VISUAL IMPACT ASSESSMENT

VLAKKELAND RESIDENTIAL DEVELOPMENT
Re. Erf 8370. Erf 8378, Erf 8399, Erf 8400,
Erf 12628, Erf 12633 and Erf 33027
PAARL
WESTERN CAPE

DRAFT

Prepared for

Guillaume Nel Environmental Consultants

On behalf of

The Drakenstein Municipality

By

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EXECUTIVE SUMMARY

The author was approached by Guillaume Nel Environmental Consultants on behalf of the Drakenstein Municipality to provide a visual impact assessment as part of the overall environmental submission for the development of a residential development on Re. Erf 8370, Erf 8378, Erf 8399, Erf 8400, Erf 12628, Erf 12633 and Erf 33027 Paarl, Western Cape.

Two alternatives were presented for assessment; Alternative 1 was an early notional layout that was undertaken before the findings of the environmental specialists were known whereas Alternative 2 was developed to accommodate these findings. The no-development alternative was used as a baseline from which the visual assessments were made.

The site lies within and adjacent to the urban edge and is bounded by Jan van Riebeeck Drive to the west, the Newton residential area to the north, Bo Dal Road to the east, and open land to the south.

The site is largely unused at present but contains disused evaporation ponds in the eastern portion and a small informal settlement in the west. There are also several houses that are still in use and the ruins and foundations of several others. Much of the site has been used for dumping.

The site is surrounded by a complex visual environment that includes urban development to the west and north, working farms on the foothills of the mountains to the east, and unused agricultural land to the south. There are three historic werwe in the area to the south that are of significant heritage importance.

The site has a limited viewshed which is defined by the mountain ridges to the east at approximately 5000m at their nearest, and to the west by Paarl Mountain at approximately 6000m at it's nearest. The areas to the north and south have an indeterminate viewshed. The extent of the impact area has been assessed as sub-regional.

The zones of visual influence that are considered to be of special importance are:

- The rural area to the east of Bo Dal Road
- The three historic werwe to the south of the site

The visual absorption capacity of the area has been assessed as medium. The proposed development will extend the development footprint in the area but it will not add any new visual elements to the wider landscape.

The overall significance of the visual impact has been assessed at medium-low for Alternative 2 after full mitigation. This is considered acceptable for a development of this size and nature.

Mitigation includes tree planting in the buffer zones along the eastern and southern boundaries. This is necessary to ensure a visually soft urban edge at the interface between the urban and rural areas to the east, and to minimise the visual intrusion on the three historic werwe to the south. Special attention will also need to be given to the visual nature and mitigation of the double storey structures along Jan Van Riebeeck Drive.

The report recommends that the development be allowed to proceed provided that the mitigation measures are implemented in full.

1 INTRODUCTION

The author was approached by Guillaume Nel Environmental Consultants on behalf of the Drakenstein Municipality to provide a visual impact assessment as part of the overall environmental submission for the development of a residential development on Re. Erf 8370, Erf 8378, Erf 8399, Erf 8400, Erf 12628, Erf 12633 and Erf 33027 Paarl, Western Cape.

1.1 VISUAL ASSESSMENT EXPERIENCE AND EXPERTISE

Over the past 14 years the author has been involved in the compilation of more than one hundred visual impact assessments. These included such high profile studies as:

- The Green Point Stadium
- The Berg River Water Project
- Agulhas Golf Estate
- Several large scale Eskom projects
- Two large scale projects in the Waterfront
- PPC Cement Factory Riebeek West
- Upgrade of Zanzibar waterfront
- 2 solar facilities Kenhardt Northern Cape
- Wind Farm Caledon Western Cape (71 3Mw turbines)
- 2 wind farms Swellendam District Western Cape

1.2 STATEMENT OF INDEPENDENCE

I hereby declare that I have no conflicts of interest related to the work of this report. Specifically, I declare that I have no personal financial interests in the property and/or development being assessed in this report, and that I have no personal or financial connections to the relevant property owners, developers, planners, financiers or consultants of the development other than the fees obtained for compiling this report.

I declare that the opinions expressed in this report are my own and a true reflection of my professional expertise.

1.3 COPYRIGHT

1.4 ASSUMPTIONS AND LIMITATIONS

This report has been compiled according to the requirements of the document 'Guidelines for Involving Visual and Aesthetic Specialists in EIA Processes' issued by the Department of Environmental Affairs and Development Planning of the Provincial Government of the Western Cape, dated June 2005.

The assessment criteria that have been used in this report conform to the requirements of the above mentioned guidelines and may differ from those used by the other assessment specialists. Certain assessment criteria are specific to visual impacts, but not to other disciplines. The visual absorption capacity of the local environment and the compatibility of the development with the local visual environment are not part of the generic methodology but are essential in understanding the visual implications of any development and have therefore played a vital part in the findings of this visual impact assessment.

This report will assess the no-development alternative and two development alternatives.

The no development alternative is used as a baseline from which to assess the other alternatives.

Alternative 1 is a notional layout that was provided by the planners at an early stage in the development process. It was compiled using the maximum space allowed without input from the environmental specialists. It was subsequently considered inappropriate for the site in terms of the specialist input and is included here merely as a record of the planning process.

Alternative 2 was a reworking of the layout plan to take certain environmental issues into consideration and is therefore the preferred alternative. All comments in the assessment sections of this report refer to this alternative unless Alternative 1 is specified.

Further alterations to the layout are still possible once authorisation has been attained and the detailed planning is undertaken. The mitigation section has therefore listed the visual issues that must be taken into account in any further planning and, provided that these are adhered to, no further visual assessment of the fine grain changes will be necessary.

1.5 METHODOLOGY

The following sequence was employed in this visual impact assessment.

- A desktop survey was made using maps and aerial photographs. These were used to identify landforms and landscape patterns and areas of potential visual impact.
- A photographic survey of the site and surrounding areas was conducted.
- Significant viewpoints and areas where views of the site will be possible were identified and the visual impact on these was analysed.
- An evaluation was made of potential visual impacts on all areas where visual influence is anticipated.
- Relevant mitigation measures were proposed.

2 LOCALITY AND STATUS OF THE STUDY AREA

See Figures 1 - 5

The site, which is approximately 108 ha in extent, comprises Erf 8359, Re/Erf 8370, Erf 8378, Erf 8399, Erf 8400, Erf 12628, Erf 12633 and Erf 33027 Paarl, Western Cape.

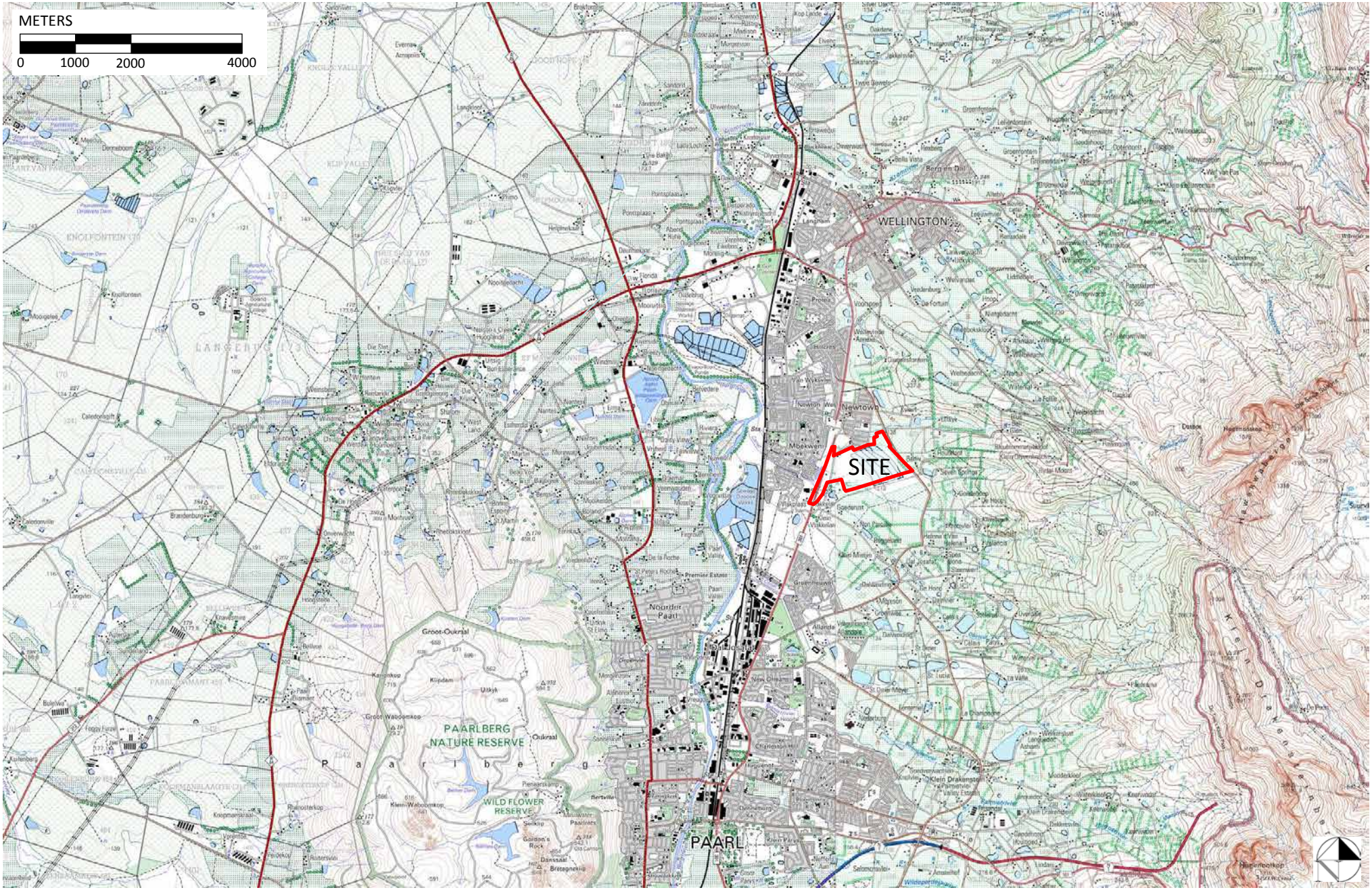
It is situated east of Jan Van Riebeeck Drive and west of Bo Dal Road, between Paarl and Wellington in the Drakenstein Municipality. Mbekweni lies to the west and north of Jan van Riebeeck Drive adjacent to the site, and Newton forms its northern boundary.

It lies within the urban edge which runs along its eastern, (Bo Dal Road,) and southern boundaries.

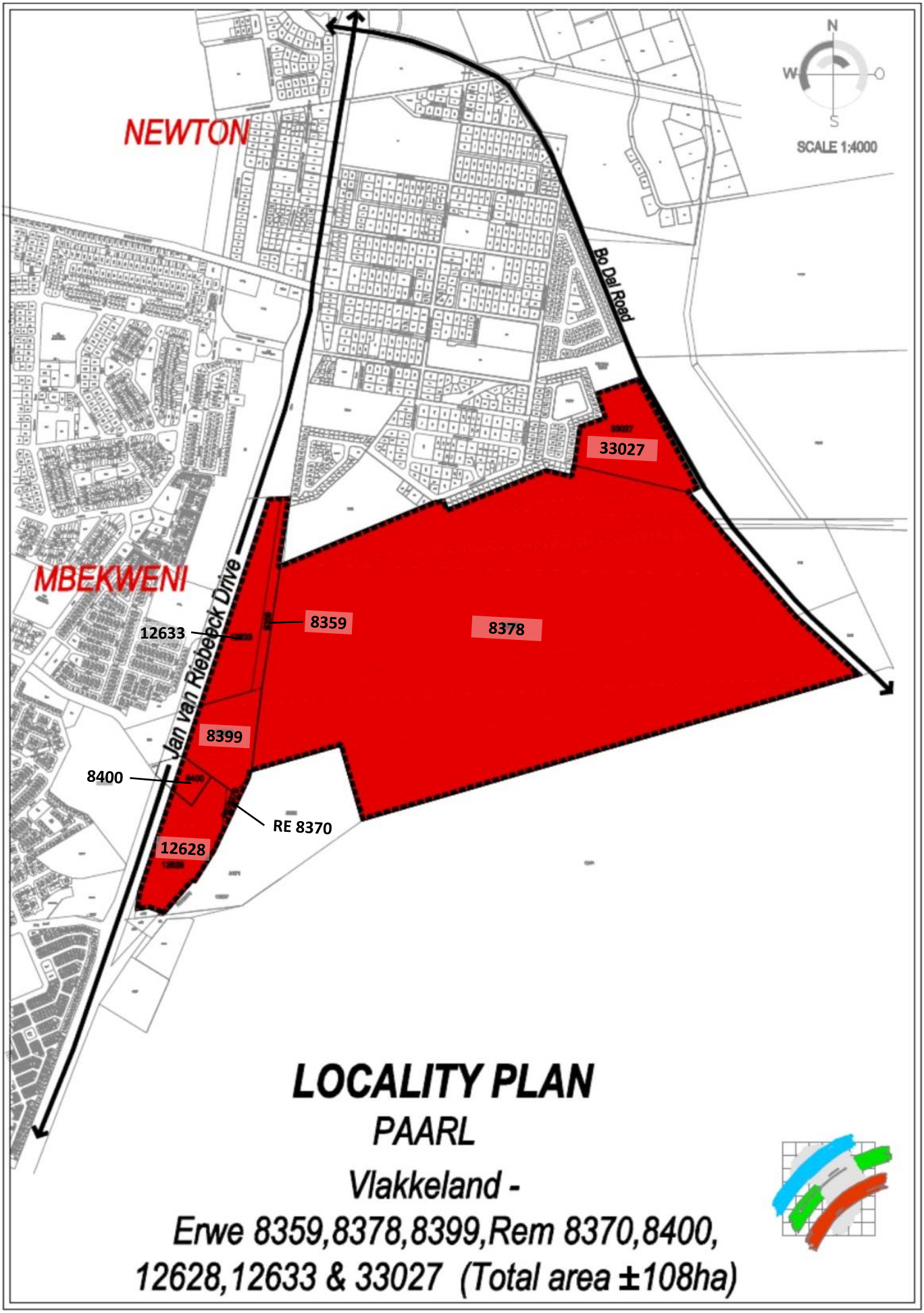
The site is largely unused at present.

Much of the eastern part of the site was used in the past for large evaporation ponds which have resulted in the terrain being sculpted to accommodate them. These have not been used for approximately 30 years and they have been breached to prevent the build-up of rain water during the wet season.

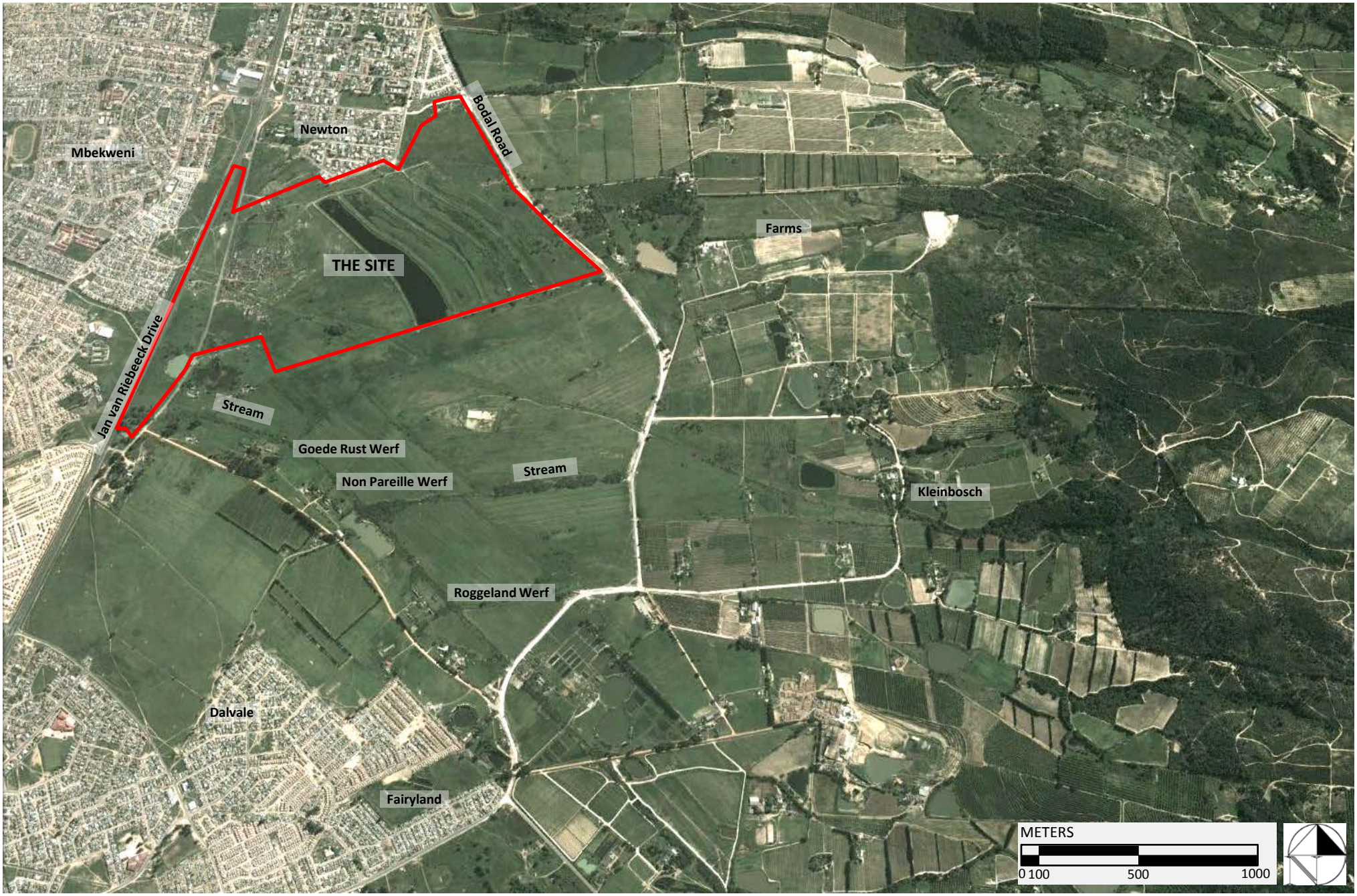
The western part of the site houses some informal shacks and animal pens, some of which appear to be no longer in use and at least two original houses that appear to be occupied. There are also several ruined structures and the foundation remains of others.



