05.05.2011
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CORNUBIA

FRAMEWORK PLAN and PHASE 1
DESIGN REPORT

IYER®
URBAN DESIGN STUDIO
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NOTE: THIS REPORT SHOULD BE READ IN CONJUNCTION WITH THE FOLLOWING:

Framework: CORN – FWORK – 010 – 08 – 10
Phase 1: CORN – PH1 – 010 9396 – 09
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNG-</td>
<td>Breaking New Ground - This is an initiative by the National Department of Human Settlements in order to establish benchmark Integrated Human Settlement developments around the country.</td>
</tr>
<tr>
<td>dB-</td>
<td>Decibels - Noise contours are measured in decibels. A decibel measures sound pressure levels.</td>
</tr>
<tr>
<td>DFA-</td>
<td>Development Facilitation Act - It is an Act that was introduced to speed up the implementation of reconstruction and development programmes and projects.</td>
</tr>
<tr>
<td>DMOSS-</td>
<td>Durban Metropolitan Open Space System - It is a system of open spaces, that incorporates areas of high biodiversity value linked together in a viable network of open spaces. It provides an ideal opportunity to conserve many of South Africa’s open space systems.</td>
</tr>
<tr>
<td>EIA-</td>
<td>Environmental Impact Assessment - It is an assessment of the possible impact, positive or negative that a proposed project may have on the environment, together consisting of the natural, social and economic aspects (<a href="http://www.wikipedia.org">www.wikipedia.org</a>).</td>
</tr>
<tr>
<td>ETM-</td>
<td>eThekwini Municipality - Is a Metropolitan Municipality encompassing the City of Durban and its hinterland.</td>
</tr>
<tr>
<td>IDP-</td>
<td>Integrated Development Plan - It is a tool or process that the municipality uses which guides and informs all planning, management and decision-making. It is a strategic Development Plan produced in 5 year cycles to set budget priorities.</td>
</tr>
<tr>
<td>NMT-</td>
<td>Non-Motorised Transport - This includes all forms of movement that are human powered such as cycling, walking etc. This form of movement is encouraged and shift people away from the use of private motor vehicles.</td>
</tr>
<tr>
<td>NSDP-</td>
<td>Northern Spatial Development Plan - It is a plan developed by the eThekwini Municipality for the northern area of Durban to redress past imbalances and build for the future by responding to future needs and anticipated growth patterns and trends.</td>
</tr>
<tr>
<td>PDA-</td>
<td>Planning Development Act - The KwaZulu-Natal Planning and Development Act, 2008 (Act No. 6 of 2008) (“the PDA”) directs and regulates planning and development in the Province and ensures that all planning and development decisions now occur at municipal level (Manual on the KwaZulu-Natal Planning and Development Act, 2008).</td>
</tr>
<tr>
<td>PPT-</td>
<td>Priority Public Transport - Refers to public transport services within a public transport system that are given some form of priority treatment, often in the form of right-of-way or route priority treatment, that reduces travel time and improves convenience for the service.</td>
</tr>
<tr>
<td>PT-</td>
<td>Public Transport - (based on definitions in Urban Public Transportation Glossary - Transportation Research Board 1989) - Is a passenger transportation service, available to any person for a prescribed fare, which is usually local in scope and operating over a set of routes from one fixed point to another.</td>
</tr>
<tr>
<td>PWWTW-</td>
<td>Phoenix Waste Water Treatment Works - Is a Waste Water treatment plant located along the R102 and Northern Drive.</td>
</tr>
<tr>
<td>SANRAL-</td>
<td>South African National Road Agency Limited - Their purpose is to maintain and develop South Africa’s expanding national road network and to manage assets (<a href="http://www.nra.co.za">www.nra.co.za</a>).</td>
</tr>
<tr>
<td>SASA-</td>
<td>South African Sugar Association - Is an organisation that exists to promote the global competitiveness, profitability and sustainability of the South African Sugar industry (<a href="http://www.sasa.org.za">www.sasa.org.za</a>).</td>
</tr>
<tr>
<td>SDF-</td>
<td>Spatial Development Framework - It is a tool, spatial plan to manage growth and development within a city. It is required by law as part of City’s Integrated Development Plan.</td>
</tr>
<tr>
<td>THD-</td>
<td>Tongaat Hulett Developments - Is a JSE listed agri-processing business which includes integrated components of agriculture, land management and property development.</td>
</tr>
<tr>
<td>TPS-</td>
<td>Town Planning Scheme - Enables the management of property through the implementation of certain general guidelines. Each Local council must formulate and implement Town Planning Schemes in their area of jurisdiction. It indicates zoning, restrictions, development rights etc.</td>
</tr>
</tbody>
</table>
PREFACE

Cornubia is to become a benchmark in achieving Integrated Human Settlement and is to be developed within the parameters of the National Department of Human Settlement’s Breaking New Ground initiative (BNG). The development is currently being spearheaded through a partnership between the eThekwini Municipality (ETM) and Tongaat Hulett (Pty) LTD. This partnership has been formalised via a Co-Operation Agreement which spells out the key principles for the development. The key objectives of the development include:

- To create value through the delivery of a balanced, economic, environmental and social return. This is to be financially viable, contributes to redressing inequalities and enhances the quality of life of the area;
- To contribute to building, consolidating and integrating the social and economic base of the region;
- To ensure a sustainable mixed use, inclusionary mixed income development that maximises the development outcomes for housing, employment as well as investment and economic opportunities.

Cornubia is therefore a bold undertaking by both Tongaat Hulett and eThekwini Municipality and sets out the commitment to national ideals, as well as defining and creating benchmarks for similar initiatives across the country.

