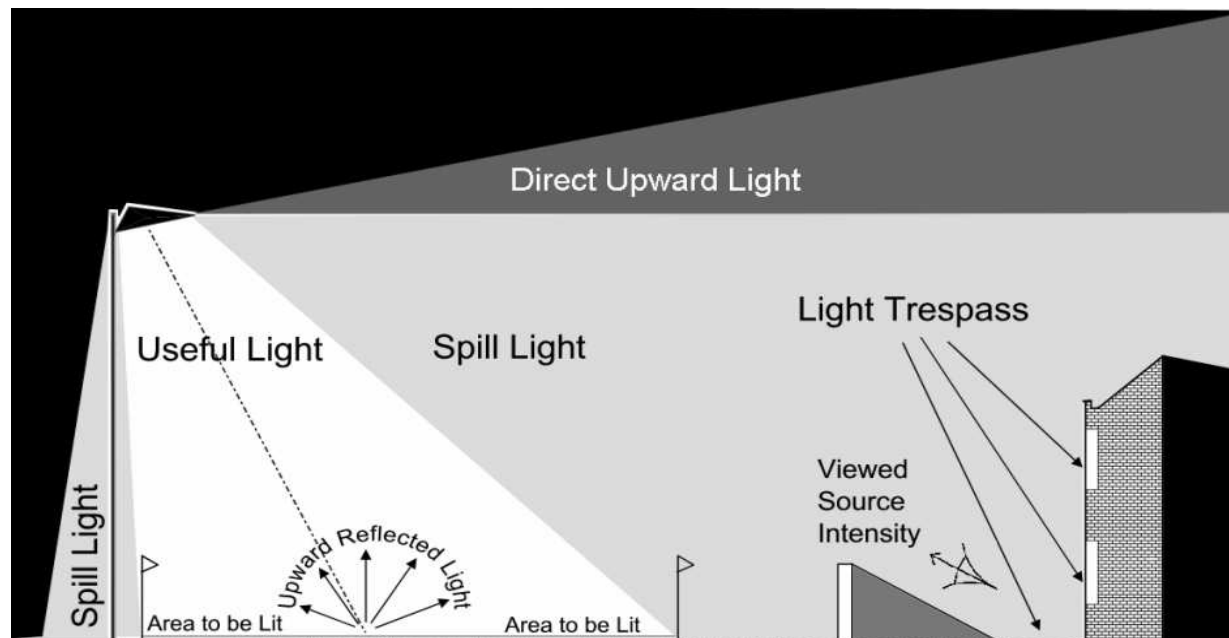


Figure 11: Obtrusive Lighting (ILE, 2005)

6. ASSESSMENT CRITERIA

6.1. Impact Identification and Assessment

The assessment criteria must clearly identify the environmental impacts of the proposed development. The environmental impacts identified will be quantified and the significance of the impacts assessed according to the criteria set out below. The EAP must make a clear statement, identifying the environmental impacts of the construction, operation and management of the proposed development. As far as possible, the EAP must quantify the suite of potential environmental impacts identified in the study and assess the significance of the impacts according to the criteria set out below. Each impact will be assessed and rated. The assessment of the data must, where possible, be based on accepted scientific techniques, failing which the specialist is to make judgements based on his/ her professional expertise and experience.

6.1.1. Assessment Procedure: Proposed Impact Assessment Methodology

For the purpose of assessing impacts of the proposed development, during the EIR phase, the project will be divided into two phases from which impacting activities can be identified, namely; the Construction Phase and the Operational Phase.

No decommissioning of the facility is anticipated at this stage.

The activities arising from each of the above phases will be included in the impact assessment tables. This is to identify activities that require certain environmental management actions to mitigate the impacts arising from them. The assessment of the impacts will be conducted according to a synthesis of criteria required by the integrated environmental management procedure.

Extent The physical and spatial scale of the impact.	Footprint	The impacted area extends only as far as the activity, such as footprint occurring within the total site area.
	Site	The impact could affect the whole, or a significant portion of the site.
	Regional	The impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns.
	National	The impact could have an effect that expands throughout the country (South Africa).
	International	Where the impact has international ramifications that extend beyond the boundaries of South Africa.