REGIONAL LOCALITY FIGURE 1



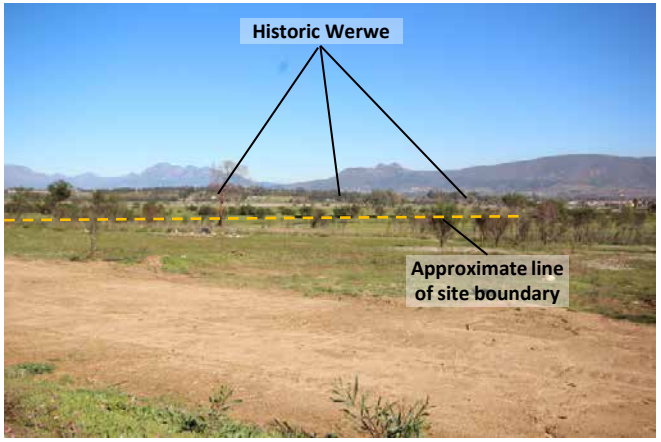
AFFECTED ERVEN FIGURE 2



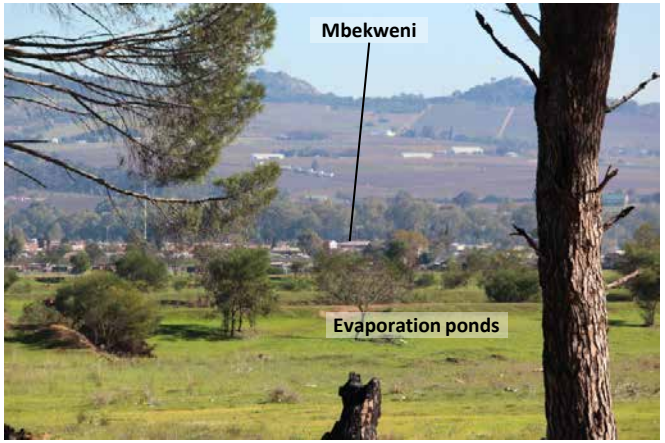
AERIAL VIEW SHOWING OVERALL LANDSCAPE CHARACTER FIGURE 3

AERIAL VIEW CLOSE-UP OF SITE

FIGURE 4

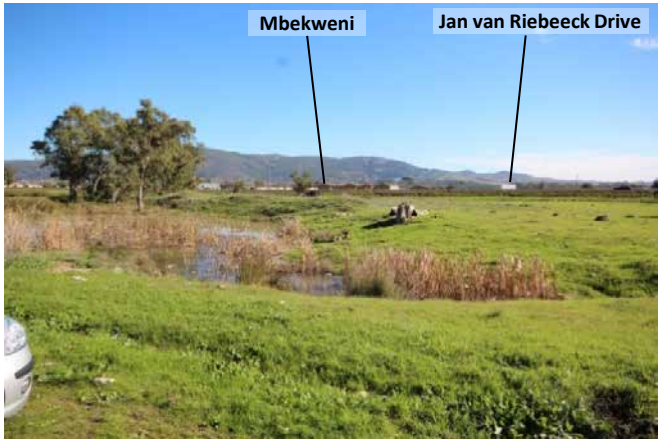


Viewpoint 1 over the site from the eastern boundary looking south-west towards the historic werwe



Viewpoint 2 from the eastern boundary of the site looking south-west. Paarl Mountain in the background

Viewpoint 3 of informal settlement looking north-east



Viewpoint 4 From the north-eastern corner of the site looking west over one of the evaporation ponds

Viewpoint 5 View from the western edge of the site looking south-east showing existing trees and extensive dumping

Viewpoint 6 View along the western boundary of the site looking south with dumping in foreground

Note: See Figure 8 for position of viewpoints

3 DESCRIPTION OF VISUAL CHARACTERISTICS

3.1 GENERAL DESCRIPTION OF SITE AND SURROUNDING AREA

The site is an irregularly shaped polygon sloping gently to the west and south, set within a complex visual environment, the main elements of which are:

- The site is essentially flat but slopes gently to the west and south.
- The unused evaporation ponds on the eastern portion of the site form a distinct visual feature. These will need to be reshaped for the proposed development.
- The site is predominantly covered in grass with areas where there are some fynbos species, but there are also a few stands of trees, mainly Eucalyptus and Pine species with some wattles. (See Botanical report.) The visual nature of the site is therefore very open allowing for distance views from, and over, the site which take in the surrounding area.
- There is an informal settlement mainly consisting of animal pens in the central western portion of the site.
- There is at least two occupied houses but there are also several ruins and foundations and left over concrete floors from houses that were demolished.
- There is a severely degraded seasonal watercourse in the south western corner of the site which has been diverted and altered over time. It can no longer be considered a natural watercourse. (See Aquatic report.)
- There is an existing tarred road running approximately parallel to Jan Van Riebeeck Drive along the western boundary and several gravel tracks cross the site.
- Areas of the site, specifically along Jan van Riebeeck Drive and adjacent to Newton are littered with builder's rubble and other dumped waste.
- To the west of the site, between Jan van Riebeeck Drive and the Berg River lies the suburb of Mbekweni. This links the developed areas of Paarl to Wellington.
- Along the northern boundary of the site lies the suburb of Newton which consists mainly of single storey dwellings.
- Bo Dal Road runs along the eastern edge of the site. This forms part of the urban edge.
- East of Bo Dal Road the visual nature of the landscape changes substantially becoming distinctly rural in nature and rising more steeply up to the first ridgeline of the foothills of the Klein Drakenstein and Hawekwa Mountains. This area consists of active farms with orchards, vineyards and agricultural fields and a significant number of trees. There are some homesteads, including several buildings of heritage importance. The greater elevation of these areas allow for panoramic views to the west over the site towards the Berg River which runs along the floor of the valley, and the Paarl Mountain range beyond on the western side of the valley.
- Rising further to the east above this intermediate ridgeline are the rocky crags of the Klein Drakenstein and Hawekwa Mountains. Between the foothill ridgeline and the mountains there is a large area from which the site will not be visible.
- To the south of the site there is a large area of agricultural land which slopes down to a stream along which, on its southern side, lie three historic werwe that are of heritage significance. These are Roggeland, Non Pareille, and Goede Rust. These werwe face diagonally onto the site at distances between approximately 250m for Goede Rust and 1000m for Roggeland. There is little in the way of visual screening between these werwe and

the site except for the limited vegetation along the stream and associated with the houses. The Roggeland werf has more vegetative screening than the other two werwe.

- Further to the south lies more agricultural land and beyond this the housing areas of Dalvale and Fairyland.

3.2 THE VISUAL ENVIRONMENT AND SENSE OF PLACE

The overall visual nature of the site and its surroundings is one of development and change. The breached evaporation dams, informal settlement, and scars of previous development on the site, the ongoing development in Newton and the recent tarring of Bo Dal Road all attest to this.

The fact that the site is within the urban edge means its future development is probably inevitable.

The difficulty, in terms of the visual environment, will be to ensure that:

- the visual integrity and sense of place of the historic werwe to the south is maintained as far as possible,
- that the interface between the suburban nature of the proposed development and the rural nature of the areas to the east of Bo Dal Road is delineated and softened in a way that maintains the visual identity and integrity of both areas.

There will only be limited visual issues with the interface of the proposed development and the housing in Newton, and interface along Jan van Riebeeck Drive where the development will be experienced visually as a logical extension of the existing built-up areas along the road. There will also be a chance to ameliorate the negative visual impacts of the informal settlement and the extensive dumping and builder's rubble on the site.

3.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

See Figures 6 and 7 and Addendum 1

The following elements that have visual implications were identified for each of the alternatives:

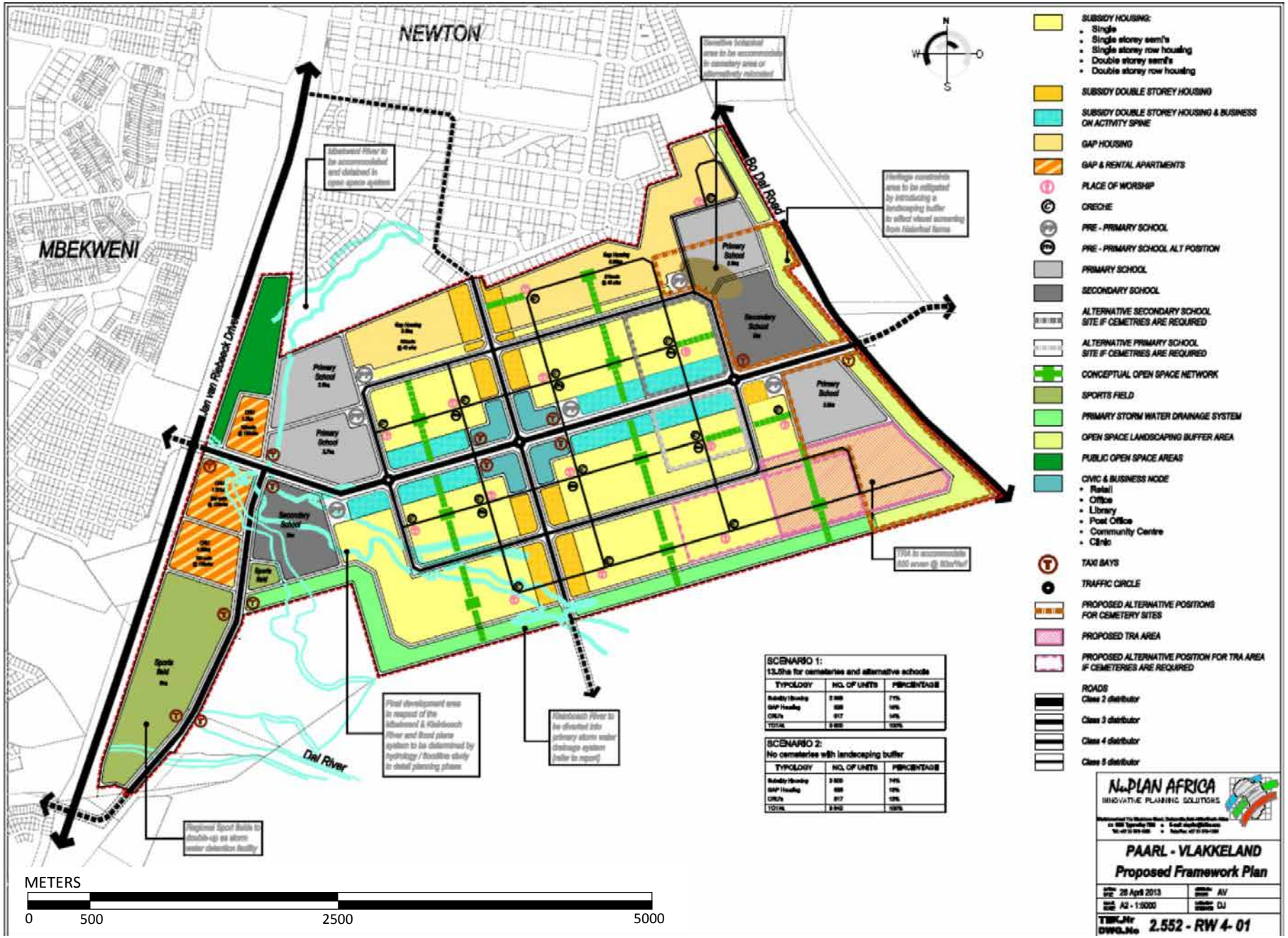
3.3.1 No Development Alternative

- This alternative assumes that the site would remain undeveloped as it is at present.
- The negative visual impacts associated with the informal settlement and the dumping would probably continue and perhaps increase in the future.
- This alternative is not considered viable as the site lies within the urban edge and development of some sort is likely to take place in the future.
- This alternative is included as a baseline from which the visual nature of the development alternatives can be assessed.

3.3.2 Alternative 1

See Figure 6

- This alternative uses the entire site with only limited buffer zones along Bo Dal Road and the southern boundary towards the historic werwe. This limits the potential for visual mitigation.



ALTERNATIVE 1 – ORIGINAL NOTIONAL LAYOUT - FIGURE 6

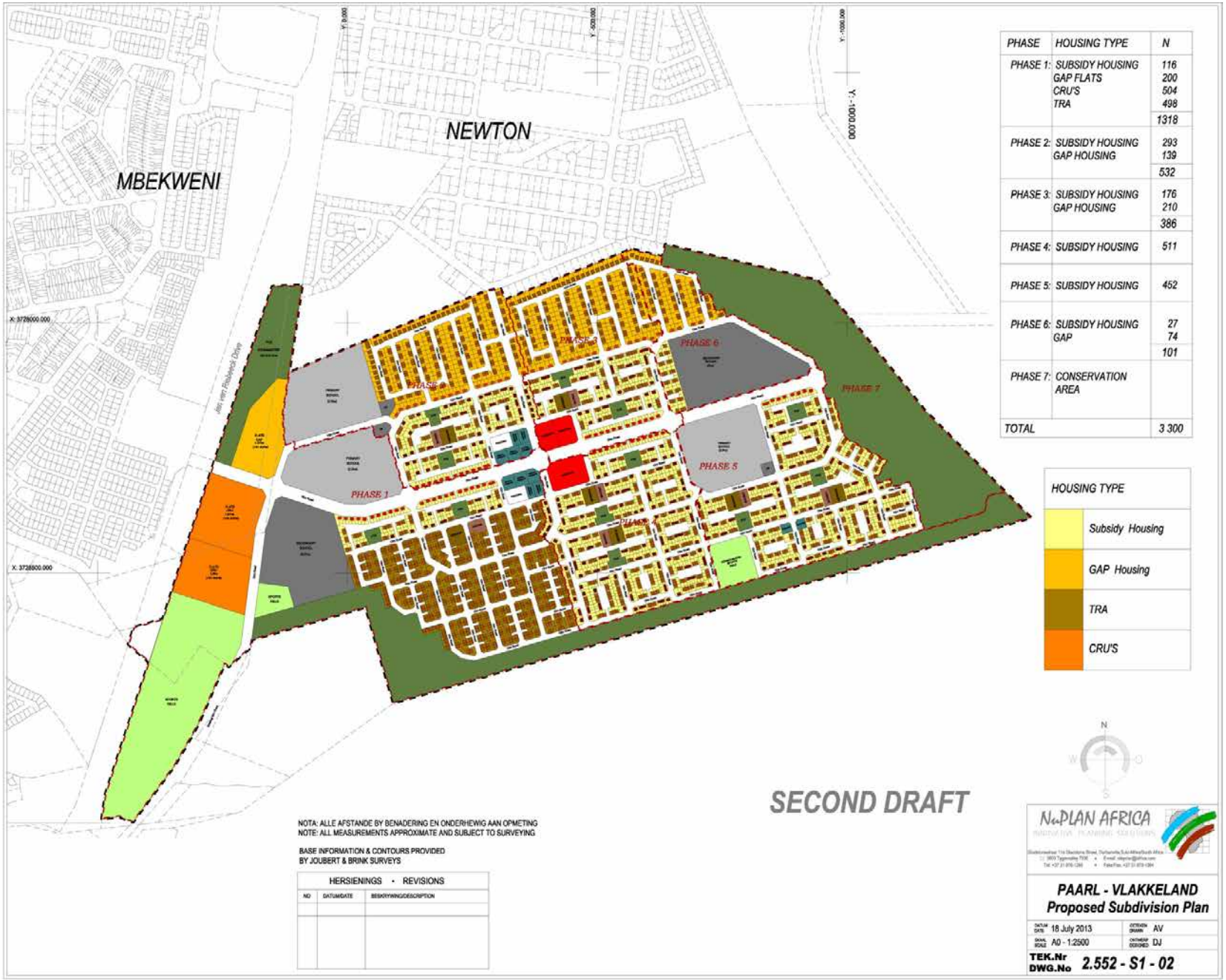
- The additional access road onto Bo Dal Road is seen as being a negative visual issue in terms of separating the urban area from the rural areas to the east. The proposed road link towards the south and the historic werwe could also have long-term negative visual consequences for the werwe.
- This alternative was issued with two variants, one included a cemetery and the other omitted it. The cemetery has been excluded from Alternative 2, the preferred alternative.
- As this is no longer a working alternative, no further comment will be made.

3.3.3 Alternative 2

See Figure 7

The proposed development will consist of a combination of:

- Subsidy housing.
- Subsidy double storey housing.
- An activity spine.
- GAP housing and GAP and rental apartments.
- Four erven for primary schools.
- Two erven for secondary schools.
- Specific locations are included to accommodate places of worship, crèches, and pre-primary schools.
- Sport fields and taxi bays.
- A conceptual open space network will run throughout the development.
- A civic and business node will be created in the centre of the development, providing a location for retail, offices, a library, a post office and a community centre.
- A primary storm water drainage system with a large storm water retention facility will be constructed in the south eastern corner alongside the southern border. This area will also serve as a sports facility, providing sport fields for the local community.
- Access to the site will be taken from Jan van Riebeeck Drive west of the site, (770m south of Mbekweni intersection,) and from the existing connection to Bo Dal Road adjacent to Newton in the east.
- As a result of the findings of the Botanical Report a considerable buffer zone and conservation area of a minimum 120m wide will run the entire length of the Bo Dal Road boundary. This will serve as a visual buffer zone. (erf 33027 in the north-eastern corner of the site has been excluded from the development footprint in its entirety as a result of the discovery of conservation worthy fynbos species in this area.)
- An approximately 35m wide buffer zone will also run along the entire southern boundary which is adequate space for visual mitigation of the views from the historic werwe to be implemented. This area will also accommodate the main storm water drainage line.
- The additional access road to Bo Dal Road has been omitted which is considered positive in terms of visual issues, and there will be no link southwards towards the historic werwe.