A primary starting point in the overall planning for Cornubia is the establishment of an overall Framework Plan to guide and cohere future development. To date several attempts have been made in formalising a Framework Plan for Cornubia.

In July 2010 the Ethekwini Municipality required that no residential development be permitted within the 55dB noise contour at 2035 and this has necessitated a review of the previous Framework Plan. This process represented an opportunity to gain broader municipal sector input in developing a shared vision and framework, and to better align the framework with the city’s long term planning for the region.

To this end, a Joint Planning Forum was established by the municipality to facilitate the review process. It was agreed that the overall structure of the framework and Cornubia’s role within the northern corridor had to be reevaluated to ensure that the new framework considers the impact of the 2035 dB noise contour.

Some of the issues or challenges the team faced included;

- Rethinking the logic of the movement structure in light of the noise contour;
- Clarifying the environmental position adopted for the framework;
- Rethinking the logic of residential, commercial and industrial development to align with the revised movement structure and with the vision for the area being sensitive to noise constraints;
- Assessing the requirements more carefully relating to social facility provision; and
- Reviewing the impact of the new framework on the EIA process currently underway, particularly relating to Phase 1.

This report represents the culmination of the review process taking into account the numerous meetings and discussions held within the Joint Planning Forum as well as specialist inputs relating to key sectors, such as social facility provision. It was also agreed at this Forum that any shortfalls in social facility and housing targets that is not accommodated within Cornubia will be addressed in the planning of the Cornubia North Area and the Northern Spatial Development Planning at a regional level.

Whilst the Cornubia Framework sets the basic guiding framework, it is important to acknowledge and understand the scale of planning and the intent at this level, which is to provide a framework at an overall level. It is anticipated that subsequent more detail levels of planning will refine the current set of proposals. However, such refinement should not alter the overall intent and philosophy of the Framework Plan. The Framework Plan represents the overall framework which will guide detailed implementation and phasing substantially in accordance with this original intent.
INTRODUCTION

1.1 BACKGROUND

The Cornubia Project area, measuring 1331 ha in extent, represents a strategic project jointly undertaken between the eThekwini Municipality (ETM) and Tongaat Hulett (Pty) LTD. aimed at developing a ‘mixed use’ urban settlement comprising a range of complementary land uses. Cornubia is widely regarded as a potential key project in the quest for ‘Integrated Human Settlement’. A key project objective therefore is the need to accommodate housing. To this end, eThekwini Municipality have recently acquired substantial portions of Cornubia with a view to establishing medium density housing precincts. The need for an overall framework to guide future development and accommodate the range of urban functions is considered critical. This report aims at describing how the various potentials of the site and the housing objectives can be met within a sustainable and forward looking framework.

This report provides an overview of the Development Framework Plan and the Conceptual Framework for Phase 1 of Cornubia.

The report is structured into six main sections. The first section provides a background to the report and project, the second section provides a brief overview of the planning context and challenges, the third section focuses on the Bid Value Modelling that informs the Cornubia Framework, the fourth section focuses on the Framework Plan, the fifth section looks specifically at the Concept Design Layout for Cornubia Phase 1 and the final section provides concluding statements.
INTRODUCTION

1.2 STUDY AREA

Cornubia is located within the North Urban Development Corridor as defined in the North Spatial Development Plan. It lies approximately 25km from the Durban CBD and sits adjacent to Umhlanga in the east, Mount Edgecombe in the South, Ottawa in the West and Waterloo in the North. The site is strategically located along the axes of the M41 and the N2. The study area has prime visibility and potential connectivity to these major systems.

Equally, being closely aligned to the R102 and inland development axis, ensures potential for metropolitan exposure and connectivity. Cornubia has the unique opportunity to not only connect to regional scale systems, but also to serve as a city scale integrator by enabling greater connectivity within the sub-region between the currently separated communities of Phoenix, Umhlanga, Ottawa and Waterloo.
PLANNING INFORMANTS, OBJECTIVES AND PRINCIPLES

Planning Informants
Core Development Objectives
Planning Philosophy and Development Principles
2.1.1 INTEGRATED DEVELOPMENT PLAN & SPATIAL DEVELOPMENT FRAMEWORK

Ethekini’s Spatial Development Framework (SDF), as established through the Integrated Development Plan (IDP) process, firmly seeks to reinforce the development, intensification and improved functioning of the existing “T” shaped development axes. The Spatial Development Framework depicts the thrust of the IDP indicating the City’s investment intentions and development management approach.

It is suggested that the SDF will respond to key spatial drivers that will determine investment within Durban. Umhlanga is considered as an urban investment opportunity and is located strategically along the existing “T” axes. The SDF acknowledges a northward investment thrust to accommodate Dube Trade Port as a key spatial driver in the Northern Region. The SDF identifies Cornubia as an investment opportunity area and is located within the defined Urban Development Corridor.
2.1.2 NORTHERN SPATIAL DEVELOPMENT PLAN

One of the key objectives of the Northern Development Spatial Plan is to redress past imbalances and build for the future by responding appropriately to future needs and anticipated growth patterns and trends. To this end, the R102 and the M41 have been identified as a Metropolitan spine and Sub Metropolitan spine respectively. The purpose of these spines are to promote the efficient and effective linkage between rural and urban areas across the metropolitan areas as well as the provision of high density opportunities in close proximity to the public transportation routes.

The Northern Spatial Development Plan suggests the following for Cornubia:

- The establishment of Cornubia as a new local node,
- The creation of new mixed use with housing densities along the R102 development spine in the region of a minimum of 60-70 du/ha,
- Establish new mixed medium and high density residential in undeveloped zones,
- Create industrial opportunity in Ottawa Flats, and
- Protect open space assets.