Duration The lifetime of the impact, that is measured in relation to the lifetime of the proposed development.	Short Term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than that of the construction phase.
	Short-Medium Term	The impact will be relevant through to the end of a construction phase.
	Medium Term	The impact will last up to the end of the development phases, where after it will be entirely negated.
	Long Term	The impact will continue or last for the entire operational lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter.
	Permanent	This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.
Intensity Is the impact destructive or benign, does it destroy the impacted environment, alters its functioning, or slightly alter the environment itself?	Low	The impact alters the affected environment in such a way that the natural processes or functions are not affected.
	Medium	The affected environment is altered, but functions and processes continue, albeit in a modified way.
	High	Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.
Probability The likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time.	Improbable	The possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is zero (0%).
	Possible	The possibility of the impact occurring is very low, due either to the circumstances, design or experience. The chances of this impact occurring is defined as 25%.
	Likely	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact occurring is defined as 50%.
	Highly Likely	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75%.
	Definite	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100%.

Mitigation – The impacts that are generated by the development can be minimised if measures are implemented in order to reduce the impacts. These measures ensure that the development considers the environment and the predicted impacts in order to minimise impacts and achieve sustainable development.

Determination of Significance – Without Mitigation – Significance is determined through a synthesis of impact characteristics as described in the above paragraphs. It provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. The significance of the impact “without mitigation” is the prime determinant of the nature and degree of mitigation required. Where the impact is positive, significance is noted as “positive”. Significance will be rated on the following scale:

No significance: The impact is not substantial and does not require any mitigation action;

Low: The impact is of little importance, but may require limited mitigation;

Medium: The impact is of importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels; and

High: The impact is of major importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

Determination of Significance – With Mitigation – Determination of significance refers to the foreseeable significance of the impact after the successful implementation of the necessary mitigation measures. Significance with mitigation will be rated on the following scale:

No significance: The impact will be mitigated to the point where it is regarded as insubstantial;

Low: The impact will be mitigated to the point where it is of limited importance;

Low to medium: The impact is of importance, however, through the implementation of the correct mitigation measures such potential impacts can be reduced to acceptable levels;

Medium: Notwithstanding the successful implementation of the mitigation measures, to reduce the negative impacts to acceptable levels, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw;

Medium to high: The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels; and

High: The impact is of major importance. Mitigation of the impact is not possible on a cost-effective basis. The impact is regarded as high importance and taken within the overall context of the project, is regarded as a fatal flaw. An impact regarded as high significance, after mitigation could render the entire development option or entire project proposal unacceptable.

Assessment Weighting – Each aspect within an impact description is assigned a series of quantitative criteria. Such criteria are likely to differ during the different stages of the project's life cycle. In order to establish a defined base upon which it becomes feasible to make an informed decision, it will be necessary to weigh and rank all the identified criteria.

Ranking, Weighting and Scaling – For each impact under scrutiny, a scaled weighting factor will be attached to each respective impact. The purpose of assigning such weightings serve to highlight those aspects considered the most critical to the various stakeholders and ensure that each specialist's element of bias is taken into account. The weighting factor also provides a means whereby the impact assessor can successfully deal with the complexities that exist between the different impacts and associated aspect criteria.

Simply, such a weighting factor is indicative of the importance of the impact in terms of the potential effect that it could have on the surrounding environment. Therefore, the aspects considered to have a relatively high value will score a relatively higher weighting than that which is of lower importance (Figure 12).

Extent	Duration	Intensity	Probability	Weighting Factor (WF)	Significance Rating (SR)	Mitigation Efficiency (ME)	Significance Following Mitigation (SFM)
Footprint 1	Short term 1	Low 1	Probable 1	Low 1	Low 0-19	High 0,2	Low 0-19
Site 2	Short to medium 2	Low to medium 2	Possible 2	Low to medium 2	Low to medium 20-39	Medium to high 0,4	Low to medium 20-39
Regional 3	Medium term 3	Medium 3	Likely 3	Medium 3	Medium 40-59	Medium 0,6	Medium 40-59
National 4	Long term 4	High 4	Highly Likely 4	Medium to high 4	Medium to high 60-79	Low to medium 0,8	Medium to high 60-79
International 5	Permanent 5	High 5	Definite 5	High 5	High 80-100	Low 1,0	High 80-100

Figure 12: Description of visual assessment parameters with its respective weighting

6.2. Identified Visual Impacts

The following impacts were identified and assessed according to the criteria ratings based on the Department of Environmental Affairs and Tourism's (DEAT) (1998) Guideline Document: EIA Regulations.