PHASE	HOUSING TYPE	N
PHASE 1:	SUBSIDY HOUSING	116
	GAP FLATS	200
	CRU'S	504
	TRA	498
		1318
PHASE 2:	SUBSIDY HOUSING	293
	GAP HOUSING	139
		532
PHASE 3:	SUBSIDY HOUSING	176
	GAP HOUSING	210
		386
PHASE 4:	SUBSIDY HOUSING	511
PHASE 5:	SUBSIDY HOUSING	452
PHASE 6:	SUBSIDY HOUSING	27
	GAP	74
		101
PHASE 7:	CONSERVATION AREA	
TOTAL		3 300

ALTERNATIVE 2 LAYOUT – PREFERRED ALTERNATIVE FIGURE 7

VISUAL IMPACT ASSESSMENT

4.1 VIEWSHED

The "viewshed" refers to the theoretical outer-most extent or area from which the subject development can be seen.

There are several types of viewshed:

- *A defined viewshed; this is when topographical features such as mountain peaks or ridgelines create a situation in which the subject is visible from one side of the feature but not from the other. This is similar to the concept of a watershed and can usually be described as a line on a map. This type of viewshed usually occurs in mountainous or hilly terrain.*
- *A defined viewshed can sometimes be divided into two types of viewshed line: The ultimate viewshed which defines the area beyond which no views of the development are possible, and a proximate viewshed which describes a line along a ridgeline or topographical feature which causes a significant shadow area within the overall viewshed from which the development will not be visible. The site will still be visible from more elevated areas beyond this shadow area.*
- *An indeterminate viewshed: this occurs in a terrain where there are no significant defining topographical features and the subject becomes visible from any high points in the terrain but is shielded from view in low points in the terrain. The local vegetation and structures can completely or partially shield the subject from view even over fairly short distances. In this type of viewshed distance becomes the main limiting factor to visibility and it is not possible to show the extents of the viewshed with a line on a map. This type of viewshed usually occurs in relatively flat terrain.*

See Figures 8 and 9

The **defined** viewshed for the site consists of two distinct parts.

The proximate viewshed: this is determined by the ridgeline to the east of the site created by the foothills of the Klein Drakenstein and Hawekwa Mountains and is approximately 2000m and further from the site. This creates a shadow area between the ridgeline and the ultimate viewshed along the crest of the mountains.

The ultimate viewshed: this is defined by the ridgelines of the Klein Drakenstein and Hawekwa Mountains to the east at a minimum distance of approximately 5000m from the site, and the ridgeline associated with Paarl Mountain across the Berg River Valley to the west at approximately 6000m and further from the site.

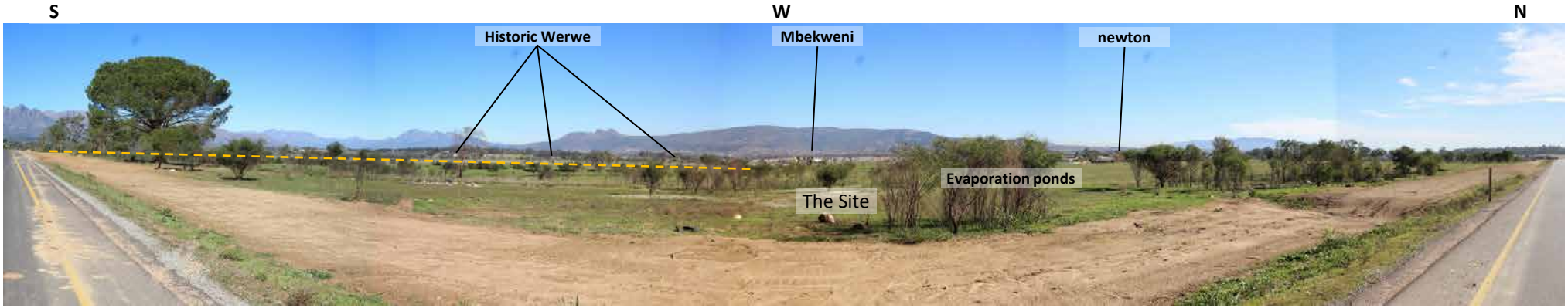
The ultimate viewshed also includes Simonsberg, the Groot Drakenstein Mountains and the Jonkershoek Mountains to the south west and south but, as these viewpoints are more than 20km from the site, the visual impact on these potential viewpoints will be minimal to nonexistent.

The areas to the north and south of the site have an indeterminate viewshed in which the development will be easily shielded from view by the local topography, vegetation and structures however; partial views will be possible from any elevated points or structures in the landscape.

The viewshed to the north is fairly limited as a result of the slope of the terrain and the shielding capabilities of the houses in Newton. To the south, the lack of significant vegetation and the downward slope of the terrain result in a larger area from which the development will be visible.

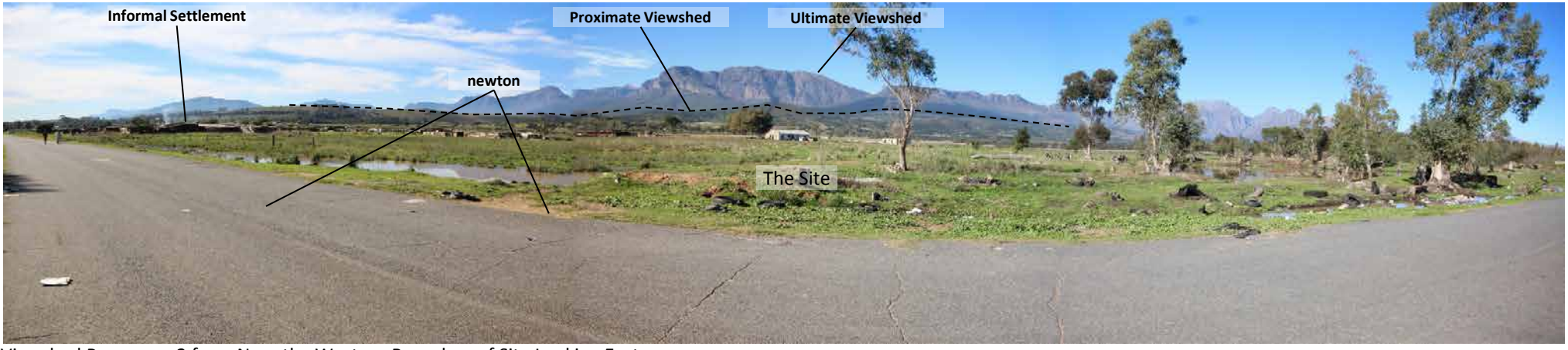
The historic werwe fall in the open area between the site and Dalvale and only the limited vegetation along the stream to the east of the werwe and around the houses is able to provide any visual shielding.

KEY TO VIEWPOINTS FIGURE 8



Viewshed Panorama 1 from Bo Dal Road Looking West

Please be aware of the 'fish-eye effect in this and all subsequent panoramas that results from joining several photographs together. The road is straight.

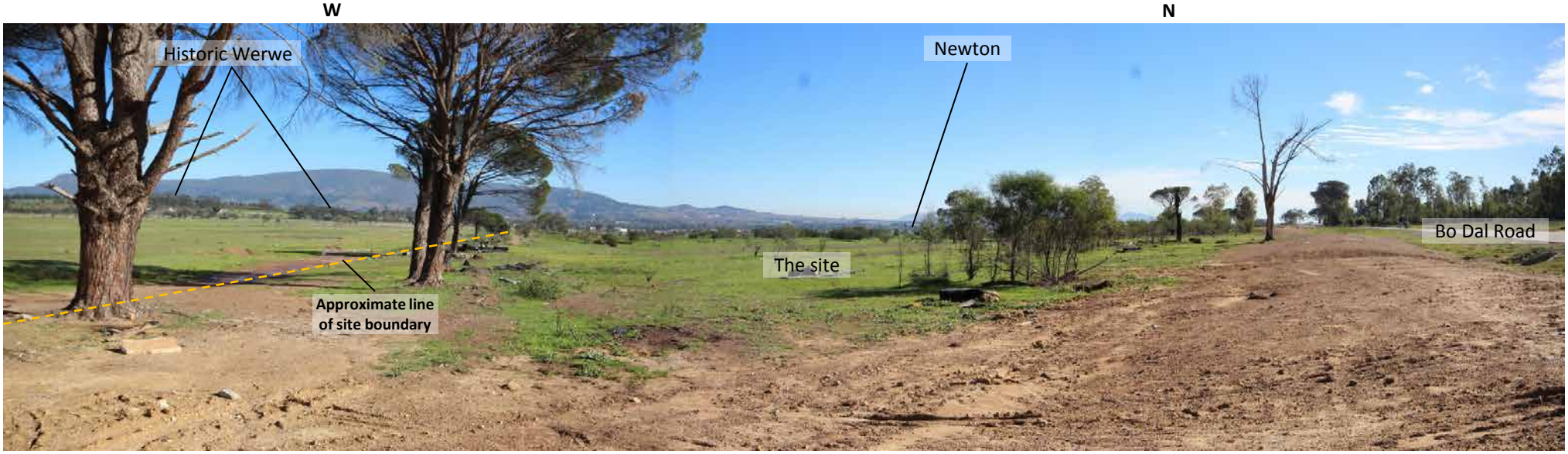


Viewshed Panorama 2 from Near the Western Boundary of Site Looking East

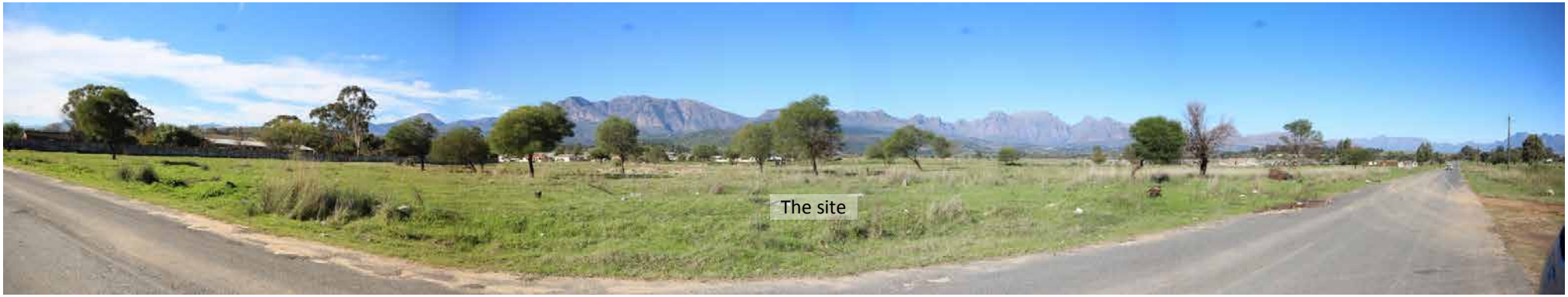
APPROXIMATE VIEWSHED

FIGURE 10

Viewpoint 7 Looking Over the Site from the Centre of the Boundary along Bo Dal Road



Viewpoint 8 From the South-east Corner of the Site Looking North-west

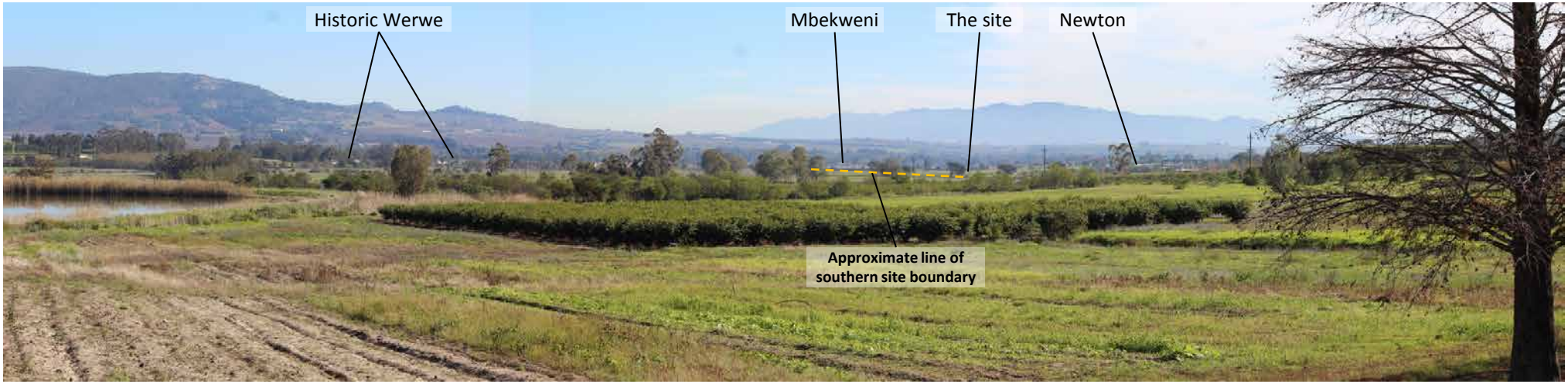


Viewpoint 9 From Near the North-western Boundary of the Site Looking East

Viewpoint 10 From the Edge of the Goede Rust Werf Facing North

Viewpoint 11 From Roggeland Road above the Non Pareille Werf Facing North

Viewpoint 12 From the Roggeland Werf Showing the Screening Nature of the Local Vegetation



Viewpoint 13 from Kleinbosch

4.2 ASSESSMENT

4.2.1 EXTENT OF THE IMPACT

This assessment measures the extent of geographical area that will be impacted by the development.

Extent of Visual Impact	
Rating	*Definition of Rating*
Site Specific	*Very small extent of visual influence – usually limited to the site*
Local	*Limited to the site and immediate surrounding area (1-5km)*
Sub Regional	*The visual influence covers a greater area (6-10km)*
Regional	*The influence covers an area that includes an entire geographic region or allows the visual impact to be extend beyond one region into another*
National	*The visual impact can be experienced across national boundaries and has national implications.*

The extent of the visual impact is considered sub-regional with all significant visual impacts being confined to the area between the Klein Drakenstein and Hawekwa Mountains to the east, and the Paarl Mountain ridgeline to the west.

Although views of the development will be possible from elevated mountainous areas situated more than 10km from the site, none of these views is considered significant as the site will be seen on the valley floor within the context of the surrounding development. At these distances the extension of the developed area will be hardly noticeable.

Table 4.1 Extent of Impact

	Construction	Operational	Night*
No Development Alternative	-	Sub-regional	Local
Development Alternatives **	Sub-regional	Sub-regional	Sub-regional

*The night time column is included to assess the potential affect of any lighting at night.
** This assessment only assesses the area that will be affected and is therefore valid for all development alternatives.

4.2.2 ZONES OF VISUAL INFLUENCE – VISUAL ANALYSIS

This assessment describes the significant areas within the viewshed from which the development may be visible and estimates the degree to which these areas will be visually influenced.

Zones of Visual Influence – estimate of visibility	
Rating	*Definition of Rating*
Non-existent	*The will be no visual influence*
Low	*The proposed development will only be partially and or, (in the case of movement along roads etc.) intermittently visible and take up a relatively small percentage of the overall vista.*
Medium	*The proposed development will be readily visible but its visual influence will be limited by distance, compatibility etc.*
High	*The entire or a large portion of the proposed development will be visible in a way that seriously changes the visual nature of the area when viewed from the identified viewpoints.*

4.2.2.1 Jan van Riebeeck Drive and Adjacent Areas

The existing visual experience to the west of Jan van Riebeeck Drive consists of almost continuous development, both residential and industrial, along its entire length.

Towards the east where the most significant views up towards the mountains are situated, there are alternating areas of residential development and open land. The most significant open area is in the vicinity of the site and at present includes the site. These open areas allow for unobstructed views up the gentle slope towards Bo Dal Road and the agricultural areas and mountains beyond.

The proposed development will add to the residential areas along the eastern side of the road and partially close the existing gap; however, there will still be a significant open area to the south of the site, which includes the area where the historic werwe are situated. The proposed sports fields at the southern tip of the site will add to this open space and maintain some of the existing views. Approximately half of the existing open space will be affected by the proposed development.

The proposed development will be seen in the lower half of the view with the vistas of the mountains beyond only being minimally affected: i.e. the view of the skyline will not be affected.

The siting of the double storey flats along this section of the road could lead to an unacceptable visual impact and mitigation measures will be needed to manage this.

Table 4.2 - Zones of Visual Influence – Jan Van Riebeeck Drive and Adjacent Areas

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±0m and further	-	-	Low*	-
Alternative 1		Without mitigation	High	High	High
		With mitigation	Medium	Medium	Low
Alternative 2		Without mitigation	High	High	High
		With mitigation	Medium	Medium	Low

*** The assessment for this and all other no-development alternatives is not non-existent because there are some visual impacts associated with the site as it stands at present. i.e. the visual impacts of the informal settlement and dumping. An assessment of non-existent can only be used if the site is pristine.**

4.2.2.2 Bo Dal Road

See figure 11 Viewpoint 7

When approaching the site from the north (Wellington,) Bo Dal Road runs directly adjacent to Newton to the south and the west before passing the site. The northern and eastern areas along this section of the road are agricultural in nature.

The implementation of the proposed development will result in the area of development along the western side of the road extending further south from Newton however, once past the development, the open areas to the west of the road will be maintained, including the views towards the historic werwe.

In views to the south, the housing and vegetation in Dalvale and Fairyland will form the background to the view and further along the road, where Bo Dal Road curves to the south and passes Fairyland, development once again runs adjacent to the road.

In Alternative 2, the inclusion of the significant buffer zone, (120m and more,) along the site boundary with Bo Dal Road will decrease the potential visual impacts considerably and allow for adequate visual mitigation. It will also provide a sense of transition between the urban area of the development to the west and the rural areas to the east of the road thereby creating a soft urban edge.

As the ground slopes gently downwards away from the road towards the Berg River, the buffer zone will result in the first row of houses being slightly below the level of the road and therefore the views across the valley towards Paarl Mountain will be less visually affected. The skyline on that side of the valley will not be affected provided that no double storey buildings are erected close to the buffer zone.