The Framework Plan for Cornubia should aim to accommodate the following roles and functions but at the same time, through more local level enquiry, seek to maximise on the uniqueness of the site.
02 PLANNING INFORMANTS, OBJECTIVES AND PRINCIPLES

2.2 CORE DEVELOPMENT OBJECTIVES

Cornubia has the potential to deliver on a range of current metropolitan development objectives given its scale and strategic location. The following are considered the core objectives:

- **District Integration:** the site represents a strategic opportunity to ‘knit’ together previously separated areas influenced largely through the imposition and apartheid heritage. Key in this is fostering improved linkage and integration between the surrounding communities of Phoenix, Mt Edgecombe, Umhlanga, Waterloo and Ottawa. A key development objective is therefore improved physical integration.

- **Pursuing Integrated Human Settlement:** given the relative unencumbered scale and Greenfield opportunity, Cornubia represents a significant opportunity to ‘get the basics right’ in terms of achieving integrated settlement. The core objective here is ensuring that a ‘complete and livable’ environment is created within which a range of economic and social opportunities are integrated with the provision of housing.

- **Ensuing Sustainability:** whereby the many facets of sustainability are considered carefully in the establishment of Cornubia. A key concern here is moving the sustainability agenda further than the ‘green agenda’. The core objectives here are establishing a framework, management and delivery system that embraces all aspects of human settlement, the natural, social and economic environments.

- **Building a Dynamic Region:** based on the strategic location of Cornubia within the northern development corridor, a key objective is responding to, drawing from and growing the energy within the larger urban and particularly economic logic of the region. New opportunities that contribute to the broader economic competitiveness needs to be considered within the planning for Cornubia.

- **Strengthening the Regional Logic of Space:** an important defining quality of the site is the natural environment. This includes at a regional scale the Ohlanta River which forms an important edge of the site, the unique landform of the site, as well as the local valley systems within the site. A key objective therefore is the potential to enhance the regional lattice of open space opportunity and connectivity.
Informed by the development objectives, the following are considered the key principles and development philosophy for Cornubia.

- **Access and Structure:** a key design principle at the level of the framework and at a local neighbourhood is the need to facilitate easy access, choice and convenience. At the larger framework scale, it is envisaged that a series of ‘framework routes’ would facilitate connectivity to the surrounding area and their respective opportunities. Equally, at a local scale, it is imperative that a robust structure is established which enables permeability and choice.

- **Density and Compactness:** encouraging density and compactness of settlement is a key design principle for Cornubia as these qualities provide the preconditions and thresholds to support urban opportunity and choice.

- **Diversity and Complexity:** encouraging complexity through mixed use and intensification is critical in delivering environments that offer choice and convenience. A key design objective within Cornubia is ensuring that a wide range of urban functions are catered for within the framework. This would ensure that future residents can access a ‘fuller’ set of urban opportunities within close proximity.

- **High Quality Urbanism:** the timeless qualities of high performance built environments must be sought within Cornubia. A clear departure from conventional housing provision premised on suburban models and patterns is a firm goal of the project. The critical interplay between form and space, between building and street, between the built and un-built are important concerns of the development approach.

- **Meeting Local Needs Locally:** the structure of Cornubia should facilitate easy access to local needs for future residents. A key design objective is ensuring walkability by locating facilities and convenience retail within local neighbourhoods. At the same time, these facilities should not be embedded within the urban fabric but should be externalised and contribute to a sense of local structure and legibility. Therefore establishing local centres in places that are connected to the wider system is important.

- **Public Transport and Non Motorised Transport Focus:** given the thresholds targeted for the area, it is possible to achieve the required support for viable public transport. This would not only ensure that a longer term sustainability focus underpins development, but would maximise local convenience and accessibility. Non motorised transport would be viable given the density and structure sought for Cornubia.

- **Access to Open Space:** creating a complete environment requires access to a range of landscapes including natural and recreational. Therefore a key design objective for Cornubia is developing an integrated open space system as part of the overall urban fabric. The existing valley and wetland systems provide an important starting point in this regard. Through additional ‘green’ linkages a lattice of open space opportunity can be created within Cornubia. It is imperative that the establishment of the open space is undertaken in a manner that contributes positively to the overall environment in terms of natural resources and residential amenity.

- **Public Space and Facilities:** a primary goal is ensuring that a complete and livable environment is created. A key ingredient to achieve this is ensuring that adequate provision is made for public facilities and developed public space.
BID VALUE EXPLORATIONS

Background and The Role of the Model
Structure of the Bid Value Model
Baseline Bid Value Model
Introducing a Structuring Lattice
Future Bid Value
3.1 BACKGROUND AND ROLE OF MODEL

The Development Framework for Cornubia has been supported by a Bid-Value modelling process to analyse, interpret, and spatially represent the inherent value of the urban system as it currently stands, and the inherent value that could be derived from a spatial scenario predicated on the proposed spatial framework.

The Bid-Value model provides both an assessment of the existing inherent potential, as well as an input into the design process by suggesting areas of higher potential energy and intensity, and provide some direction to the determination of specific functional uses, or the degree of mix of uses. It can also serve as a basis for longer term strategies for the development and release of land.

The area of coverage of the Bid-Value model includes both Cornubia and Cornubia North for the purposes of this report.
3.2 STRUCTURE OF THE BID VALUE MODEL

The figure on the right indicates the basic structure of the model. The model utilises a balance between a desirability index (a measure of the lands suitability for development), and a developability index (a measure of development demand).