6.2.1. Construction Phase Impacts

Visual impact of construction of the development on visual receptors: Includes temporary views of vegetation clearance, construction activities including construction camps, material lay-down yards, stockpiles, cranes, scaffolding, delivery vehicles and temporary fencing.

Visual impact of construction of the infrastructure upgrades on visual receptors: Includes temporary views of vegetation clearance along the servitudes (through open space areas), disruption of the urban environment along busy roads and side walks, material stockpiles, delivery vehicles, signing lighting and guarding.

6.2.2. Operational Phase Impacts

Visual impact of operational activities on visual receptors: Permanent views of the Huddle Development which includes medium density residential buildings, retail buildings, boundary wall, new entrances and landscaped areas.

Visual impact of operational activities on the visual resource: Includes impacts on the woodland character and sense of place of the site and surrounding leafy streetscapes.

6.2.3. Cumulative Impacts

- Loss of visual resources (Green Open Space); and
- Obtrusive lighting (interior and exterior lighting).

7. IMPACT ASSESSMENT

7.1. Construction Phase Impacts

7.1.1. Visual impact of construction of the development on visual receptors

Parcels of exposed soil will define the construction areas of the different zones and will be a dominant feature during the construction phase. The construction site will appear disorganised and dispersed with construction equipment, material stockpiles and ancillary components. Large construction equipment may be used for the construction of complex buildings. Extensive earthworks will be necessary to grade the sites and possible dust clouds may be generated by the activities. Delivery vehicles and trucks will frequently deliver building material to the site. The *intensity* of the impact on visual receptors during the construction phase is considered to be *medium*.

Table 5: Visual impact of construction activities on visual receptors

Impact source(s)	Construction activities including construction camps, material lay-down yards, stockpiles, cranes, scaffolding, delivery vehicles, and dust.	Status	-
Nature of impact	Views of the above mentioned construction activities which are out of character with the surrounding landscape and which will affect the sense of place negatively.		
Reversibility of impact	Partially reversible through the implementation of adequate visual mitigation measures during the construction phase.		
Degree of irreplaceable loss of resource	High		
Affected stakeholders	Residents in the adjacent neighbourhoods, motorists travelling along Club Street and recreational users of the Harvey Municipal Nature Reserve.		
Magnitude	<i>Extent</i>	Regional - 3	
	<i>Intensity</i>	Medium - 3	
	<i>Duration</i>	Short – Medium Term - 2	
	<i>Probability</i>	Highly Likely - 4	
Significance	<i>Without mitigation</i>	$(Extent + Intensity + Duration + Probability) \times WF$ $(3+3+2+4) \times 4 = 48$ Medium	M
	<i>With mitigation</i>	$WOM \times ME = WM$ $48 \times 0.6 = 28.8$ Low to Medium	L– M

Mitigation measures

- Protect identified trees specimens.
- Utilise the existing screening capacity of the site and improve it by enclosing the construction site and stockyards with a dark green or khaki brown shade cloth of at least 20% density and at least 3 metres high, as an additional screen.
- Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance.
- Remove rubble and other construction rubbish off site as soon as possible or place it in containers in order to keep the construction site free from additional unsightly elements.
- Dust suppression techniques should be implemented especially on windy days, preferably using biodegradable binding agents.
- If practically possible, locate construction camps in areas that are already disturbed or where it is not necessary to remove established vegetation.

- Retain the existing vegetation cover of the site through selective clearing, where practical.
- Exposed soil must be covered or 'camouflaged' using a biodegradable soil mat and vegetation cover to reduce the duration of visible scarring of the landscape.
- Rehabilitation of all stripped and damaged areas must be implemented as soon as practically possible.
- It is suggested that construction should start and stop during normal working hours without starting too early or continuing until late into the night to avoid night-time visual impacts, also avoid working over weekends and holiday periods.
- If construction is necessary during night-time, light sources should be directed downwards and inwards away from sensitive view points and roads to prevent obtrusive lighting.