When traveling in the opposite direction from the south towards Wellington, once the residential areas of Fairyland and Dalvale have been passed, the southern edge of the proposed development will be seen against the backdrop of the existing development in Newton. Some visual mitigation of this will be possible by planting groups of trees in the buffer zone along this edge. (See Figure 11 Viewpoint 8)

The omission of an adequate buffer zone in Alternative 1 would have increased the potential visual impact considerably and resulted in a harder urban edge.

The lighting at night could have a significant effect on the sense of place along the road and will therefore need to be carefully mitigated.

Table 4.3 - Zones of Visual Influence – Bo Dal Road

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±120m and further	-	-	low	-
Alternative 1		Without mitigation	High	Medium-High	High
		With mitigation	Medium-High	Medium	Low
Alternative 2		Without mitigation	Medium	Medium	High
		With mitigation	Medium	Medium-low	Low

4.2.2.3 Newton

The development will start immediately adjacent to the existing houses at the southern edge of Newton. This means that the existing views over the site that are possible from these houses will be cut off and replaced by urban development changing their existing visual environment entirely.

There is little that can be done to mitigate these changes in the visual environment.

Table 4.4 - Zones of Visual Influence – Newton

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	Width of the road reserve and further	-	-	Low	-
Alternative 1		Without mitigation	High	High	High
		With mitigation	High	High	Medium
Alternative 2		Without mitigation	High	High	High
		With mitigation	High	High	Medium

4.2.2.4 The Historic Werwe

See Figures 12 and 13 Viewpoints 10 - 12

The critical views that give a visual context to the historic werwe will all be negatively affected to some degree as the werwe face diagonally on to the proposed development.

The Goede Rust werf will be the most significantly affected as it lies only approximately 250m from the nearest point of the proposed development. The stepping back of the development line immediately north of the werf will however, aid in the visual mitigation and the existing trees along the stream adjacent to the werf will also provide some shielding.

The distance to the development from Non Pareille will be approximately 500m at its closest however; the lack of significant vegetation associated with the werf will allow the development area to be seen in some detail.

Roggeland is situated approximately 1000m from the southern edge of the proposed development at its nearest and therefore this werf will experience the least amount of visual impact of the three. Additionally, as a result of the orientation of the werf, only the north-eastern section of the development will be visible. The trees along the stream adjacent to the werf provide significant mitigation however, should these be removed the development will be clearly visible across the intervening open fields.

All three werwe have a significant number of mature trees associated with the werf itself. This will result in there being areas in each werf where the proposed development will not be visually obtrusive. This largely comprises of the areas directly associated with the houses.

The targeted planting of trees and tree lines on the werf properties can aid in managing any specific visual impacts as they are identified. The specification of this is however beyond the scope of this report and will be the responsibility of the werf owners.

As the site slopes upwards from the werwe, the mitigation planting that will be required in the buffer zone along the southern boundary of the site will only have a limited mitigating effect however, it will have the effect of breaking up the perceived extent of the development and softening the intensity of the impacts.

The backdrop to all the potential views from the werwe will be the slopes to the east and north of Bo Dal Road. At no time will the development break the skyline and therefore the overall integrity of the visual nature of the topography will not be affected.

The lighting at night could have a significant effect on the sense of place of all three werwe and will therefore need to be carefully mitigated.

Table 4.5 - Zones of Visual Influence – Historic Werwe

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±250m and further	-	-	Low	-
Alternative 1		Without mitigation	High to Medium-high	High to Medium-high	High
		With mitigation	Medium-high to Medium	Medium-high to Medium	Low
Alternative 2		Without mitigation	High to Medium-high	High to Medium-high	High
		With mitigation	Medium-high to Medium	Medium-high to Medium	Low

4.2.2.5 Slopes to the East of the Site and the Mountains

See Figure 13 Viewpoint 13 (Kleinbosch)

The slopes of the foothills to the east of the site above Bo Dal Road contain some dwellings, most of them being relatively recent, but there are several that have historical significance.

As the hills are convoluted, not all of the houses have their primary view axis towards the site. For those that do, the added elevation of their positions allow them to have views over the site, with the development falling into the lower half of the overall view which will result in the vistas across the valley to Paarl Mountain not being affected.

The development will also be seen in the context of the exiting development in Newton and the urban and industrial areas to the west of Jan van Riebeeck Drive. The development will therefore be experienced as an extension of these areas rather than as introducing any new visual elements into the landscape.

The mitigation planting along Bo Dal Road will have little effect on these viewpoints as the viewers are generally situated above the height of the proposed trees. They will therefore be able to see over any trees to the development beyond. No effective day-time visual mitigation is possible for these views. The enlarged buffer zone in Alternative 2 will however place a greater distance between the viewers and the first row of houses and this will lower the visual impact significantly.

The lighting at night could significantly raise the visual impact on these viewpoints and therefore careful mitigation of the lighting will be required.

The views from the slopes of the mountains further east will have a significantly reduced visual impact compared to those on the lower slopes closer to the site. The reason for this is that, as a result of the greater distance to these viewpoints, the overall area that will be visible will be greatly enlarged and therefore the percentage of the overall view that is altered by the implementation of the development will be relatively smaller. The added elevation of these viewpoints will also serve to mitigate the visual impact as the development will only effect the views looking down into the valley and not the distance views westwards towards Paarl Mountain and Table Mountain beyond.

Table 4.6 - Zones of Visual Influence – Slopes to the East of the Site and the Mountains

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±120m and further	-	-	Low	-
Alternative 1		Without mitigation	Medium-high* to Low	Medium-high to Low	High
		With mitigation	Medium-high to Low	Medium-high to Low	Low
Alternative 2		Without mitigation	Medium-high to Low	Medium-high to Low	High
		With mitigation	Medium-high to Low	Medium to Low	Low

* This depends on the orientation of the viewpoints, their distance to the site and the presence of any vegetation local to the viewpoint that can act as visual screening.

4.2.2.6 Slopes of Paarl Mountain to the West

Views from the slopes of Paarl Mountain to the west of the site will have a lower visual impact compared to those to the east. This is partly because of the greater distance to these viewpoints and also because from these viewpoints the overall percentage of the vista that will be altered is relatively small.

The foreground will also be taken up by the existing development in the valley and the proposed development will be experienced as an incremental increase in the amount of existing development along Jan van Riebeeck Drive.

Table 4.7 - Zones of Visual Influence – Slopes of Paarl Mountain to the West

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±5000m and further	-	-	Low	-
Alternative 1		Without mitigation	Low	Low	Medium
		With mitigation	Low	Low	Low
Alternative 2		Without mitigation	Low	Low	Medium
		With mitigation	Low	Low	Low

4.2.3 VISUAL ABSORPTION CAPACITY OF THE AREA

This assessment rates the area surrounding the project in terms of its basic landscape character with respect to its ability to visually absorb the proposed project.
*This concept is closely linked to the concept of compatibility with the surrounding landscape, but the emphasis is on the **area's** ability to absorb the development and **not** on the **development's** ability to fit into the surroundings*

Visual Absorption Capacity	
Rating	*Definition of Rating*
Low	*The landscape is very sensitive to alterations in its visual nature*
Medium	*The landscape can visually absorb small to medium sized alterations in its character.*
High	*The landscape can visually absorb medium to large changes in its character.*

***Note**: In this category 'low' is considered problematic and 'high' is considered desirable.*

The limited distance to the proximate viewshed, the relatively even landscape to the north, and south, and the presence of the similar existing development in the area result in the visual absorption capacity being assessed at medium.

The uncontrolled usage of light at night will not be well absorbed however full mitigation will mean that the visual absorption capacity can be maintained at night.

Table 4.8 - Visual Absorption Capacity

Alternative	Mitigation	Construction	Operational	Night
No development Alternative	-	-	-	-
Development Alternatives**	Without mitigation	Medium	Medium	Low
	With mitigation	Medium	Medium	High

* ***Note**: In this category 'low' is considered problematic and 'high' is considered desirable.*
**This category assesses the land around the site and not the development itself. It therefore applies to all development alternatives.

4.2.4 COMPATIBILITY WITH THE SURROUNDING LANDSCAPE

*This assessment evaluates the extent to which the **proposed development** conforms to usages in the surrounding landscape. Important to this assessment are the concepts of sameness, scale, diversity, texture, colour etc.*

Compatibility with surrounding Landscape	
Rating	*Definition of Rating*
High - Appropriate	*The proposed development fits in well with the type and style of the surrounding landscape and no new or different elements are introduced.*
Medium - Moderately Appropriate	*The proposed development can blend into the surrounding landscape but its type and style may be different and new elements are introduced but not in a jarring way.*
Low - Inappropriate	*The proposed development is at odds with the type and style of development in the surroundings, and new and jarring elements are introduced*

***Note**: In this category 'low' is considered problematic and 'high' is considered desirable.*

The development will not be introducing any new elements into the visual environment, all of the various visual elements already being evident in the surrounding landscape.

The compatibility of the development is assessed at medium for Alternative 1 largely due to its greater visual effect on Bo Dal Road but Alternative 2 will be more appropriate to this area.

The planting of trees within the development will further increase the visual compatibility of the development with the surrounding landscape.

Table 4.9 - Compatibility with the Surrounding Landscape

Alternative	Mitigation	Construction	Operational	Night
No development Alternative	-	-	High	-
Alternative 1	Without mitigation	Low	Low	Low
	With mitigation	Medium-low	Medium-low	Medium
Alternative 2	Without mitigation	Medium-low	Medium-low	Low
	With mitigation	Medium-high	Medium-high	High

***Note**: In this category 'low' is considered problematic and 'high' is considered desirable.*

4.2.5 INTENSITY OF VISUAL IMPACT

This assessment refers to the intensity with which the visual nature of the landscape will be altered.

Intensity of Visual Impact	
Rating	*Definition of Rating*
Low	*The sense of place and visual functions of the area are negligibly altered and the perceived character of the area is not qualitatively changed.*
Medium	*The sense of place and visual functions of the area are altered and the perceived visual character of the area is altered but not in an unacceptable way.*
High	*The sense of place and visual functions of the area are severely altered in a way that changes the perceived character of the area.*

4.2.5.1 Jan Van Riebeeck Drive and Adjacent Areas

The intensity of the visual impact on Jan van Riebeeck Drive for both alternatives will be the same.

Although the implementation of the development will only represent an increase in the area of the existing surrounding development, thereby not adding any new visual elements to the environment, the placement of the two storey flats along this edge could constitute a higher intensity visual impact if their Jan van Riebeeck Drive elevation is not carefully designed and mitigated.

The inclusion of the sports facilities along this edge, which will allow for a greater extent of unobstructed views towards the mountains, will have a positive effect in lowering the intensity of the visual impact along this road.

Table 4.10 - Intensity of Visual Impact – Jan van Riebeeck Drive and Adjacent Areas

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±0m and further	-	-	Low	-
Alternative 1		Without mitigation	High	High	High
		With mitigation	Medium	Medium	Low
Alternative 2		Without mitigation	High	High	High
		With mitigation	Medium	Medium	Low

4.2.5.2 Bo Dal Road

The intensity of the visual impact on Bo Dal Road will be significantly reduced by the inclusion of the buffer zone in Alternative 2 although this is partly dependent on there being no future development on Erf 33027.

Table 4.11 - Intensity of Visual Impact – Bo Dal Road

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±120m and further	-	-	Low	-
Alternative 1		Without mitigation	Medium	Medium	Medium
		With mitigation	Medium	Medium	Low
Alternative 2		Without mitigation	Medium	Medium	Medium
		With mitigation	Medium	Medium	Low

4.2.5.3 Newton

The intensity of the visual impact on the row of houses facing onto the site will be high as their entire visual context will be altered but the remainder of the houses in Newton will experience a low intensity impact or no impact at all.

Table 4.12 - Intensity of Visual Impact – Newton

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	Width of the road reserve and further	-	-	Medium-low	-
Alternative 1		Without mitigation	High	High	High
		With mitigation	Medium	Medium	Low
Alternative 2		Without mitigation	High	High	High
		With mitigation	Medium	Medium	Low

4.2.5.4 Historic Werwe

The intensity of the visual impact on the Historic werwe will range between medium-high for the Goede Rust werf and medium-low for the Roggeland Werf.

The visual effect will be to alter the sense of place by bringing more urban development into what is traditionally a rural agricultural setting. The intensity will not be higher as there is already a significant amount of development within the views from the werwe.

Table 4.13 - Intensity of Visual Impact – Historic Werwe

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±250m and further	-	-	Low	-
Alternative 1		Without mitigation	High to Medium	High to Medium	High to Medium
		With mitigation	Medium-high to Medium-low	Medium-high to Medium-low	Medium to Low
Alternative 2		Without mitigation	Medium-high	Medium-high	High to Medium
		With mitigation	Medium	Medium	Medium to Low

4.2.5.5 Slopes to the East

The intensity of the visual impact on the houses on the slopes above Bo Dal Road will depend on the orientation of the primary views of each house and the amount of local vegetation that is able to mitigate these views.

The intensity of all views from the mountains beyond will be low.

Table 4.14 - Intensity of Visual Impact – Slopes to the East

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±120m and further	-	-	Low	-
Alternative 1		Without mitigation	High	High	High
		With mitigation	Medium-high	Medium-high	Low
Alternative 2		Without mitigation	Medium-high	Medium-high	Medium-high
		With mitigation	Medium-low	Medium-low	Low

4.2.5.6 Slopes to the West

The intensity of the visual impact on all other areas will mitigated by distance and that fact that the development will be seen as an extension of the existing urban fabric rather than representing a new visual element in the landscape.

Table 4.15 - Intensity of Visual Impact – Slopes to the West

Alternative	Distance	Mitigation	Construction	Operational	Night
No development Alternative	±5000m and further	-	-	Low	-
Alternative 1		Without mitigation	Low	Low	Medium-low
		With mitigation	Low	Low	Low
Alternative 2		Without mitigation	Low	Low	Medium-low
		With mitigation	Low	Low	Low

4.2.6 DURATION OF VISUAL IMPACT

This assesses the visual impact in terms of the lifespan of the development and therefore the lifespan of the visual impact.

Duration of Impact	
Rating	*Definition of Rating*
Temporary	*Change will occur but the timing is unknown*
Short-term	*Up to 3 years*
Medium-term	*3 to 15 years*
Long-term	*More than 15 years*
Permanent	*The nature of the impact is such that it will be irreversible over time.*

The duration of visual impacts associated with the construction phase will be short-term but will stretch over the implementation of the phases.

The duration of visual impacts associated with the operational phase will be long-term.

4.2.7 OVERALL SIGNIFICANCE OF THE VISUAL IMPACT

This rating combines the ratings for the extent of the impact, the duration of the impact, the intensity of the impact and the sensitivity of the viewers to arrive at a rating for the impact as a whole.

It is very difficult to arrive at a single overall significance rating for a project of this type. This rating is based on the ratings in the sections preceding this one, but also on the experience of the independent visual specialist. There will always be a limited number of viewpoints within the viewshed from which the ratings in the table below may be considered too high or too low.

Table 4-16 – Overall Significance of Visual Impact

Alternative	Mitigation	Construction	Operational	Night
No development Alternative	-	-	Low	-
Alternative 1	Without mitigation	High	Medium-high	High
	With mitigation	High	Medium	Medium-low
Alternative 2	Without mitigation	Medium-high	Medium	High
	With mitigation	Medium	Medium-low	Low

4.2.8 STATUS OF THE VISUAL IMPACT

This assessment rates the estimated perception of the development by viewers in terms of being positive, neutral, or negative.

The usual reaction to the sight of any new development, especially by those who know an area well, is negative, and that is likely to be the initial reaction to the proposed development by the viewers who live in the area, however, it is believed that, with time, the development will become part of the accepted landscape and achieve a neutral status although it is unlikely that it will be viewed as visually positive.

4.2.9 PROBABILITY OF THE IMPACTS OCCURRING

This quantifies the probability of the impact occurring as described in the text.

Probability of Occurrence	
Improbable	*<40% chance of occurring*
Possible	*40%-70% chance of occurring*
Probable	*>70% to 90% chance of occurring*
Definite	*>90% chance of occurring*

It is probable that the visual impacts described in this report will occur.

4.2.10 CONFIDENCE IN THE ASSESSMENT

This states the level of confidence that the visual assessor has in the assessments above. It is possible that, because of such factors as the availability or quality of the input data, the assessor may have more confidence in certain assessments than in others.

Confidence in the Assessments	
Low	*Data is insufficient or unavailable and further input may change the assessment*
Medium	*Some data is inadequate or unavailable but it is unlikely that the assessment will change significantly.*
High	*The available data is detailed and accurate leading to high confidence in the assessments*

The confidence in the findings of this report is medium-high provided that the eventual development stays within the parameters described in the development plans and the architectural typologies. Any significant changes to the layout, number of structures, or their architectural character could invalidate the findings of this report.

4.2.11 CUMULATIVE IMPACTS

The development of the site will represent a cumulative visual impact on the existing environment as a result of the development footprint in the area being extended.

As the development will fill the last open area within the local urban edge, provided that the urban edge is not changed, there should be no further cumulative visual impacts in future.

RECOMMENDED MITIGATION MEASURES

5.1 Introduction

Several of the mitigation measures mentioned below have already been taken into consideration in the layout of alternative 2. The basic principles that are required for visual mitigation are however repeated here so that they can be used as a basis for any potential future changes to the development, should this be necessary, as the final detailed planning is undertaken.

5.2 Buffer Zone Areas

It is essential that the buffer zone areas along Bo Dal Road and the southern boundary as demarcated in the Alternative 2 layout be retained should the layout be altered in any way.

Erf 33027 at the north east corner of the site, which has been omitted from the Alternative 2 layout, should be reincorporated into the buffer zone along the Bo Dal Road edge. This is the most botanically sensitive area and making it part of the conservation area will minimise the potential for future development on the erf and permanently formalise the visual buffer zone.