The results of the Bid-Rent model on the following pages provide a visual indication of the likely intensity of activity and development that could accrete to the area over time.
3.3 BASELINE BID VALUE MODEL

The diagram on the right reflects the default result of the Bid-Value model. The lightest areas in the model represent those areas with relatively low bid-value. The warmer colors show areas with relatively high bid-value, and tend to correlate with areas of the urban system that are fundamentally well structured and enabling.

The functionality of the Bid-Value Model stems largely from the ability to weight the various components, both individually and collectively, to assess fundamental relationships between the spatial structure of an area, and different user/development scenarios. In this regard, for example, the model could be run with a high bias towards environmental protection, or with a high bias towards investment promotion. The default weighting values are those related to the broader objectives of the current study, and are focused fundamentally on Urban Performance.
3.4 INTRODUCING A STRUCTURING LATTICE

The diagrams that follow the Baseline Bid-Value model reflect the implications of the proposed structuring elements underpinning the Spatial Framework proposals. The proposed Cornubia Framework roads have been superimposed on the model to test the implications to the study area.
BID VALUE EXPLORATIONS

3.5 FUTURE BID VALUE

The diagram on the right indicates the future bid value profile should Cornubia and surrounding developments develop according to the development vision. It clearly illustrates the inherit potential of land along the interface of the N2 as well as the quadrant of the N2 and M41 where a development node is proposed. The areas around Marshall Dam and the intersection of Northern Drive and Blackburn Road (“Ottawa Flats Area”) also shows signs of greater intensity.

Whilst the model is highly useful, it forms one part in the development of the Cornubia Framework. The Framework has utilised the model as a tool for guidance with other sources derived from workshops with the city, consultant planners and land owners.
CORNUBIA FRAMEWORK

Existing Situation
Cadastral Description
Ownership
Existing Conditions and Challenges
Open Space Structure
Proposed Movement Networks
Land Use Zones
Framework Summary
Phasing
The study area is defined by the natural as well as hard interfaces. The northern boundary is formed by the Ohlanga River, the southern and eastern boundary is formed by the M41 and N2 respectively and the western boundary is defined in parts by the R102 and existing regional rail system. The study area is strategically located along the major regional and district routes. Also within close proximity is the Gateway Shopping Centre and the Umhlanga Ridge Town Centre containing a mix of retail, office, entertainment and residential development, adding to the attractiveness of the broader area.

The study area is adjacent to the low income residential areas of Waterloo and Ottawa. Across the M41 lies the upper income areas of Mount Edgecombe as well as Umhlanga which is east of the study area. To the extreme west lies the working class suburb of Phoenix. Blackburn Village has been included within this study. The intention is for eThekwini Municipality to acquire this land for future residential development. It is clear that the study area is in a prime position to promote and foster economic opportunity, social and physical integration.
There are numerous subdivisions or land parcels that make up the overall area in terms of the Mt. Edgecombe Town Planning Scheme (TPS) (See table below).

At a framework level, these subdivisions are not considered restrictive as the planning is focused on establishing an integrated framework for the overall area. Although the South African Sugar Association (SASA) is located outside of the cadastral ownership of the Tongaat Hulett group, the framework considers this area as part of the planning study area so as to ensure holistic planning. As indicated previously the Blackburn area has been included in this study and is described as Rem. of Lot 21 or Blackburn no.1529. There are numerous power line servitudes that transverse the site as well as a major substation. These would need to be considered as part of the planning constraints.

| CORNUNBIA CADAstral DESCRIPTION | |
|----------------------------------|--|---|
| 4 of Lot 20 No 1557             | Rem of 6 of Lot 31No, 1560 |
| Rem of Lot 20 No 1557            | 50 of Lot 31No, 1560 |
| Rem of Ptn 1of Lot 20 No 1557    | Rem of 8 of Lot 31No, 1560 |
| Rem of 42 Ml Edgecombe          | Rem of 13 of Lot 31No, 1560 |
| 4 of Lot 21No 1529               | Rem of 14 of Lot 31No, 1560 |
| 3 of Lot 21No 1529               | Rem of 15 of Lot 31No, 1550 |
| 7 of Lot 21No 1529               | Rem of 16 of Lot 31No, 1560 |
| 8 of Lot 21 No 1529              | Rem of 21 of Lot 31No, 1560 |
| 2 of Lot 21 No 1529              | 57 of Lot 31No, 1560 |
| 9 of Lot 21 No 1529              | Rem of Lot A 32 No, 1539 |
| 11 of Lot 21 No 1529             | Ptn 5 of Lot A 32 No, 1539 |
| 1of Lot 21No 1529                | Rem of Erf 17 Ml Edgecombe |
| Rem of 4 of Lot 31No, 1560       | Rem of Erf 15 Ml Edgecombe |
| 5 of Lot 31No, 1560              | Rem. of Lot 21 or Blackburn no.1529 |
CORNUBIA FRAMEWORK

4.3 OWNERSHIP

Ethekweni Municipality have recently acquired 517ha of land from Tongaat Hulett (Pty) LTD. with the primary intention of providing low income and affordable housing. Tongaat Hulett (Pty) LTD. owns 717 ha of land and proposes General Business, Mixed Use, Light Industry and Medium Density Residential development. The remaining portion of land (i.e. 69ha) is owned by the South African Sugar Association (SASA). It is understood that SASA plan to develop their land for office park development.

Tongaat Hulett (Pty) LTD. owns a few erven in Blackburn Village with the balance owned by private individuals. Blackburn now forms part of Cornubia and it is understood that the eThekwini Municipality intends acquiring land at Blackburn (28ha) for future residential development. The various land owners are working together to ensure that Cornubia is a sustainable ‘Integrated Human Settlement’. The following table below indicates the parcels of land owned by the various landowners within Cornubia.
The table indicates the parcels, sub parcels of land owned by the various landowners within Cornubia. The exception is Blackburn Village which is likely to be acquired by the eThekwini Municipality.