Significance of the impact

Construction activities generally appear to be disorganised and unsightly. In the case of Huddle Park the sloping topography and existing dense vegetation of the golf course, between the development and residences on the southern, western and north-western perimeters, will reduce the visual impact caused by construction activities to a degree. The high walls, mature gardens and orientation of residences along Club Street will reduce the visual impact experienced by residents to the east of Huddle Park. The moderate Visual Absorption Capacity (VAC) of the landscape as well as the sheer viewing distance will reduce the impact caused to residents in higher lying neighbourhoods as well as recreational users of the Harvey Municipal Nature Reserve. The significance of the impact caused by construction activities without mitigation is therefore regarded to be medium. Implementation of appropriate mitigation measures (as discussed above) will decrease the **significance** of the impact to **low-medium**.

7.1.2. Visual impact of construction of infrastructure upgrades on visual receptors

Linear stretches of exposed soil will be visible where the underground gas pipeline and electric cables intercept areas of green open space (servitudes). Pedestrian footways will be temporarily closed where service installations take place next to roads (Club Street). The proposed road upgrades (in Club Street) will also leave stretches of uncovered soil and will be scattered with earthmoving and road construction equipment and vehicles. These interventions will not only be unsightly but can also lead to heavy traffic delays. The **intensity** of the impact on visual receptors during the construction of the proposed infrastructure upgrades is considered to be **high**.

Table 6: Visual impact of construction of infrastructure upgrades on visual receptors

Impact source(s)	Infrastructure upgrade construction activities including linear stretches of exposed soil, partially demolished pedestrian footways, earthmoving and road construction equipment and vehicles, material stockpiles and dust.	Status	
Nature of impact	Views of the above mentioned construction activities which are out of character with the surrounding landscape and which will affect the sense of place negatively.		
Reversibility of impact	The impact is partially reversible through the implementation of adequate visual mitigation measures during the construction phase.		
Degree of irreplaceable loss of resource	High		
Affected stakeholders	Residents in the adjacent neighbourhoods and motorists travelling along Club Street		
Magnitude	<i>Extent</i>	Regional - 3	
	<i>Intensity</i>	High - 5	
	<i>Duration</i>	Short – Medium Term - 2	
	<i>Probability</i>	Highly Likely - 4	

Significance	<i>Without mitigation</i>	$(Extent + Intensity + Duration + Probability) \times WF$ $(3+5+2+4) \times 4 = 56$ Medium	M
	<i>With mitigation</i>	$WOM \times ME = WM$ $56 \times 0.6 = 33.6$ Low to Medium	L - M

Mitigation measures

- Refer to general construction mitigation measures listed in section 7.1.1.
- Clearing of a full servitude should be avoided. Vegetation should only be stripped where absolutely necessary.
- Avoid straight lines of vegetation stripping and strip vegetation with irregular edges where possible.
- Linear earthworks must be carried out in phases and rehabilitation of completed sections should be implemented concurrent with the next section.
- Rehabilitation outcomes should include at the very least the re-instatement, but preferably the improvement of the pre-construction environment.
- Re-vegetated areas should be monitored on a monthly basis to ensure successful rehabilitation.

Significance of the impact

Infrastructure upgrades, especially for linear services laid underground, are generally unsightly and inconvenient. Areas to be uncovered can leave scars on the landscape for long periods until rehabilitated successfully. In the case of the Huddle Development, infrastructure upgrades will have a negative visual impact on all residences overlooking the affected servitudes (green open space) as well as on Residents, Recreational Users and Motorists that live or move along the affected road (Club Street). The impact on Residents that overlook servitudes will be reduced by the fact that the aesthetic value of relevant servitudes is already compromised by overhead powerlines. The high security walls, mature gardens and the orientation of residences along Club Street will reduce the visual impact on these Residents to a degree. The significance of the impact caused by construction of infrastructure upgrades without mitigation is therefore regarded to be medium. Implementation of appropriate mitigation measures (as discussed above) will decrease the **significance** of the impact to **low-medium**.

7.2. Operational Phase Impacts

7.2.1. Visual impact of operational activities on visual receptors

The existing woodland character of the site will be altered by the removal of the existing vegetation as well as the implementation of buildings and widening of roads. New indigenous trees will be planted in landscaped areas and private gardens of the estate to restore some of the lost character. Once the new vegetation is established the development will blend in better with its surroundings. The **intensity** of the impact on visual receptors during the operational phase is considered to be **medium**.