The buffer zone adjacent to Bo Dal Road will provide a significant reduction in the intensity of the visual impact on the road and the areas on the slopes to the east, and will create a soft urban edge that maintains the demarcation between the urban areas to the west and the agricultural/rural areas to the east in a visually sensitive way.

Groups of trees are to be planted in random locations within this area. The positioning of the trees is to be determined by a botanical specialist in consultation with a landscape architect so that both the conservation objectives to preserve the fynbos identified by the botanist, and the visual mitigation objectives are met.

The aim of the visual mitigation is not to hide the development, but rather to break up the perceived density of the development to views from the road. The longitudinal views along the road should include only limited glimpses of the development when traveling in both directions while allowing intermittent views of the development when looking west perpendicular to the road.

The fact that the outer edges of the Alternative 2 layout largely consist of road reserves is seen as positive as this will allow for the front of the houses to face onto the buffer zones. These are generally better maintained than the backyards of the properties which may be cluttered by the accumulation of visually unacceptable detritus and lean-to structures etc.

There are a few properties which are an exception to this along both the eastern edge, (Bo Dal Road,) and the southern boundary. Special attention must be paid to mitigating the potential negative impacts of the backyards of these properties when placing the tree groups.

Groups of trees are also to be planted along the southern buffer zone with the aim of breaking up the perceived density of the development and softening its edge to views from the historic werwe.

(A tree line along this edge was contemplated but this would constitute a significant visual impact in itself and its maintenance may be problematic. Additionally, as a result of the slope, the trees would have to be very tall to entirely shield the development and finding suitable indigenous species would be difficult. This idea was therefore rejected.)

A list of suitable trees supplied by the botanical specialist is included in Addendum 2

It will be difficult to ensure that the buffer zones do not become places for littering and dumping. It is therefore suggested that from the outset a means is found to create some buy-in from the community to preserve and maintain these areas.

5.3 Architectural

- No two storey buildings are to be placed in the lower third of the development along the southern boundary. The additional distance between these buildings and the historic werwe will lower the intensity of the visual impact on them substantially.
- Special care is to be given to the design of the Jan van Riebeeck Drive elevation of the two storey flats. It is essential that this elevation does no present a back face to the road. These elevations are to be fully articulated and not display external piping etc.
- The buildings should be staggered slightly so that the perception of a monolithic wall of development along the road is prevented. Colours and textures can also be used to achieve this aim.

5.4 Colours and finishes

- In general colours and textures must be chosen for their ability to blend into the surrounding environment with light earth-tones being predominant.
- Variation of colours, textures and finishes should be used to break up the apparent density of the development.
- Generally the roofs are to be medium to dark grey as this is the colour that best blends into the environment in all light conditions and across the seasonal colour changes. Other colours can be considered to provide contrast provided they are muted and do not call attention to themselves. No bright or contentious colours for the roofs, including green, are to be allowed.

5.5 Landscaping

- Apart from the planting in the buffer zones mentioned above, landscaping will be key in creating and maintaining a visually acceptable environment which is appropriate to the existing visual context.
- Vegetative screening by means of trees and shrubs must be used to break up the perceived scale of the development to views from Jan van Riebeeck Drive.
- Tree planting within the development should be encouraged for both the individual erven, and the public spaces, schools etc. This will be the continuation of a long tradition of tree planting in the Paarl area and will provide for significant mitigation of the intensity of the visual impact over time as the trees mature. It will also create a far better quality of visual environment within the community itself.

5.6 Lighting

- It is essential that light spillage and pollution be kept to an absolute minimum. To this end all external lighting must be shielded in such a way that only the area that is meant to be lit is actually lit, and light is not allowed to spill into the surrounding landscape.
- The aim is to have no naked light sources, i.e. the light bulbs themselves, visible from outside the site. Only reflected light should be visible away from the site. This is especially true of the street lighting and any security lighting that may be installed. (Note that lights with translucent shields are considered to be direct sources of light and should also not be used where they can be seen away from the site.)
- Please see Addendum 3 for guidelines concerning the use of lighting.

5.7 Fencing

- All fencing along the outer boundaries of the site is to be visually permeable. No solid walls or vibracrete type fencing is to be used. This is especially true for the Jan van Riebeeck Drive boundary where a 'barrier' effect is to be prevented at all costs.
- Vegetative screening of the fencing is to be encouraged where possible and appropriate.
- Razor wire should not be used. Where security measures are necessary, visually unobtrusive solutions must be found.

5.8 Construction Phase

- There is to be a strict ban on any construction activities outside of the development area and construction workers are to be prevented from using the buffer zones for any purpose whatsoever. These are essentially conservation areas and must be protected as such.
- All stock piles of buildings materials are to be protected against dispersion by any means into the surrounding terrain. This is especially true of cement and diesel which can have a significant long-term negative effect on visual environment if inappropriately used.
- All builders' rubble is to be removed from the site timeously and dumped at a registered dump site.
- All construction scars are to be rehabilitated immediately after construction is complete. This is especially true for all activities related to the supply of infrastructure, some of which may be outside the development area. (i.e. sewer and water connections, etc.)
- The generation of dust is to be strictly limited.
- Litter is to be strictly controlled.

6 CONCLUSION AND RECOMMENDATIONS

The site has a medium visual absorption capacity due to the presence of other similar development in the area. The development footprint will be enlarged but no new visual elements will be introduced into the overall landscape.

It is vitally important the interface along the urban edge with Bo Dal Road is properly mitigated. The expansion of the buffer zone along this edge in Alternative 2 along with the recommended mitigation screening will ensure that this edge is softened and the demarcation between the urban and agricultural areas is handled in a visually sensitive manner.

The mitigation of the southern edge of the development is also vitally important so that the visual impact on the historical erven to the south of the site is minimised.

Mitigation will also have to be undertaken along Jan van Riebeeck Drive to soften the visual impact of the double storey buildings along this edge.

With full mitigation the overall significance of the visual impact has been assessed as medium-low for Alternative 2 and this is considered acceptable for a development of this size and nature. It is therefore recommended that the project be allowed to proceed provided that the mitigation measures are implemented in full.

ADDENDUM 1

Architectural Typologies

TYPICAL HOUSING TYPOLOGIES

Vlakkeland Housing Development

INNOVATIVE PLANNING SOLUTIONS

NuPLAN AFRICA

INTRODUCTION

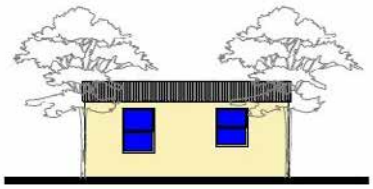
As part of the appointment, the PRT was requested to prepare examples for a range of typical typologies that can be used in the implementation phases of the project. The typologies as explored represent examples of top structures that meet the norms and standards of DOHS for subsidy and GAP and rental markets.

The subsidy units represent typologies ranging from single free standing units, semi-detached single storey units, single storey row units as well as semi-detached double storey and row units. GAP units range from single free standing, single semi-detached as well as double storey semi-detached units. Rental blocks depict typical CRU units but could vary depending on the actual need.

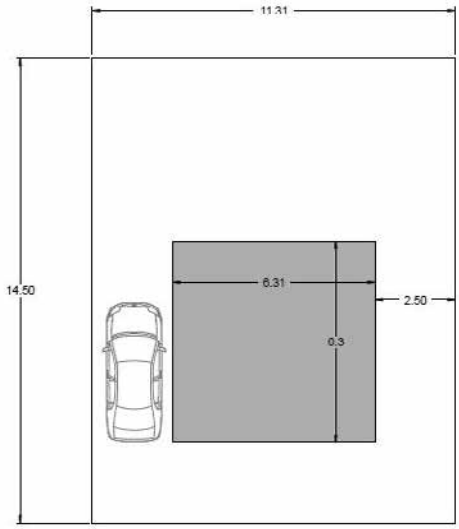
SUBSIDY: Single Freestanding

Floor Plan

Typical Elevation



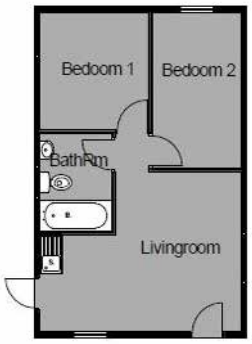
Site Plan



Notes:

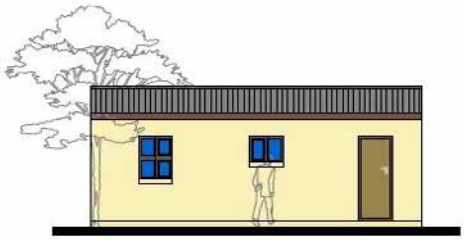
Erf Size : 164 sqm
Unit Size : 40 sqm

ASLA CONSTRUCTION

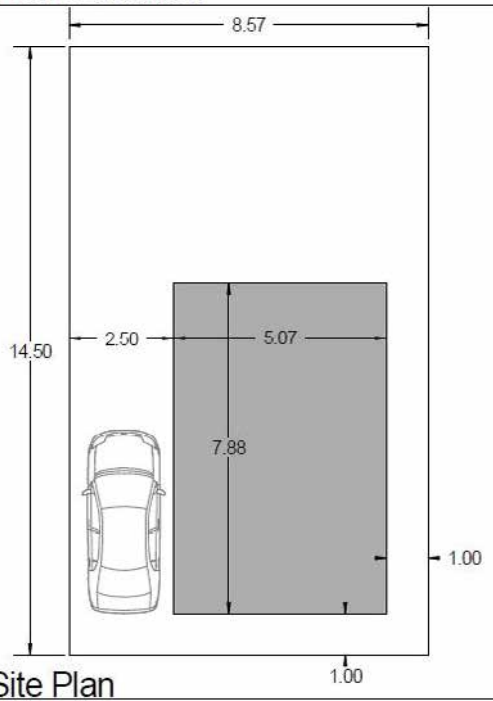


Ground Floor Plan

Front Elevation



Typical Elevation



Site Plan

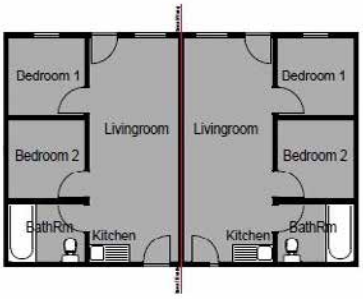
Notes:

Erf Size : 124 sqm
Unit Size : 40 sqm

BRAINWAVE
PROJECTS 1921cc
P.O. BOX 4035 • DURBANVILLE • 7551 • TEL : 021 905 3068 • FAX: 021 905 6124

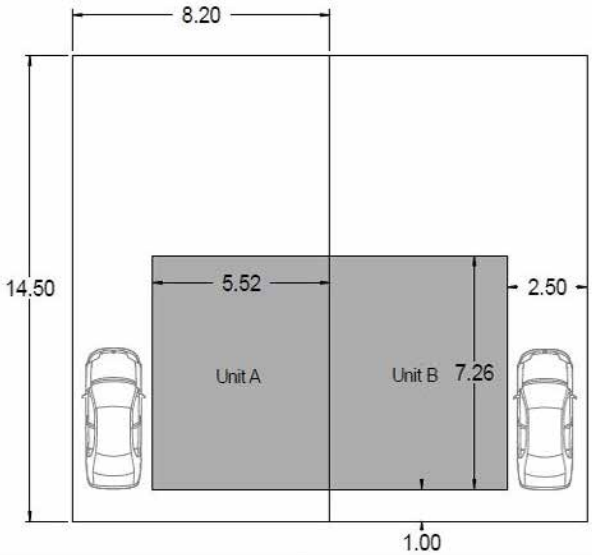
SUBSIDY: Single Semi-Detached

Floor Plan



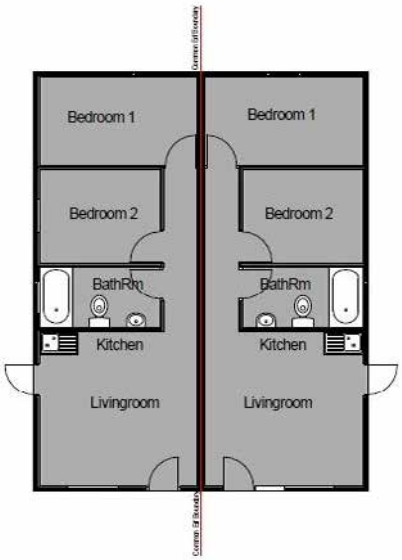
Typical Elevation

Site Plan

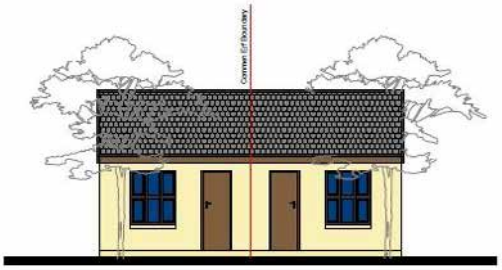


Notes:

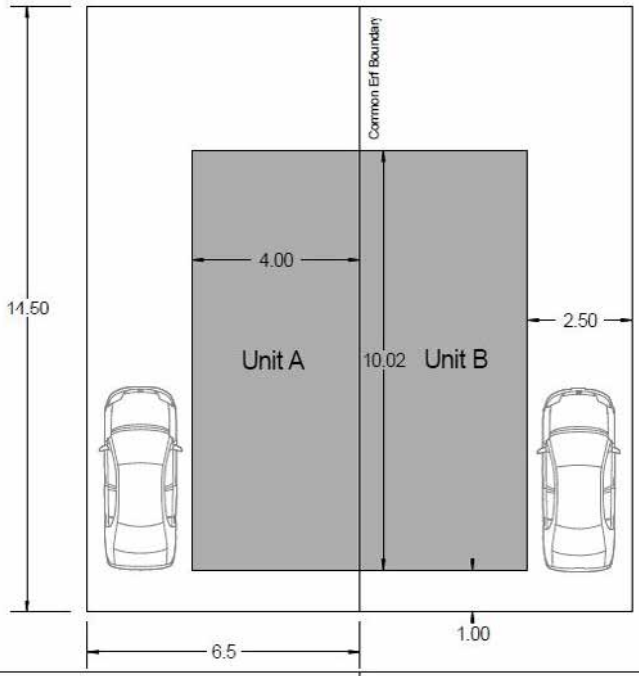
Erf Size : 116 sqm
Unit Size : 40 sqm



Ground Floor Plan



Typical Elevation



Site Plan

Notes:

Erf Size : 94 sqm
Unit Size : 40 sqm

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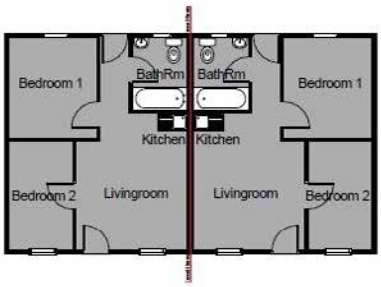
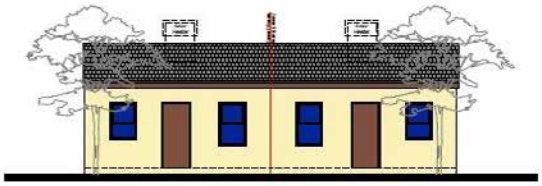
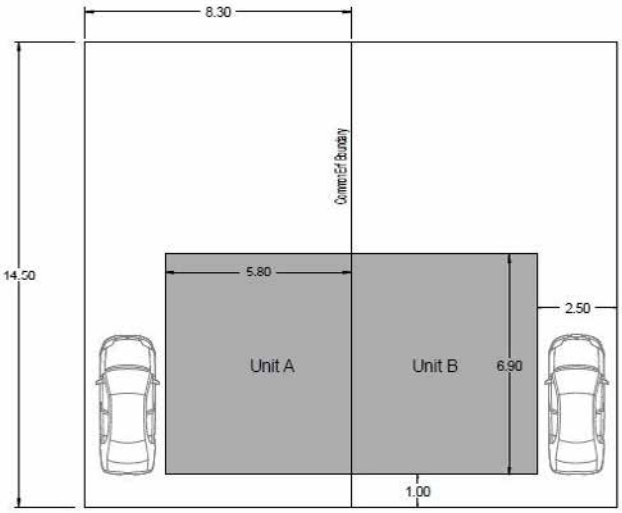
Floor Plan



Typical Elevation



Site Plan



Notes:

Erf Size : 120 sqm
Unit Size : 40 sqm

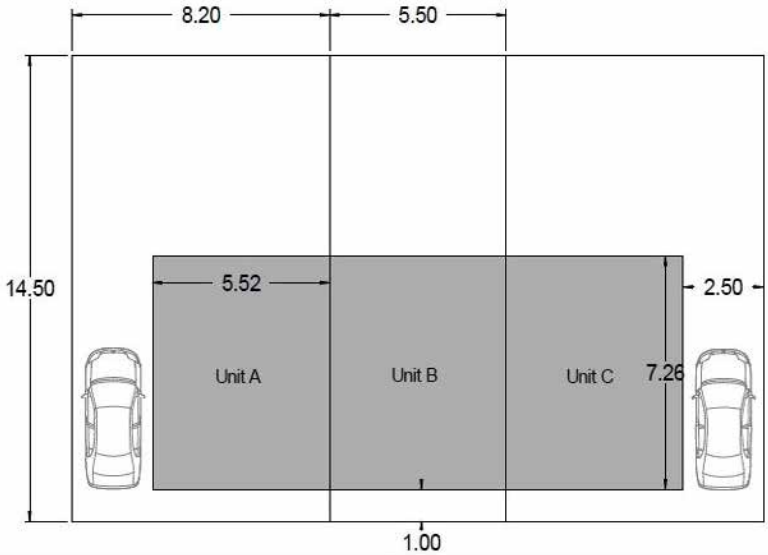
POWER GROUP

SUBSIDY: Single 3 Row Housing

Floor Plan

Typical Elevation

Site Plan

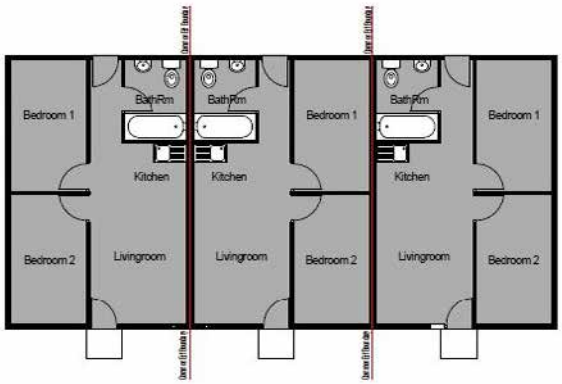


Notes:

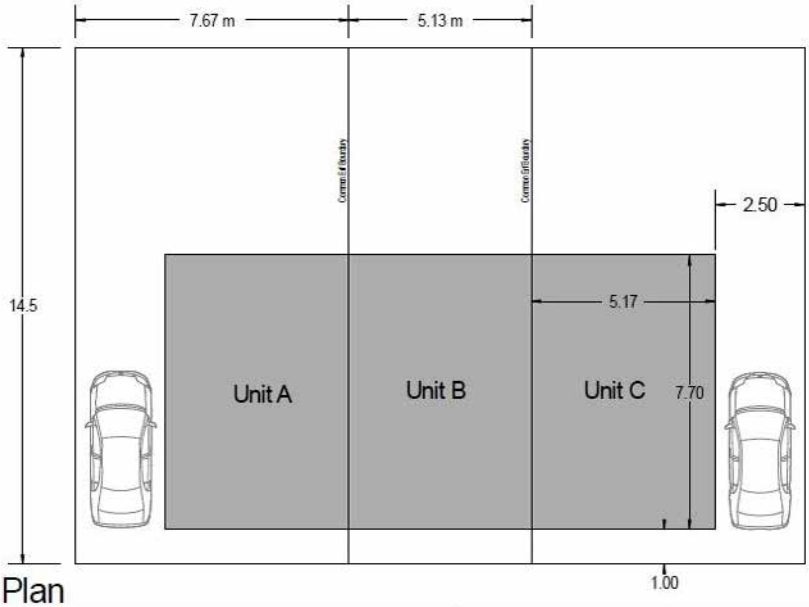
Erf Size (Outside) : 116 sqm Erf Size (Inside) : 80 sqm
Unit Size (Outside) : 40 sqm Unit Size (Inside) : 40 sqm

ASLA CONSTRUCTION

Floor Plan



Typical Elevation



Site Plan

Notes:

Erf Size (Outside) : 112 sqm Erf Size (Inside) : 75 sqm
Unit Size (Outside) : 40 sqm Unit Size (Inside) : 39 sqm

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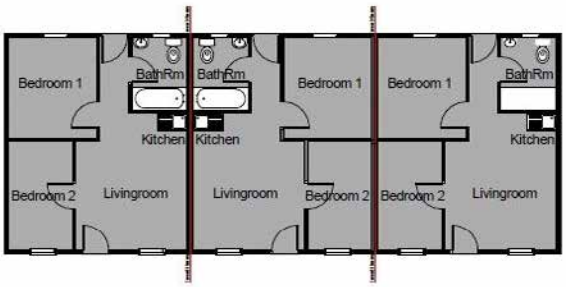
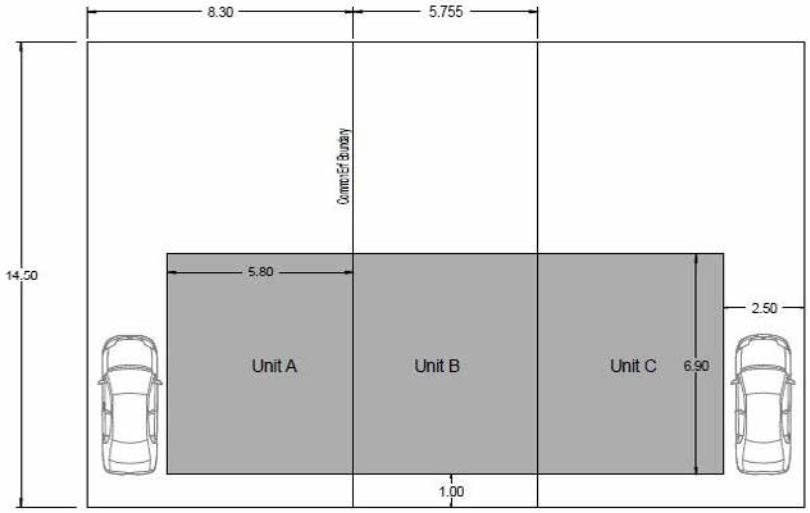
Floor Plan



Typical Elevation

Site Plan



Notes:

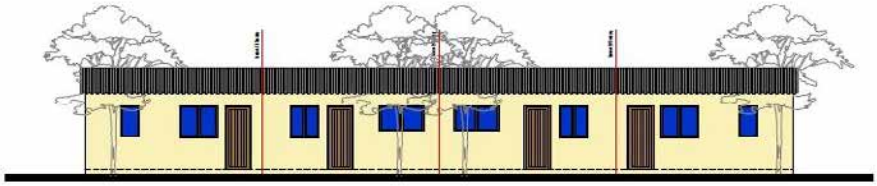
Erf Size (Outside) : 120 sqm Erf Size (Inside) : 84 sqm
Unit Size (Outside) : 40 sqm Unit Size (Inside) : 40 sqm

POWER GROUP

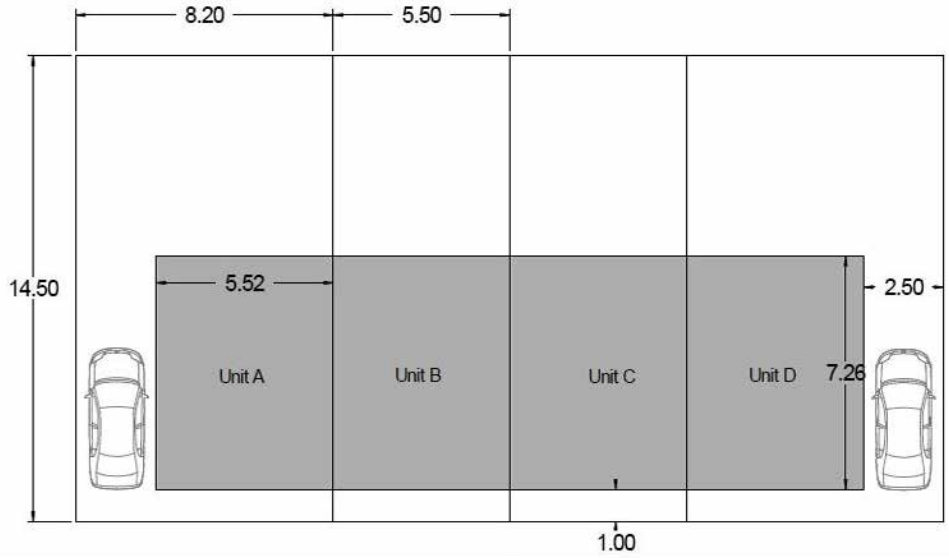
SUBSIDY: Single 4 Row Housing

Floor Plan

Typical Elevation



Site Plan

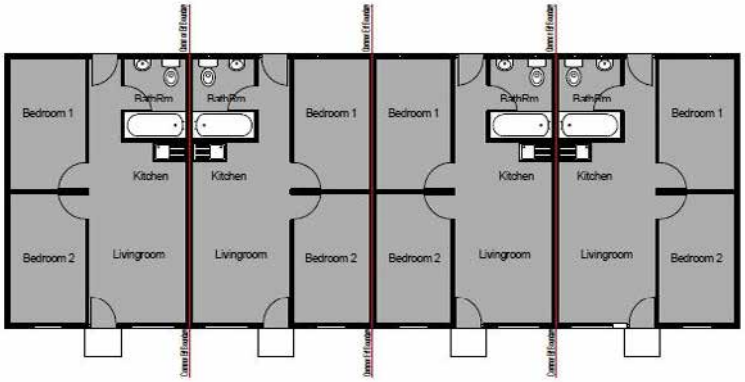


Notes:

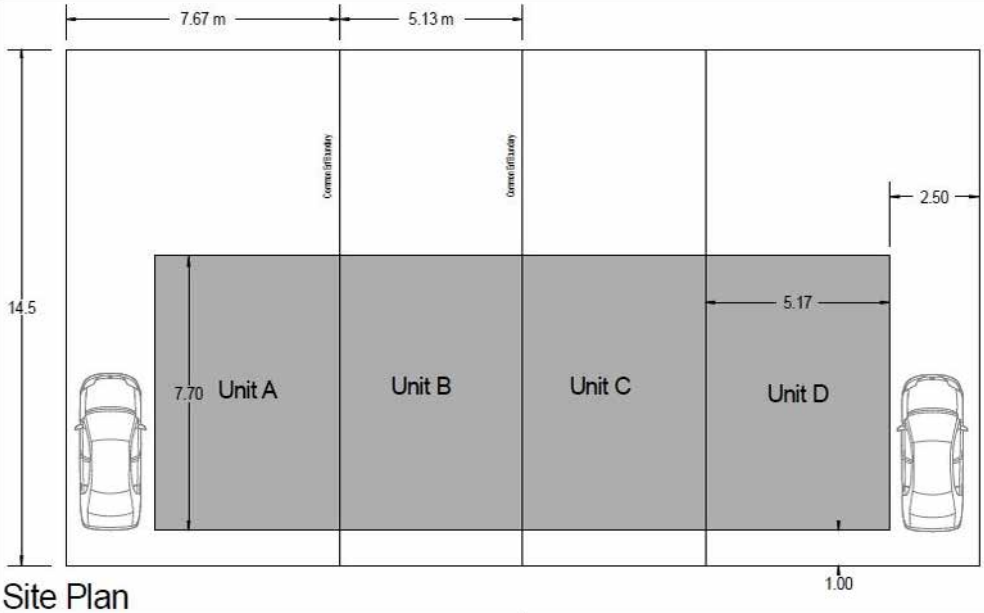
Frf Size (Outside) : 116 sqm Frf Size (Inside) : 80 sqm
Unit Size (Outside) : 40 sqm Unit Size (Inside) : 40 sqm

ASLA CONSTRUCTION

Floor Plan



Typical Elevation



Site Plan

Notes:

Erf Size (Outside) : 112 sqm Erf Size (Inside) : 75 sqm
Unit Size (Outside) : 40 sqm Unit Size (Inside) : 39 sqm

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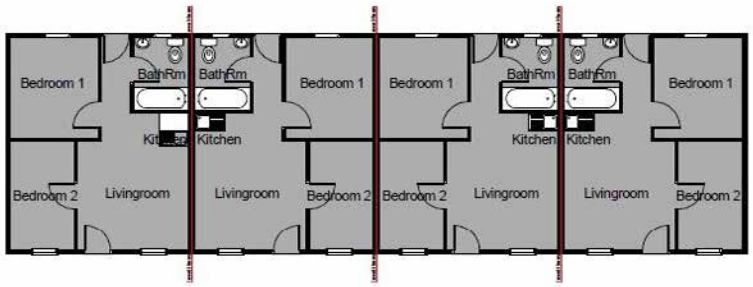
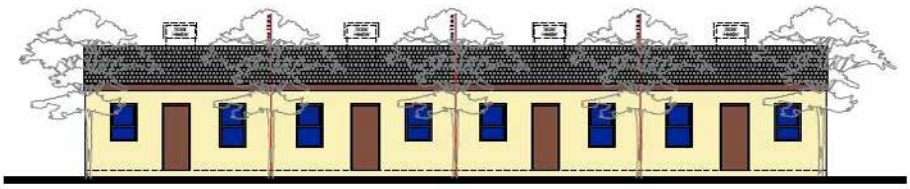
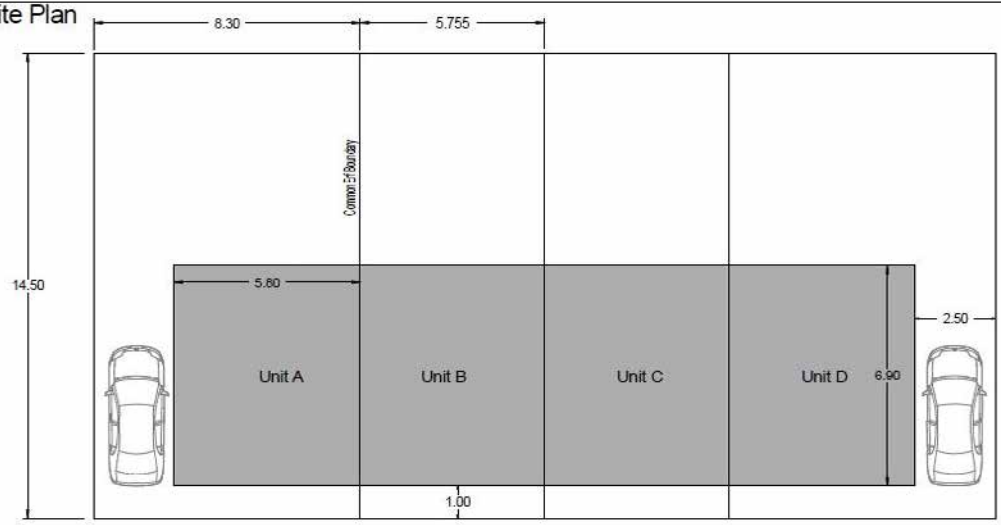
Floor Plan



Typical Elevation



Site Plan



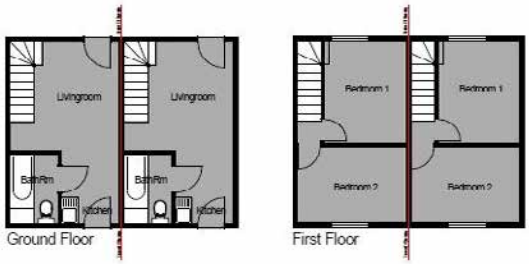
Notes:

Erf Size (Outside) : 120 sqm Erf Size (Inside) : 84 sqm
Unit Size (Outside) : 40 sqm Unit Size (Inside) : 40 sqm

POWER GROUP

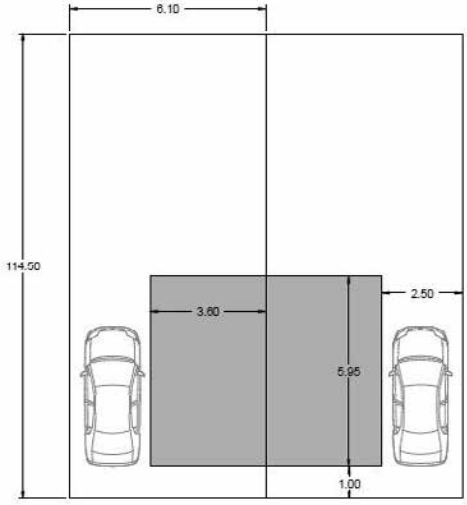
SUBSIDY: Double Storey Semi-Detached

Floor Plan



Typical Elevation

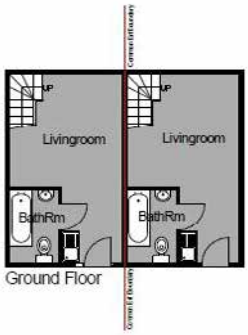
Site Plan

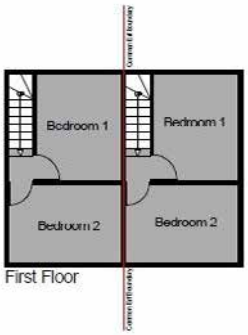


Notes:

Frf Size : 88 sqm
Unit Size : 44 sqm

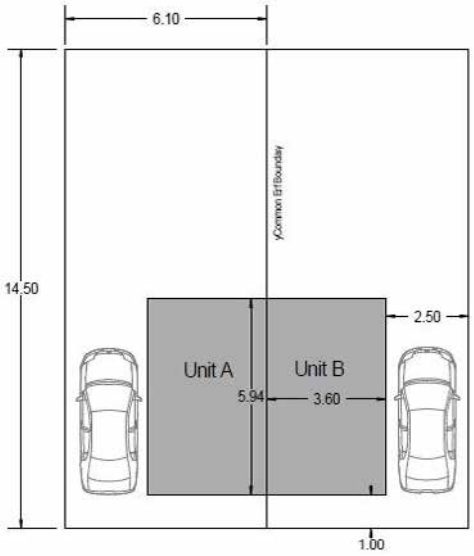
ASLA CONSTRUCTION





Floor Plans

Typical Elevation



Site Plan

Notes:

Erf Size : 88 sqm
Unit Size : 44 sqm

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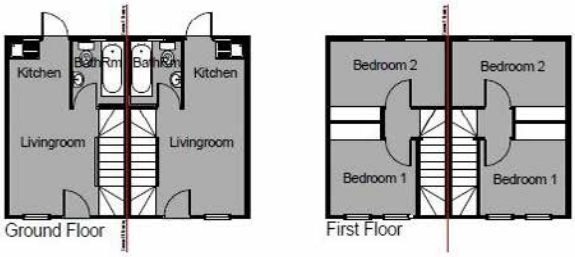
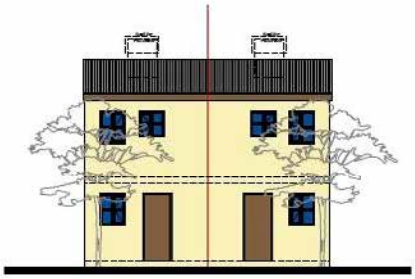
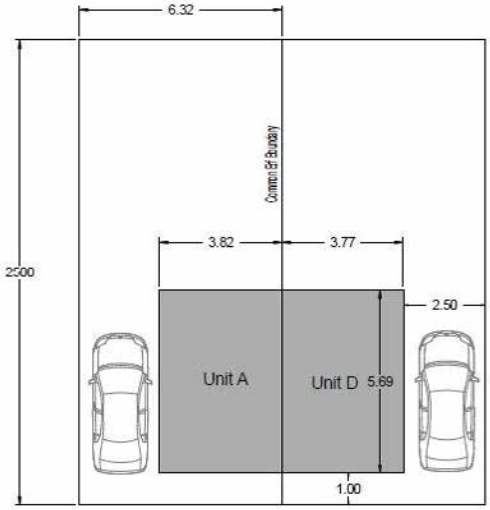
Floor Plan