<table>
<thead>
<tr>
<th>CORNUBIA CADASTRAL DESCRIPTION - OWNERSHIP</th>
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<tbody>
<tr>
<td><strong>Tongaat Hulett</strong></td>
</tr>
<tr>
<td>4 of Lot 20 No 1557</td>
</tr>
<tr>
<td>Rem of 142 Mt Edgecombe</td>
</tr>
<tr>
<td>2 of Lot 21 No.1529</td>
</tr>
<tr>
<td>1 of Lot 21 No. 1529</td>
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<tr>
<td>Rem of 4 of Lot 31 No. 1560</td>
</tr>
<tr>
<td>5 of Lot 31 No. 1560</td>
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<td>Rem of 6 of Lot 31 No.1560</td>
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<td>Rem of 8 of Lot 31 No.1560</td>
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<td>Rem of 13 of Lot 31 No. 1560</td>
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<td>Rem of 14 of Lot 31 No. 1560</td>
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<td>Rem of 15 of Lot 31 No. 1550</td>
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<tr>
<td>Rem of 16 of Lot 31 No. 1560</td>
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<td>Rem of 21 of Lot 31 No. 1560</td>
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<tr>
<td>57 of Lot 31 No. 1560</td>
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<tr>
<td>Rem of Lot A 32 No. 1539</td>
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<tr>
<td>Ptn 5 of Lot A No 1539</td>
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<tr>
<td>A portion of Rem of Lot 20 No 1557</td>
</tr>
<tr>
<td>A portion of Rem of Ptn 1 of Lot 20 No 1557</td>
</tr>
</tbody>
</table>
4.4.1 NATURAL ELEMENTS:

The study area is characterised by steep and undulating topography, wetland areas and floodplains, all of which contribute to the unique character and landform of Cornubia. The slope conditions also represent a constraint in some instances as 15 percent of the site is steeper than 1:3 (illustrated in light orange in the figure to the right.) A major portion of steep land is located along the valley sides and along the Ohlanga River. The 100 year floodline and its 40m buffer has been respected in the planning of Cornubia. The wetlands, drainage lines and their buffers indicated as a green line on the figure on the right occupies approximately 28 percent of the site. These systems occur extensively along the Ohlanga River with smaller pockets located centrally within the site. This suggests that approximately 43 percent of the site would be influenced by potentially undevelopable land or Environmental sensitive areas. Apart from the above there are numerous vantage points and ridge’s which serve as an opportunity for the development. These are indicated as a red symbol and a dashed blue line on the figure on the right.
4.4.2 NOISE CONTOURS:

The 2015 and 2035 55dB noise contours have been highlighted to determine its impact on the study area. In July 2010 the Ethekwini Municipality required that no residential development be permitted within the 55dB noise contour at 2035 and this has necessitated a review of the Framework Plan. At present the 2035 55dB contour impacts on Cornubia and not the 2015 55dB which lies outside the study area. Whilst the noise contour has posed a challenge in the planning of Cornubia, it also offered an opportunity to identify alternative residential areas and investigate alternate housing typologies so as to enable the development of higher densities formats.

The pilot phase which was approved prior to this directive will have to adopt mitigation measures such as attenuation for units within the 55dB noise contour. The project management team for the Municipality are investigating appropriate housing typologies and systems to mitigate against noise.
4.4.3 MINERAL RIGHTS:

The western edge of the site abutting the Phoenix Wastewater Treatment Works (PWWTW) and along the R102 contains clay reserves. The mineral deposits are located on Rem of Sub 1 of Lot 20 No 1557, Registration Division FU, Province of KZN. Currently Corobrik has the rights to these clay reserves.

Quarrying operations will be carried out on an annual basis for approximately 2 months a year during the dry winter months. Appropriate management plans will be established to manage any negative impacts of such activity. The extracted minerals will not be stockpiled on Cornubia, but transported to the main Corobrik Avoca Factory. No brick manufacturing (processing) will be undertaken on the site and all quarried areas will be rehabilitated.

No permanent infrastructure or permanent personnel will be on the quarry site during quarrying operations. No industrial waste will be generated on site, as there is no brick manufacturing process plant on the property.
In terms of surface water pollution control, run-off from the site will be channeled away from the operating areas into the natural drainage system via cut-off drains/berms. In terms of the existing sugar lease agreement, Corobrik allows Tongaat Hulett Sugar to grow sugarcane on areas that are not currently being quarried or utilized.

This agreement expires in 2015. Currently, 20 000m³ (1/2 ha) is being mined in the Ottawa Flats (east of the existing Phoenix Waste Water Treatment Works, in the proposed industrial area), with a further 60 000m³ to be mined in 2011. Corobrik has not indicated a need to mine in the areas under eThekwini ownership, and will limit all quarrying operations on Tongaat Hulett land.
4.4.4 PHOENIX WASTEWATER TREATMENT WORKS (PWWTW) BUFFER:

The Phoenix Wastewater Treatment Works (PWWTW) and proposed extension limits residential within 300m from its operations. This is due to the foul odour which is common with these type of facilities renders it not desirable for residential developments within close proximity. The diagram on the right indicates the impact of the 300m buffer within the study area. Although residential was identified as the main use not permitted within this zone, further input is required to commercial/office type of developments developed within this buffer zone.
CORNUBIA FRAMEWORK

4.5 OPEN SPACE STRUCTURE

APPROACH:

The approach adopted for Cornubia regarding the open space network is based on establishing a network of open space throughout the development area. This network would not simply formalise all existing open space, and especially given the existing disturbed nature of open space within Cornubia. The approach would be based on establishing a balance between open space and urban development. The concept allows for the creation of an intersecting lattice of open space and movement as the basis of the framework. The following scenarios may apply;

1) Where there are high value edges such as major mobility routes/ interfaces, development within this zone will take priority at major intersections. The green network will make way for development given the inherent economic value of this zone;

2) Where there are major regional open spaces that have high environmental value, the development will make way for the green network to connect and form part of the major regional system.
Cornubia is characterised by agricultural land therefore there are no DMOSS areas. An Open Space System can be established through additional new ‘green’ linkages adopting the existing valley systems, wetlands and their buffers and steep topography as a basis. The existing systems are fragmented apart from the Ohlanga River which provides the major east – west open space corridor. The open space system conceived in this manner serves as a lattice that allows for continuity for habitat and for recreational purposes.

The total extent of wetlands and drainage areas including their buffers is 380ha. This amount excludes additional open space created through design. Together these constitute approximately 29 percent of the total study area.
4.6.1 DESCRIPTION OF NETWORKS

The next level of framework giving structure to future settlement is the framework of movement routes. A series of interconnected roads is proposed for Cornubia. These north-south and east-west linkages allow the study area to be connected to the N2, M41 and R102 and places of significance. The road networks are as follows (the cross-section of the main routes can be seen on page 37):

**Blackburn Link (Type A)** - is a Primary Arterial and will serve as a mobility route with limited access. A 40m reserve is proposed. This route is significant as it connects places such as Phoenix and Ottawa with the areas east of the freeway (N2). A new interchange is proposed at the Blackburn link and N2 junction. Also proposed is a proposed interchange along Northern Drive/R102 and the Blackburn Link with a partial intersection upgrade along the Old Main Road and the Blackburn Link. General Business, Light Industry and Medium Density Residential are proposed along this arterial.

**Dube West (Type B)** - is a Public Transportation route. A 60m reserve is proposed which will cater for Priority Public Transportation (PPT) with stations along its length as well as generous sidewalks and turning lanes (see cross-section on Page 37). An interchange upgrade is required at the junction between the M41 and Dube West. General Business will be focused along Dube West hence it has been termed an “Economic Spine” with Light Industrial uses on the fringes of the General Business zone.
4.6.1 DESCRIPTION OF NETWORKS continued…

**Cornubia Boulevard-East (Type C1)** - will also serve as Public Transportation route. A 60m reserve is proposed. The route will be developed as an accessibility route. The accessibility routes serve as high friction activity spines. These spines promote mixed use development with the focus on residential as the main use. This promotes pedestrian accessibility and activity. A planned overpass at the N2 is proposed to connect with the Umhlanga New Town Centre in the east with an interchange upgrade proposed at the junction between the N2 and M41. Cornubia Boulevard provides access as well as integration with destination centres. Cornubia Boulevard will consist of various land use intensities. There are two primary mixed use nodes located along this route i.e. the Marshall Dam/Phoenix Node and the node along the N2/M41 with its linkages to Umhlanga New Town Centre.

**Cornubia Boulevard-West (Type C2)** - Connects with Dube West and Blackburn Link. Has been identified as a 40m Collector Access Road. This route has Light Industry and Medium Density Residential proposed along its length.

**Dube East (Type C2)** - Is a Collector with a 40m reserve will function as an accessibility route. It will function predominantly as a residential spine with High Density Residential uses proposed along its length. An interchange upgrade is proposed along the M41 and Flanders Drive intersection.

**Type C3** - Connects with Cornubia Boulevard and will eventually link into Waterloo (subject to detail Traffic Planning and Engineering). This route has been identified as a 35m Collector Access Route which will have a mix of uses along its length.
### 4.6 PROPOSED MOVEMENT NETWORKS

#### 4.6.1 DESCRIPTION OF NETWORKS

<table>
<thead>
<tr>
<th>Road Name</th>
<th>Classification UTG</th>
<th>Section</th>
<th>ROW (m)</th>
<th>Category of PT Route</th>
<th>Primary Function</th>
<th>Intersection Spacing (m)</th>
<th>Design (Running) Speed (kph)</th>
<th>Direct Property Access(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackburn Bvd</td>
<td>Arterial</td>
<td>1</td>
<td>3</td>
<td>40</td>
<td>Complementary</td>
<td>Mobility</td>
<td>70 – 90 (±70)</td>
<td>• Property and access intersections in combination 350m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>4</td>
<td>40</td>
<td>Complementary</td>
<td>Mobility</td>
<td>70 – 90 (±70)</td>
<td>• Property access only via intersection arrangement to arterial standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>5</td>
<td>40</td>
<td>Complementary</td>
<td>Mobility</td>
<td>70 – 90 (±70)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
<td>40</td>
<td>Complementary</td>
<td>Mobility</td>
<td>No intersections</td>
<td>70 – 90 (±70)</td>
</tr>
<tr>
<td>Cornubia Bvd</td>
<td>Collector</td>
<td>2</td>
<td>12</td>
<td>40</td>
<td>Complementary</td>
<td>Access</td>
<td>±80</td>
<td>Left In and Left Out ≥ 80m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>8</td>
<td>60</td>
<td>Priority PT</td>
<td>Access</td>
<td>≥400</td>
<td>Left In and Left Out ≥ 80m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>15</td>
<td>60</td>
<td>Priority PT</td>
<td>Access</td>
<td>≥400</td>
<td>Left In and Left Out ≥ 80m</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>16</td>
<td>60</td>
<td>Priority PT</td>
<td>Access</td>
<td>≥400</td>
<td>Left In and Left Out ≥ 80m</td>
</tr>
<tr>
<td>Dube West</td>
<td>Collector</td>
<td>11</td>
<td>14</td>
<td>60</td>
<td>Priority PT</td>
<td>Mobility</td>
<td>≥400</td>
<td>None</td>
</tr>
<tr>
<td>Dube East</td>
<td>Collector</td>
<td>7</td>
<td>10</td>
<td>40</td>
<td>Complementary</td>
<td>Access</td>
<td>≥80</td>
<td>Left In and Left Out ≥ 80m</td>
</tr>
<tr>
<td>Local</td>
<td>Collector</td>
<td>16</td>
<td>17</td>
<td>35</td>
<td>Complementary</td>
<td>Access</td>
<td>≥80</td>
<td>≥80m Full Directional</td>
</tr>
</tbody>
</table>