Table 7: Visual impact of operation activities on visual receptors

Impact source(s)	The completed development (residential and retail zones) and perimeter wall.		Status	-
Nature of impact	Views of the above mentioned development.			
Reversibility of impact	The impact is permanent			
Degree of irreplaceable loss of resource	High			
Affected stakeholders	Residents in the adjacent neighbourhoods, motorists travelling along club street and recreational users of the Harvey Municipal Nature Reserve.			
Magnitude	<i>Extent</i>	Regional - 3		
	<i>Intensity</i>	Medium - 3		
	<i>Duration</i>	Permanent - 5		
	<i>Probability</i>	Highly Likely - 4		
Significance	<i>Without mitigation</i>	$(Extent + Intensity + Duration + Probability) \times WF$ $(3+3+5+4) \times 4 = 60$ Medium to High		M - H
	<i>With mitigation</i>	$WOM \times ME = WM$ $60 \times 0.6 = 36$ Low to Medium		L - M

Mitigation measures

- Draw up a set of architectural, landscape and aesthetics guidelines for the estate, to which each tenant / owner must subscribe.
- Retain as many large trees as possible during the planning of each site and the development as a whole.
- If there are noteworthy exotic specimens (i.e. large and beautiful trees), then efforts should be made to protect these– they have social and aesthetic value, and help to buffer the visual impact in the short term, especially when the new planted trees are establishing.
- Ensure that internal streets are planted with street trees and are landscaped appropriately.
- Ensure that parking areas are planted with shade trees and landscape appropriately.
- Replace as many trees as possible in order to restore the existing woodland character.
- In order to reduce the visual imposition of large buildings it is recommended that the colour scheme selected for the walls of buildings in the retail / business zone is of a nature that would visually break up large surfaces.
- Make use of architectural and landscape strategies to create a comfortable pedestrian-scale environment along public routes and streets.
- Ensure that an aesthetics committee is set up to monitor / control / approve building plans.
- Do not allow unsightly services (i.e. aircon ducts, satellite dishes, etc.) to be visible on any buildings.
- Ensure that backyards of buildings are not visible from public spaces, or that these are adequately screened.
- Ensure that the perimeter of the development is landscaped and maintained, and that street trees are retained, replaced / established so as to contribute to the public realm.
- Where possible matt paint must be used on walls in order to reduce reflection.
- Roof material should not be silver or glossy (e.g. unpainted corrugated iron).

- Where direct views of the development occurs, such as along Edward Avenue and Margret Rose Street, screening techniques such as earth berms and/or dense vegetation (with screening characteristics) must be implemented.
- All buildings, infrastructure and exterior spaces must be maintained. Repair damage and do not allow the facility to fall into disrepair.
- Monitor all areas for rehabilitation failure and implement remedial action immediately.

Significance of the impact

The proposed development (retail and residential) will represent visual contrast with the adjacent Huddle Park (built versus un-built) while the retail component will also represent visual contrast with the surrounding residential neighbourhoods (change of land use). However, the sloping topography and existing dense vegetation within the Huddle Park Golf Course, between the development and residences on southern, western and north-western perimeters will reduce visual impact caused by the development to a degree. The high walls, mature gardens and orientation of residences along Club Street will reduce the visual impact experienced by Residents to the east of Huddle Park. The moderate VAC of the landscape as well as the sheer viewing distance will reduce the impact caused to residents in higher lying neighbourhoods as well as Recreational Users of the Harvey Municipal Nature Reserve. The significance of the impact caused by the proposed development and associated upgrades without mitigation is therefore regarded to be medium to high. Implementation of appropriate mitigation measures (as discussed above will decrease the **significance** of the impact to **low-medium**.

7.2.2. Visual impact of operational activities on the visual resource

The visual character and sense of place of the site and immediate surrounding areas will be affected by the proposed development and associated road and infrastructure upgrades. The removal vegetation to make way for the development will result in a loss of local Green Open Space. The removal of the mature tree canopy will also destroy the woodland character that provides the site with a sense of place. The leafy streetscape (Club Street) will also be affected by widening of the road and removal of a row of mature trees. New indigenous trees will be planted in landscaped areas and private gardens of the estate as well as next to Club Street to restore some of the lost character. Once the new vegetation is established the development will blend in better with its surroundings. The **intensity** of the impact on visual receptors during the operational phase is considered to be **medium**.