Typical Elevation



Site Plan



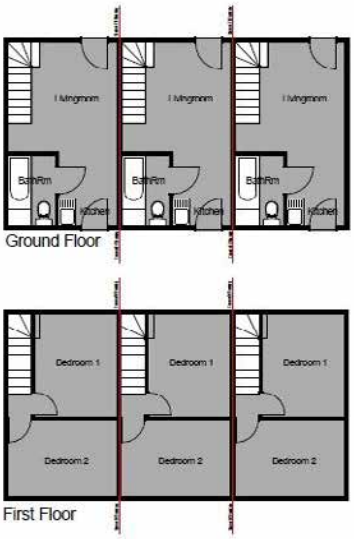
Notes:

Erf Size : 92 sqm
Unit Size : 44 sqm

POWER GROUP

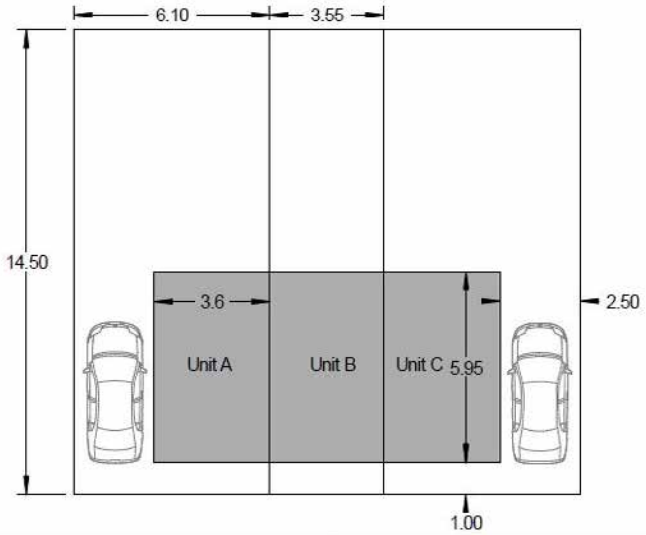
SUBSIDY: Double Storey 3 Row Housing

Floor Plan



Typical Elevation

Site Plan

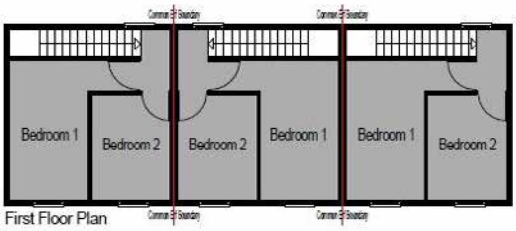


Notes:

Frf Size (Outside) : 88 sqm
Unit Size (Outside) : 44 sqm
Frf Size (Inside) : 52 sqm
Unit Size (Inside) : 44 sqm

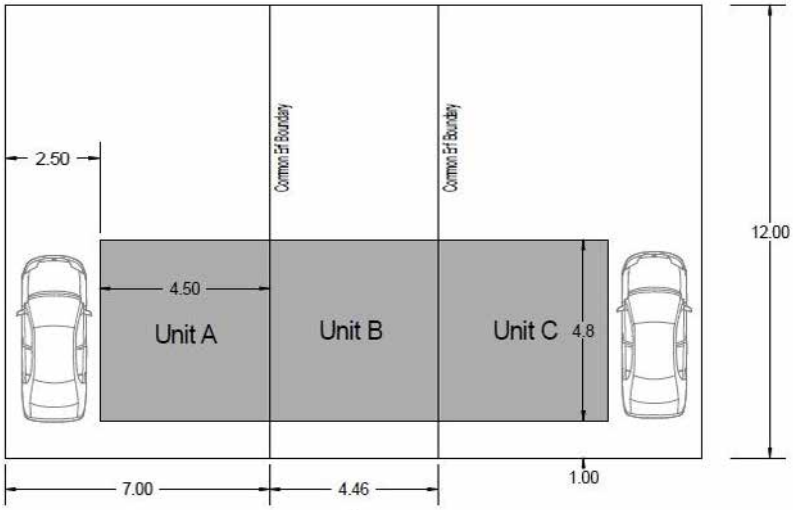
ASLA CONSTRUCTION

Floor Plan



Typical Elevation

Site Plan



Notes:

Erf Size (Outside) : 84 sqm Erf Size (Inside) : 54 sqm
Unit Size (Outside) : 44 sqm Unit Size (Inside) : 42 sqm

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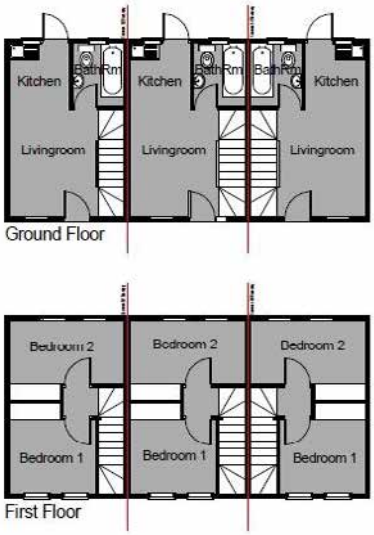
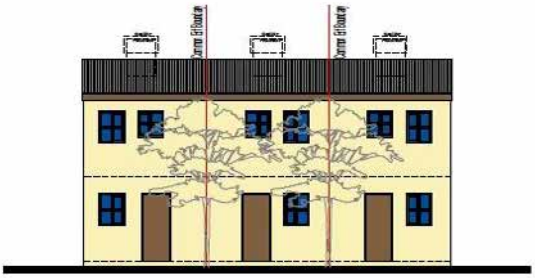
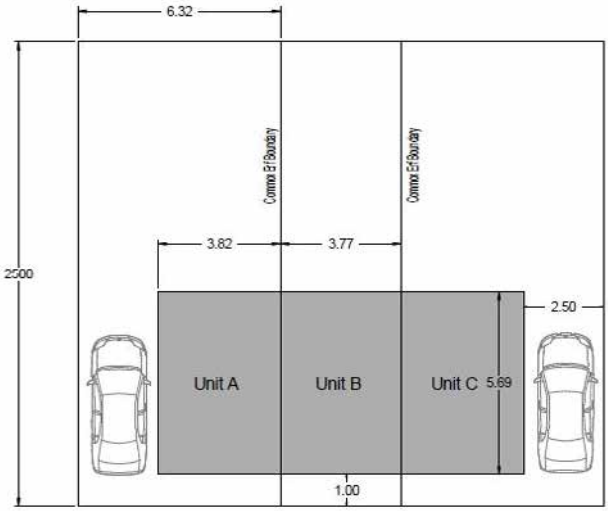
Floor Plan



Typical Elevation



Site Plan



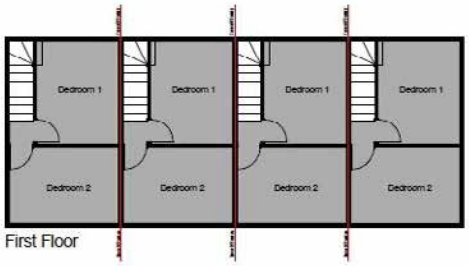
Notes:

Erf Size (Outside) : 92 sqm Erf Size (Inside) : 55 sqm
Unit Size (Outside) : 44 sqm Unit Size (Inside) : 42 sqm

POWER GROUP

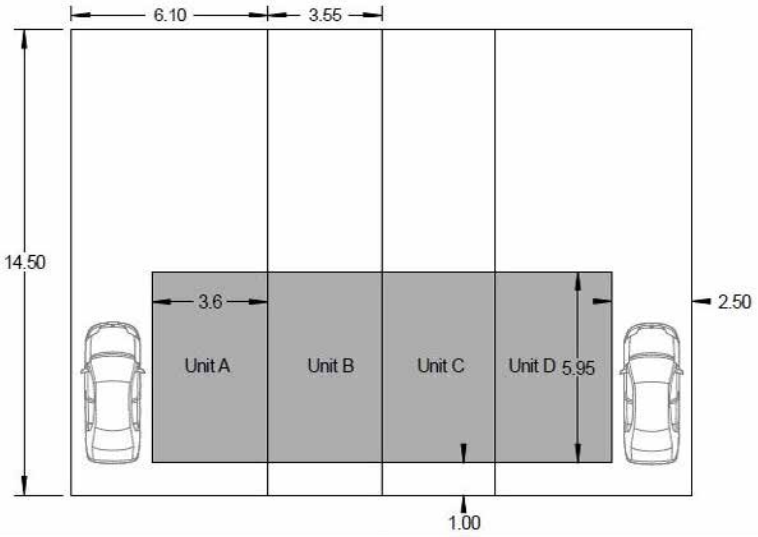
SUBSIDY: Double Storey 4 Row Housing

Floor Plan



Typical Elevation

Site Plan

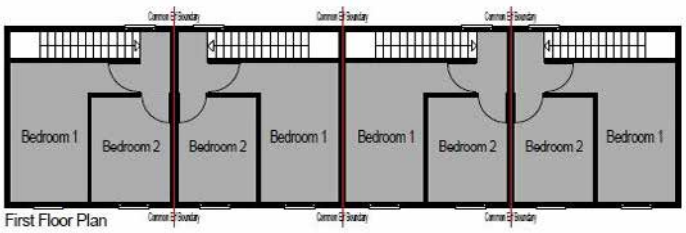


Notes:

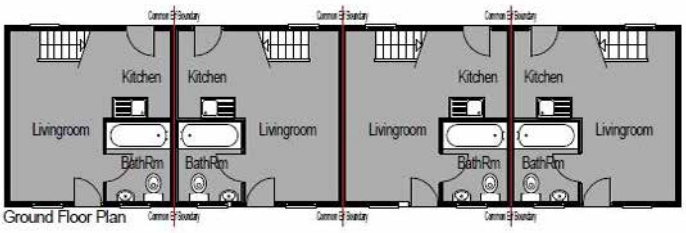
Frf Size (Outside) : 88 sqm Frf Size (Inside) : 52 sqm
Unit Size (Outside) : 44 sqm Unit Size (Inside) : 44 sqm

ASLA CONSTRUCTION

Floor Plan

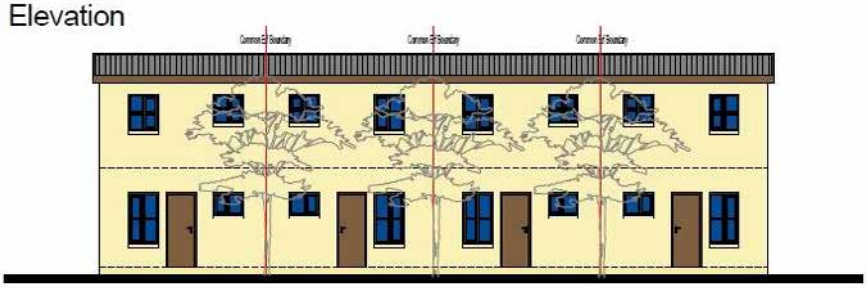


First Floor Plan

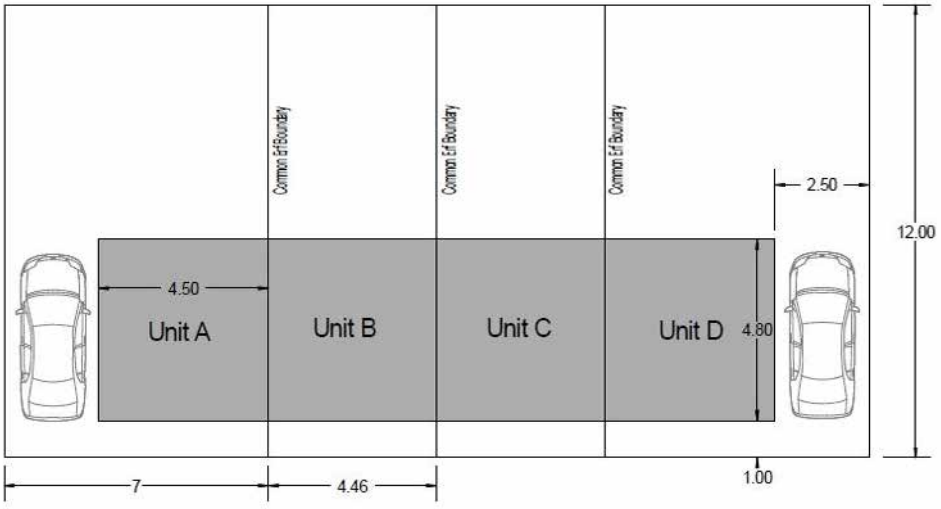


Ground Floor Plan

Typical Elevation



Site Plan



Notes:

Erf Size (Outside) : 84 sqm Erf Size (Inside) : 54 sqm
Unit Size (Outside) : 44 sqm Unit Size (Inside) : 42 sqm

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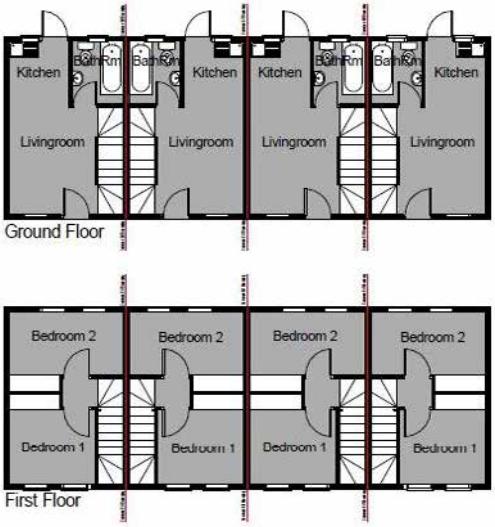
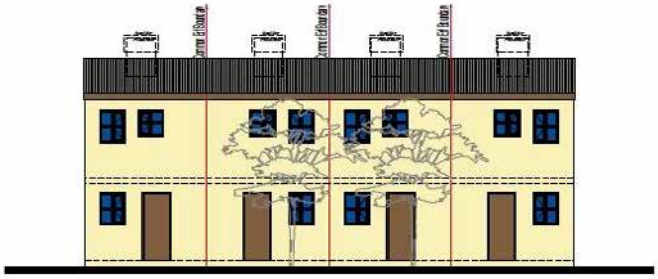
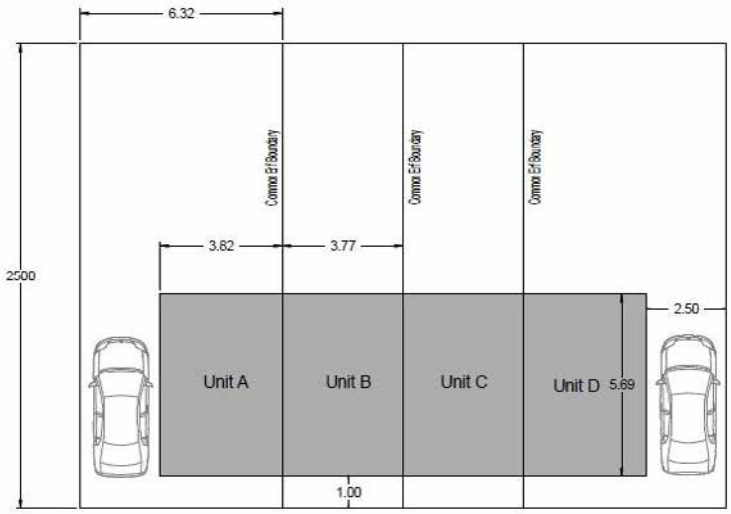
Floor Plan



Typical Elevation



Site Plan



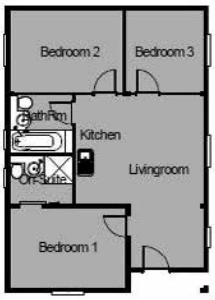
Notes:

Erf Size (Outside) : 92 sqm Erf Size (Inside) : 55 sqm
Unit Size (Outside) : 44 sqm Unit Size (Inside) : 42 sqm

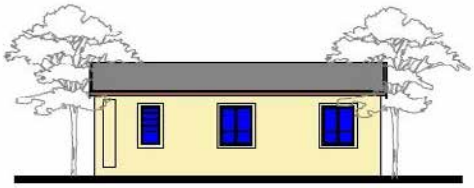
POWER GROUP

GAP: Single Storey Freestanding

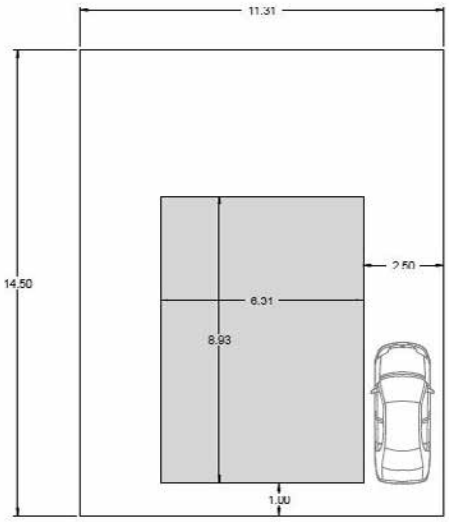
Floor Plan



Typical Elevation



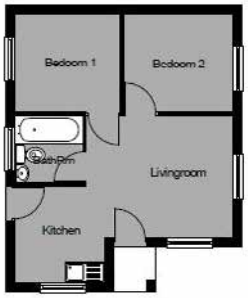
Site Plan



Notes:

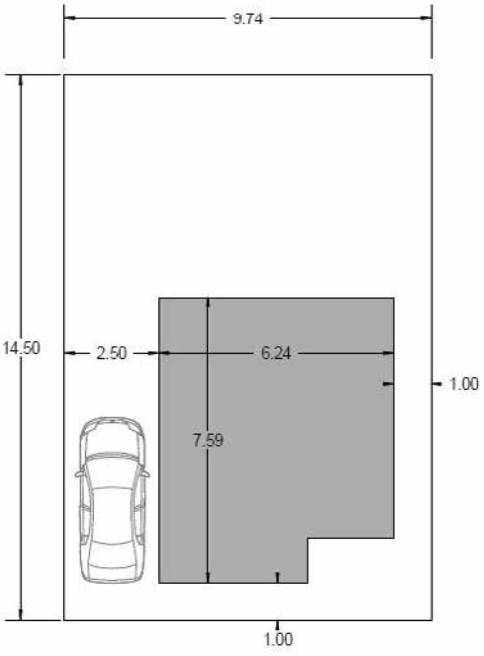
Erf Size : 165 sqm
Unit Size : 56 sqm

ASLA CONSTRUCTION



Ground Floor Plan

Typical Elevation



Site Plan

Notes:

Erf Size : 141 sqm
Unit Size : 45 sqm

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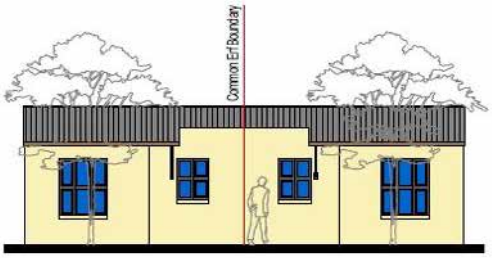
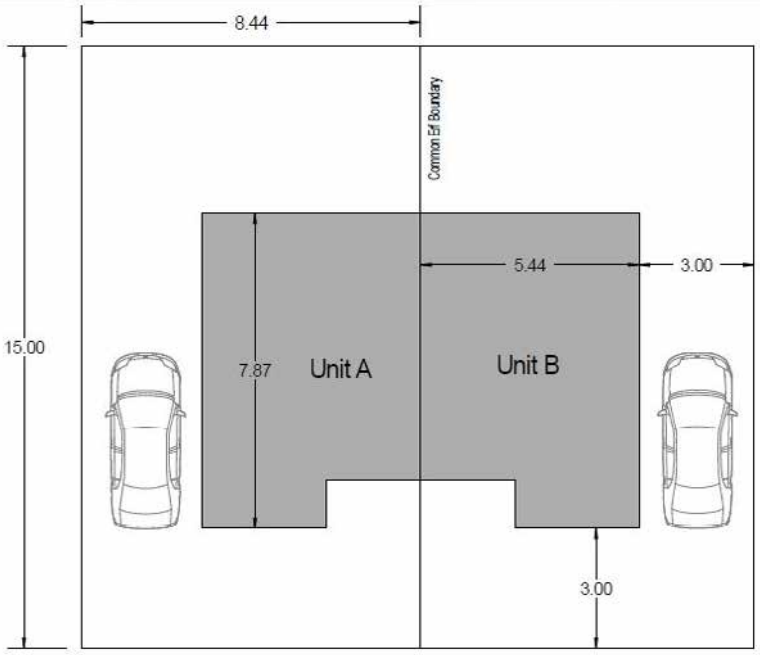
GAP: Single Storey Semi Detached

Ground Floor Plan



Typical Elevation



Site Plan

Notes:

Erf Size : 127 sqm
Unit Size : 40 sqm

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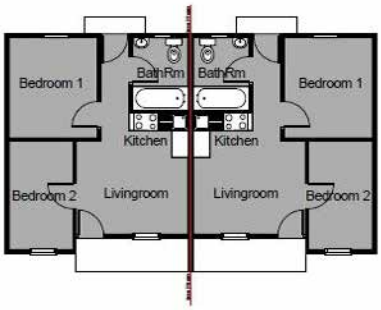
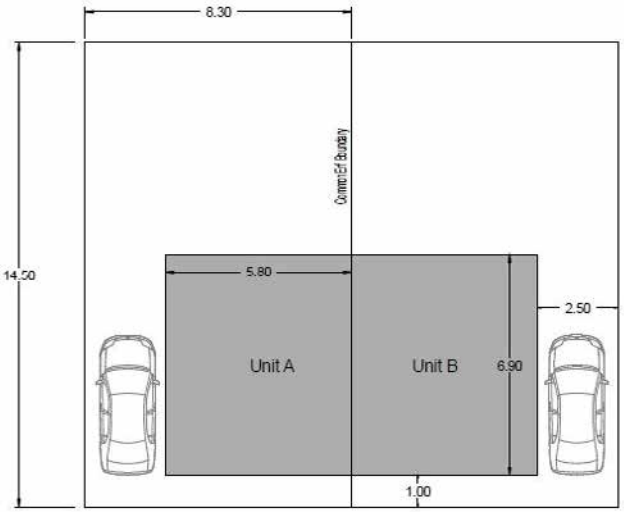
Floor Plan



Typical Elevation

Site Plan

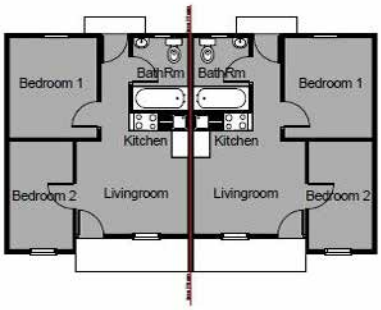


Notes:

Erf Size : 120 sqm
Unit Size : 40 sqm

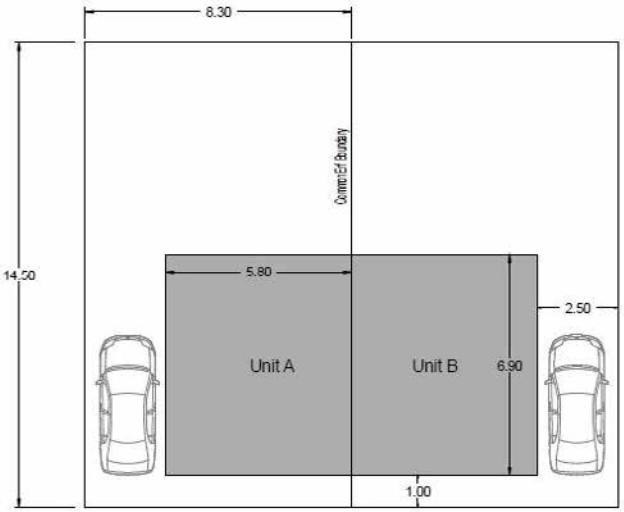
POWER GROUP

Floor Plan



Typical Elevation

Site Plan



Notes:

Erf Size : 120 sqm
Unit Size : 40 sqm

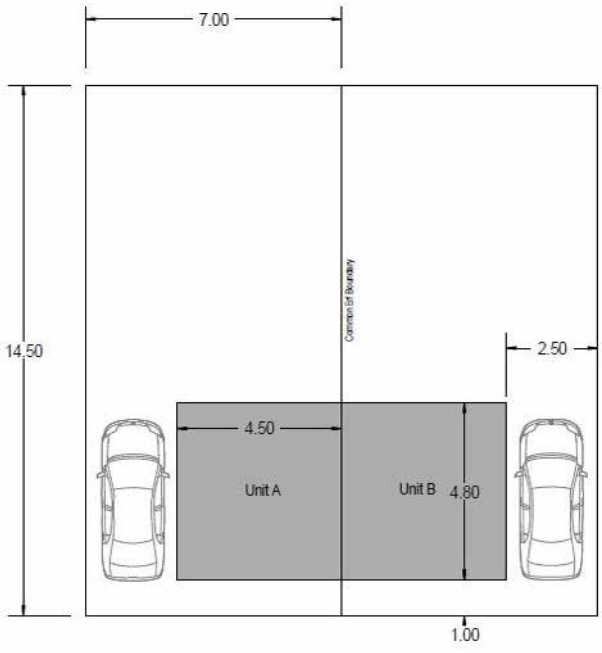
POWER GROUP

GAP: Double Storey Semi Detached

Floor Plans

Typical Elevation

Site Plan



Notes:

Erf Size : 102 sqm
Unit Size : 44 sqm

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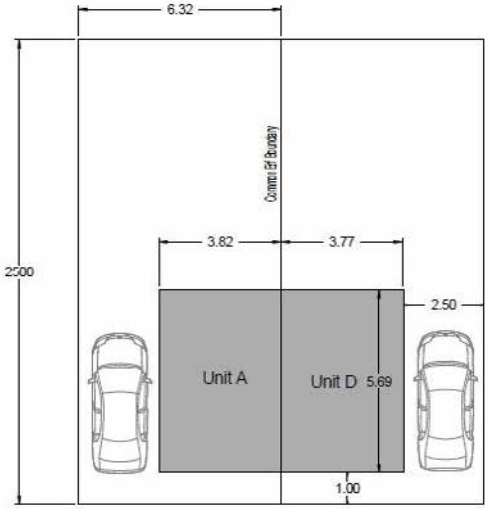
Floor Plan

Typical Elevation

Site Plan



Notes:

Erf Size : 92 sqm
Unit Size : 44 sqm

POWER GROUP

Rental Units (CRU's)

ADDENDUM 2

Proposed Tree List

APPROPRIATE TREE SPECIES FOR USE IN THE BUFFER ZONES

ENDEMIC trees

Wild olive (*Olea europaea* su*bsp. africana*)

Wild camphor bush (*Tarchonanthus camphoratus*)

Rockwood (*Heeria argentea*)

Rock candlewood (*Maytenus oleoides*)

Laurel protea (*Protea laurifolia*)

Waboom (*Protea nitida*)

Suikerbos (*Protea repens*)

Hard pear (Olinia ventosa)

Wild peach (*Kiggelaria africana*)

Silky bark (*Maytenus acuminata*)

Cape saffron (*Cassine peragua*)

Cape holly (*Ilex mitis*) needs high water table

Rooi Els (*Cunonia capensis*) needs high water table

Wild almond (*Brabejum stellatifolium*) needs high water table

Cape gum (*Metrosideros angustifolia*) needs high water table

Shrubs

Searsia lucida

Searsia glauca

Leucospermum grandiflorum

INDIGENOUS BUT NOT ENDEMIC

Water berry (*Syzigium cordatum*) can grow in areas with high water table

ADDENDUM 3

Lighting Pamphlet

Good Neighbor OUTDOOR LIGHTING

PRESENTED BY THE NEW ENGLAND LIGHT POLLUTION ADVISORY GROUP (NELPAG) AND SKY PUBLISHING CORP.

What is good lighting?

Good outdoor lights improve visibility, safety, and a sense of security, while minimizing energy use, operating costs, and ugly, dazzling glare.

Why should we be concerned?

Many outdoor lights are poorly designed or improperly aimed. Such lights are costly, wasteful, and distractingly glary. They harm the nighttime environment and neighbors' property values.

Glare Here's the basic rule of thumb: If you can see the bright bulb from a distance, it's a bad light. With a good light, you see lit ground instead of the dazzling bulb. "Glare" is light that beams directly from a bulb into your eye. It hampers the vision of pedestrians, cyclists, and drivers.

Light Trespass Poor outdoor lighting shines onto neighbors' properties and into bedroom windows, reducing privacy, hindering sleep, and giving the area an unattractive, trashy look.

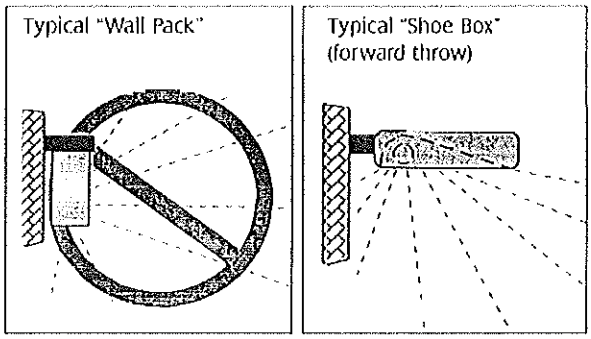
Energy Waste Many outdoor lights waste energy by spilling much of their light where it is not needed, such as up into the sky. This waste results in high operating costs. We waste over a billion dollars a year in the United States needlessly lighting the night sky.

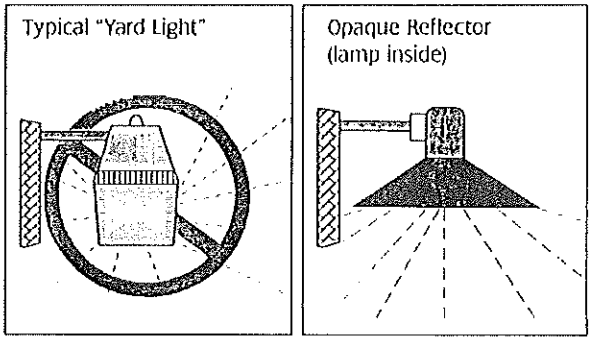
Sky Glow Rays that beam uselessly above the horizon create murky skyglow – the "light pollution" that washes out our view of the stars.

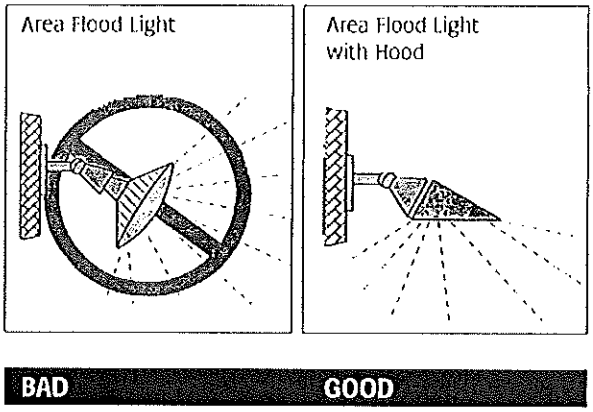
How do I switch to good lighting?

1 Provide only enough light for the task at hand; don't over-light, and don't spill light off your property. Specifying enough light for a job is sometimes hard to do on paper. Remember that a full Moon can make an area quite bright. Some lighting systems illuminate areas 100 times more brightly than the

Some Good and Bad Light Fixtures







full Moon! More importantly, by choosing properly shielded lights, you can meet your needs without bothering neighbors or polluting the sky.

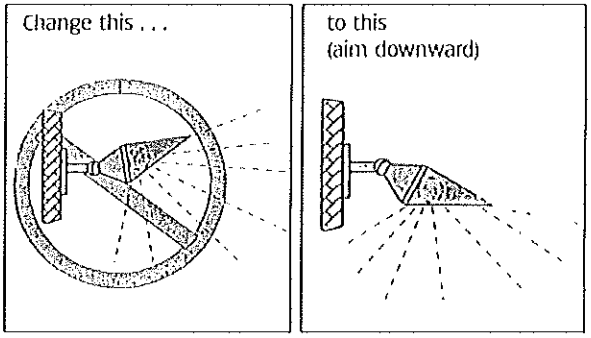
2. Aim lights down. Choose "full-cutoff shielded" fixtures that keep light from going uselessly up or sideways. Such fixtures produce minimum glare. They create a pleasant-looking environment. They increase safety because you see illuminated people, cars, and terrain, not dazzling bulbs.
3. Install fixtures carefully to maximize their effectiveness on the targeted area and minimize their impact elsewhere. Proper aiming of fixtures is crucial. Most are aimed too high. Try to install them at night, when you can see where all the rays actually go.

   Properly aimed and shielded lights may cost more initially, but they save you far more in the long run. They can illuminate your target with a low-wattage bulb just as brightly as a wasteful light does with a high-wattage bulb.
4. Choose energy-efficient low-pressure sodium (LPS) or high-pressure sodium (HPS) lamps wherever yellowish light will do the job. Use less efficient white lights only where ideal color rendition is important.
5. Where feasible, put lights on timers to turn them off each night after they are no longer needed. Put home security lights on a motion-detector switch, which turns them on only when someone enters the area; this provides a great deterrent effect!

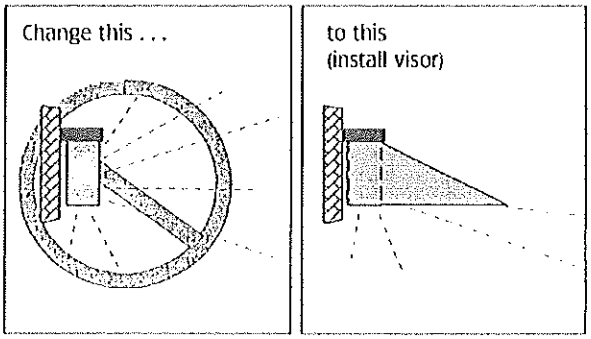
Replace bad lights with good lights.

You'll save energy and money. You'll be a good neighbor. And you'll help preserve our view of the stars.

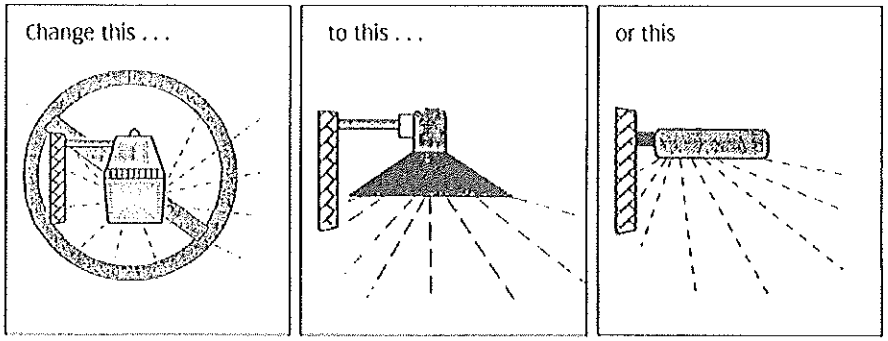
What You Can Do To Modify Existing Fixtures



FLOOD LIGHT



WALL PACK



YARD LIGHT | OPAQUE REFLECTOR | SHOE BOX

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(http://cfa-www.harvard.edu/cfa/ps/nelpag.html) and
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We urge all individuals and groups interested in the problems of light pollution and obtrusive lighting to support the IDA and subscribe to its newsletter. IDA membership costs $30 per year; send your check to IDA, 3225 N. First Avenue, Tucson, AZ 85719, U.S.A.

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