Note: 1) Excludes Lower Order Roads (Access and Private Roads)
2) Intersection spacing along Priority PT routes  400m for effective PT operations
3) All standards based on UTG1 and UTG5

The table above indicates the detail road framework hierarchy for the Cornubia Development. This represents the criteria for the ultimate development. The table indicates the road name, classification based on the UTG guidelines, indicates the reserve width up to certain sections which is indicated on the layout plan to the right, as well as classification of its primary function and if it is a complimentary route or PT route. Also indicated on the above table is the intersection spacing and design running speed of the route.

It also gives an indication as to property access i.e. whether it has direct access or left in and left out access. The table serves as the guideline for future detail design.
4.6 PROPOSED MOVEMENT NETWORKS

4.6.1 DESCRIPTION OF NETWORKS continued…

The sections above depict the envisaged typology of roads in Cornubia. The typologies cater for the maximum requirements in terms of sidewalks, general traffic lanes, turning lanes and in the 60m reserve option, a PPT service is catered for through the passing lanes for stations.

A Non Motorised Transport (NMT) zone is proposed within the sidewalk areas for the routes as well as the proposed utilisation of servitude areas and open space for the promotion of NMT. The delineation will occur in the next level of planning.
4.6 PROPOSED MOVEMENT NETWORKS

4.6.2 PUBLIC TRANSPORTATION FRAMEWORK

The possible Priority Public Transport (PPT) would play a significant role in shaping future development. Adopting this system as a basis for the framework structure ensures that Cornubia is effectively integrated and tied to the regional logic of movement.

The diagram on the right indicates the Public Transportation Framework. Dube West and Cornubia Boulevard have been identified as Priority Public Transportation routes indicated in a red line on the plan to the right. Dube West serves as a major Public Transport (PT) route from Dube Trade Port and King Shaka Airport in the north, through Cornubia, along Phoenix Highway to Bridge City in the south. The balance of the networks indicated in a cyan colour have been identified as Public Transportation Complimentary routes. These complimentary PT routes will run in shared lanes with general traffic.

Possible PT Intermodal points could be developed along these routes indicated as an orange circular fill with a blue outline on the plan to the right with the potential of creating a intermodal stations of significance at the Cornubia Boulevard and Dube West intersection. A site has been identified within the Umhlanga Town centre for a Public Transport intermodal facility.
4.7 LAND USE ZONES

4.7.1 GENERAL BUSINESS USE

The core interface areas that have visibility and accessibility from the M41 and N2 are proposed for general business. A business corridor is proposed along “Dube West” which will consist predominantly of office, and retail types of uses. The areas within the 2035 noise contour will have no residential development as determined by the Ethekwini Municipality and therefore this zone has been earmarked for businesses. The following pages will indicate the typology of uses proposed along the Business corridor. Given the regional gateway function along the N2, it is envisaged that development along this interface would respond accordingly in terms of frontage and exposure. Development has been concentrated along the major interchanges along this zone as opposed to a linear band of development.

At the same time maintaining a ‘softer and greener’ approach is considered a broader planning goal. Therefore it is proposed that a highway planting zone is accommodated and that the massing of buildings and their façade treatment is managed carefully through future precinct plans along this interface.

The total extent of this zone is 186 ha which is 14% of the total area. In addition to this, a relatively low FAR of 0.6 on average is proposed for the General Business Zone with a total bulk of approximately 892 800m².
4.7.1 GENERAL BUSINESS USE continued...

The figure on the right indicates a conceptual urban form layout for the general business zone (subject to change in detail design). It gives an impression as to the type of form/layout envisaged along the M41 and R102 corridor. Also shown below are precedent for the types of uses proposed.
CORNUBIA FRAMEWORK

4.7 LAND USE ZONES

4.7.1 GENERAL BUSINESS USE continued...

4.7.1.1 Typical Site Development Options for General Business Use

The major business corridor should be serviced by a viable public transport system and the edge to this corridor could either have a retail office edge at ground floor depending on where the building sits along the corridor – retail is most likely to be attracted towards the nodes or close to the public transport stations. On slopes at 1:8 or flatter a square or rectangular block pattern can be achieved with perimeter development enclosing open space within each block.

The Business Corridor could accommodate retail uses at ground floor on the PPT route with customer parking at the rear. Offices could be developed above the retail serviced by structured parking below.

1.6 slope

Total Parking Bays (excluding bays at ground floor): 166
Bays required for offices and retails at lower levels: 75
Extra bays: 91
Extra Office area: 2275 sqm @4bays/100sqm
Site Area: 3105 sqm
Total Bulk (excluding storage space and parking level): 5346.7sqm
F.A.R: 1.7

1.8 slope

Total Parking Bays (excluding bays at ground floor): 130
Bays required for offices and retail at lower levels: 64
Extra Bays: 66
Extra Office Area: 1600 sqm @4bays/100sqm
Site Area: 3381 sqm
Total Bulk (excluding storage space and parking level): 4777.8 sqm
F.A.R: 1.4

First floor plan  Ground floor plan  Parking floor plan  Retail floor plan

First floor plan  Ground floor plan  Parking floor plan  Retail floor plan
4.7.1 GENERAL BUSINESS USE continued…

The Business Corridor could also accommodate logistics uses with loading/offloading areas behind. Opportunities for office uses exist facing the lower road should be explored.