Table 8: Visual impact of operation activities on the visual resource

Impact source(s)	The completed development (residential and retail zones) and perimeter wall.	Status	-
Nature of impact	Green Open Space will be lost. The woodland character and leafy streetscape will be altered.		
Reversibility of impact	The impact is permanent		
Degree of irreplaceable loss of resource	High		
Affected stakeholders	Residents in the adjacent neighbourhoods, motorists travelling along club street and recreational users of the Harvey Municipal Nature Reserve.		
Magnitude	<i>Extent</i>	Regional - 3	
	<i>Intensity</i>	Medium - 3	
	<i>Duration</i>	Permanent - 5	
	<i>Probability</i>	Highly Likely - 4	

Significance	<i>Without mitigation</i>	$(Extent + Intensity + Duration + Probability) \times WF$ $(3+3+5+4) \times 4 = 60$ Medium to High	M - H
	<i>With mitigation</i>	$WOM \times ME = WM$ $60 \times 0.6 = 36$ Low to Medium	L - M

Mitigation measures

Refer to mitigation measures in section 7.2.1

Significance of the impact

The proposed development will reduce Green Open Space in the local area. The development will also have a negative affect on the woodland character of the site and surrounding streetscapes through the removal of mature trees and other vegetation. Successful rehabilitation and landscaping can restore the lost woodland character to an extent, but the green open space taken up by the development footprint will forever be lost. The significance of the impact caused by the proposed development and associated upgrades without mitigation is therefore regarded to be medium to high. Implementation of appropriate mitigation measures (as discussed in Section 7.2.1) will decrease the **significance** of the impact to **low-medium**.

7.3. Cumulative Impacts

7.3.1. Loss of visual resources (Green Open Space)

The main element that provides the visual resource (Green Open Space) with a unique landscape character is the presence of a well-established tree population that defines a strong sense of enclosure which is indicative of a mature landscape. The site can be described as an urban-woodland recognised for the dense tree canopy and lush green appearance. The **intensity** of the impact this development (in conjunction with other urban development) has on visual resources such as Huddle Park is considered to be **high**.

Table 9: Loss of visual resources (Green Space)

Impact source(s)	The completed development (residential and retail zones) and perimeter wall.		Status	-
Nature of impact	Loss of visual resources (green space) in conjunction with other urban development.			
Reversibility of impact	The impact is permanent			
Degree of irreplaceable loss of resource	High			
Affected stakeholders	All observers			
Magnitude	<i>Extent</i>	National - 4		
	<i>Intensity</i>	High - 5		
	<i>Duration</i>	Permanent - 5		
	<i>Probability</i>	Highly Likely - 4		
Significance	<i>Without mitigation</i>	$(Extent + Intensity + Duration + Probability) \times WF$ $(4+5+5+4) \times 5 = 90$ High	H	
	<i>With mitigation</i>	$WOM \times ME = WM$ $90 \times 0.8 = 72$ Medium to High	M - H	

Mitigation measures

Refer to mitigation measures under section 7.2

Significance of the impact

Due to the high visual quality associated with Green Open Space in urban residential suburbs as well as the ever-expanding urban development that is taking place throughout Johannesburg and other South African cities, there is a need to preserve the few urban green spaces that are left. Therefore, the significance of the impact that the proposed development would have without mitigation, is regarded to be high. Implementation of appropriate mitigation measures (as discussed in Section 7.2) will decrease the **significance** of the impact to **medium- high**.

7.3.2. Obtrusive Lighting

Residential visual receptors of the proposed development will be exposed to an increase in obtrusive lighting at night caused by internal and external lighting of proposed residences, security lighting on the perimeter as well as street lighting of internal roads. The village centre (retail zone) will also be lit at night for security reasons. The **intensity** of the impact that lighting will have on the receiving environment is therefore considered to be **high**.

Table 10: Visual impact of obtrusive lighting

Impact source(s)	Internal and external lighting of the proposed buildings as well as security and street lighting.	Status	-
Nature of impact	Intensified obtrusive lighting		
Reversibility of impact	The impact is partially reversible through the implementation of adequate lighting mitigation measures.		
Degree of irreplaceable loss of resource	High		
Affected stakeholders	Residents in the adjacent neighbourhoods and recreational users of the Harvey Municipal Nature Reserve.		
Magnitude	<i>Extent</i>	Regional - 3	
	<i>Intensity</i>	High - 5	
	<i>Duration</i>	Permanent - 5	
	<i>Probability</i>	Likely - 3	
Significance	<i>Without mitigation</i>	$(Extent + Intensity + Duration + Probability) \times WF$ $(3+5+5+3) \times 4 = 64$ Medium - High	M-H
	<i>With mitigation</i>	$WOM \times ME = WM$ $64 \times 0.4 = 25.6$ Low to Medium	L-M

Mitigation measures

- When and if vertical structures or surfaces are lit, install a down light luminaire fitted with day-night switches.
- Refrain from permanently illuminating outdoor spaces where light is only required intermittently. Lighting can be switched on and off manually or through an automatic time switch, synchronised with the times light is required.

- An electrical engineer should be consulted for the design and specification of the lighting in terms of screening sources and low wattage lights. Security lights can be motion activated to lower obtrusive lighting periods.

Significance of the impact

Due to the contribution of obtrusive lighting by the proposed development in conjunction with existing lighting of the surrounding suburbs the significance of this impact without mitigation, is regarded to be medium - high. Implementation of appropriate mitigation measures (as discussed above) will decrease the **significance** of the impact to **low-medium**.

8. CONCLUSION

The site is moderately sloped and falls in a north-westerly direction which will limit views of the Development, from the eastern residential areas such as Senderwood, Bedford and Bedford Park. Residents, Recreational Users and Motorists living or moving along Club Street will experience full views of the proposed Development. Most of the residences on Club Street are tucked away behind high security walls and mature gardens and are facing away from Club Street towards the smaller neighbourhood roads. Residents living on Linksfield Drive in the far south as well as visitors of the Harvey Municipal Nature Reserve will experience elevated views of the development as they are located on a ridgeline 150m higher than the site. Other adjacent residents, such as people living in Edward Avenue and especially Margaret Rose Street will experience glimpses of the development through the existing dense vegetation of the Huddle Park Golf Course. Residents in higher lying areas towards the west and north-west, such as Sandringham (including Sandringham High School), Glensan, Fairmount Ridge, Glenkay, Fairvale and Sylwamonte may also experience elevated views of the development from vantage points higher than ground level (i.e. multiple story houses, flats, lookout points, etc.) (Figure 9: Visibility Map).

During the construction phase, parcels of exposed soil will define the construction areas of the different zones and will be a dominant feature. The construction site will appear disorganised and dispersed with construction equipment, material stockpiles and ancillary components. Large construction equipment may be used for the construction of complex buildings. Extensive earthworks will be necessary to grade the sites and possible dust clouds may be generated by the activities. Delivery vehicles and trucks will frequently deliver building material to the site.

During the operational phase the existing woodland character of the site will be altered by the removal of the existing vegetation (mostly exotic trees) and replaced by residential and mixed use development. New indigenous trees will be planted in landscaped areas and private gardens of the development to restore some of the lost character. Once the new vegetation is established the development will be more camouflaged and blend in better with its surroundings.

The following is a summary (Table 11) of the significance of the anticipated visual impacts:

Table 11: Summary of the significance of anticipated visual impacts

Impact	Significance without mitigation	Significance with mitigation
<i>Construction Phase:</i>		
Visual impact of construction activities on visual receptors	Medium	Low to Medium
Visual impact of construction of infrastructure upgrades on visual receptors	Medium	Low to Medium
<i>Operational Phase:</i>		
Visual impact of operational activities on visual receptors	Medium to High	Low to Medium
Visual impact of operation activities on the visual resource	Medium	Low to Medium
<i>Cumulative Impacts:</i>		
Loss of visual resources (Green Open Space)	High	Medium to High
Obtrusive lighting	Medium	Low to Medium

9. IMPACT STATEMENT

The finding of the Visual Impact Assessment undertaken for the proposed Huddle Development is that the study area and surrounding region will be visually impacted upon in the long-term. Potential visual impacts may be experienced by Residents in surrounding neighbourhoods, Motorists travelling along Club Street as well as visitors to the Harvey Municipal Nature Reserve.

Due to the topography (gradual slope from north to west) and the existing dense vegetation of the remainder of Huddle Park (not to be removed as part the Huddle Development), direct views from adjacent visual receptors would be limited. Residents in adjacent higher lying neighbourhoods as well as visitors to the Harvey Municipal Nature Reserve would therefore be more sensitive to visual impacts from the development than some residents living closer by.

Notwithstanding the above, the moderate VAC of the area and proposed post-development landscaping measures will allow the development to blend in with the local context. It was therefore found that the visual impact of the proposed development on visual receptors (during the construction and operational phases) would not be significant. With regards to the cumulative impact of losing urban Green Open Space) to development in a city wide and national context, the impact was found to be significant, but did not constitute a fatal flaw.

In light of the above, and considering all factors (including the anticipated post mitigation impact significance ratings (ranging from low-medium to medium-high), it is the opinion of the author that that the proposed Huddle Development is acceptable from a visual perspective, and the development as proposed is supported, pending the implementation of mitigation measures as recommended.

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APPENDIX A: SITE PHOTOS



View of the site from Club Street

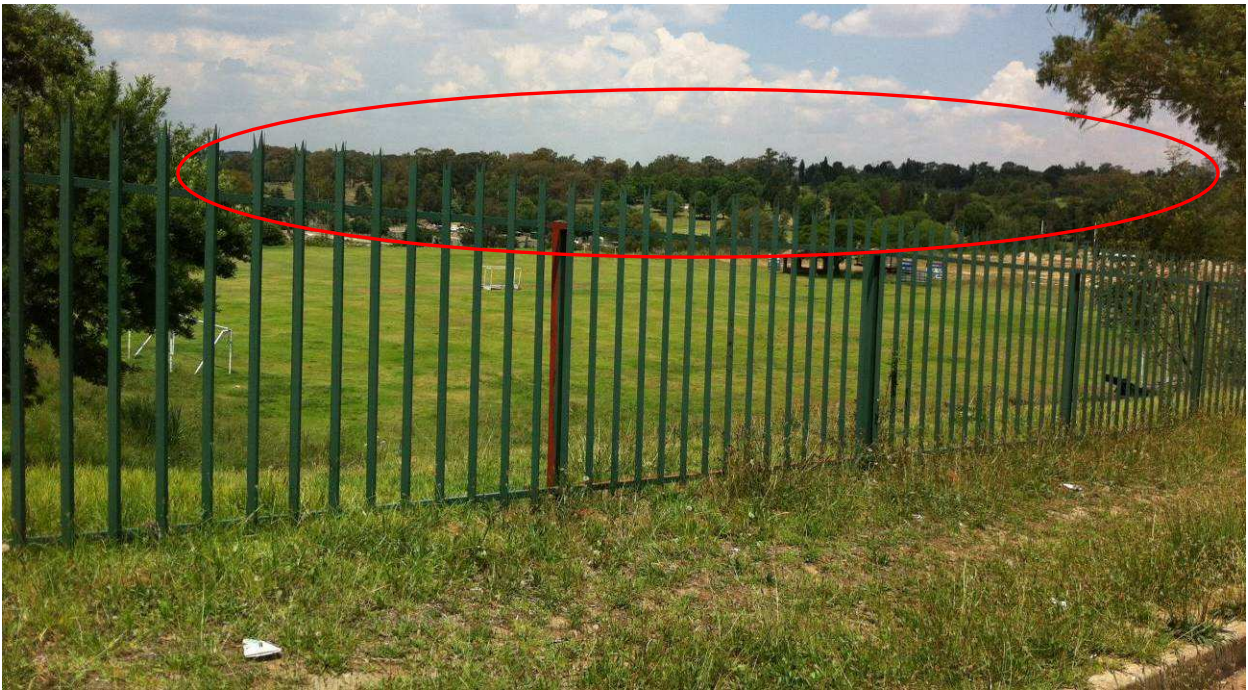


Entrance to the Huddle Park Golf and Recreation Facility (from Club Street)

APPENDIX A: SITE PHOTOS



Western boundary of the proposed site (Huddle Park is to the left of the fence and the proposed Huddle Development will be on the right)



View from Margaret Rose Street

APPENDIX A: SITE PHOTOS



View from George Avenue