1.6 slope
4.7 LAND USE ZONES

4.7.1 GENERAL BUSINESS USE continued…

4.7.1.2 Control / Design Guidelines

Development controls (Coverage, FAR, parking, building lines etc) should be supplemented by Form-based design controls indicated setbacks, canopies, colonnades, materials, colours etc. to ensure that the corridor has a degree of design integrity and that buildings respond positively to the Public environment.

The Corridor will need to provide generous sidewalks and tree planting and accommodate PPT stations in the central island at suitable distances apart.
4.7 LAND USE ZONES

4.7.2 MIXED USE 1 & MIXED USE 2

The Mixed Use 1 category comprises of both High Density Residential and Retail uses with a 60% and 40% split of residential and retail (indicated as a red hatch on the plan to the right) and the Mixed Use 2 category comprises of also High Density Residential and Retail uses however with a 80% and 20% split of residential and retail respectively (indicated as a brown hatch on the plan to the right). The Mixed Use Zone is a natural progression from the General Business Use zone. It permits retail, office and high density residential uses. The quadrant of the N2 and M41 has been identified for a Core Node where a diversity of uses will occur. The mixed use zoning promotes the development of activity spines within the study area.

The Mixed Use 1 and 2 zone accounts for 2% of the area and a total area of 24ha and 25 ha respectively. It is envisaged that an urban pattern and form of development is achieved and an FAR of 2.4 on average with heights ranging from 4-6 storey’s is proposed. The total bulk proposed is approximately 460 800m2 for the Mixed Use 2 zone. The residential and commercial split within the Mixed use 2 zone is 40% commercial and 60% residential. This translates to 184 320m2 and 276 480 m2 of bulk respectively. The residential component yields approximately 2304 units. The residential and commercial split within the Mixed use 1 zone is 20% commercial and 80% residential. This translates to 92 160m2 and 368 640m2 of bulk respectively. The residential component yields approximately 3072 units.
4.7.2 MIXED USE 1 & MIXED USE 2 continued....

The figure on the right indicates the proposed conceptual urban form layout for one of Cornubia’s core node. This depicts an urban block typology with buildings responding to the street grid in a perimeter block format based on principles of the New Urbanism. Provided below is an example of a perimeter block town centre response.
4.7.2 MIXED USE 1 & MIXED USE 2 continued....

The figure below is an example of edge response proposed for the Mixed Use 1 component, i.e. retail on the ground floor with residential above.
4.7.3 HIGH DENSITY RESIDENTIAL 1

The High Density Use straddles the majority of the framework roads. It is envisaged that these uses would primarily permit residential development for social housing or GAP housing. “Dube East”, one of the main framework routes, has been identified as a residential corridor which contains High Density Residential, refer to the next page for the proposed typology of use along this route. It is intended that “Dube East” would ultimately connect with the developments proposed in the North and could develop as a mixed use corridor in the future. The implication of this in-terms of the larger Northern Corridor Framework will need to be evaluated.

It is envisaged that medium rise 3 to 4 storey development can be accommodated within this zone. This zone accounts for 2% of the area with a total of 22ha. A density of 200 du/ha would apply to this zone. This yields approximately 4400 units.
4.7.3 HIGH DENSITY RESIDENTIAL 1 continued…

The major residential corridor should be serviced by a viable public transport system. The edge to this corridor would be predominantly residential however in the future it could allow a retail edge at ground floor to develop depending on where the building sits along the corridor. Retail is most likely to be attracted towards the nodes or close to the public transport stations.

On slopes at 1:8 or flatter a square or rectangular block pattern can be achieved with perimeter development enclosing open space within each block. The blocks on the transit corridor are able to reach a density of 200 units per hectare whereas the lower density development at the rear can be developed at 80 units per hectare.
4.7 LAND USE ZONES

4.7.4 MEDIUM DENSITY RESIDENTIAL 1, 2 & INTERFACE ZONE

A large portion of the Cornubia site has been allocated for residential development particularly Medium Density Residential. This is indicated in yellow on the plan to the right and has been divided into three main categories namely Medium Density Residential 1 - Subsidised Housing (R0 - R3,500) which includes an Interface Zone which has a higher du/ha yield but falls within the subsidised income bracket and a Medium Density Residential 2 category which is Partial Subsidised Housing (R3,501 - R7,000) income level.

An array of different residential densities are proposed such as Medium Density Residential 1 and 2 it is proposed 80 du/ha, and the Interface Zone it is proposed 100 du/ha.

From a built form aspect, it is envisaged 2 storey development will be accommodated within this zone. This could include row or duplex housing typologies (refer to the next page for examples). Medium Density Residential 1 accounts for 12% of the area with Medium Density Residential 2 accounts for 3% of the total study area. These yield approximately 10304 units and 2880 units respectively. The Interface Zone yields approximately 1360 units. Together the Medium Density Housing yields approximately 14 544 units.
4.7.4 MEDIUM DENSITY RESIDENTIAL 1, 2 & INTERFACE ZONE continued…

The images on the right reflect the typology and urban quality envisaged for the Medium Density Housing Precincts and the images on the next page illustrate the type of units that will be developed as part of the pilot phase for the Cornubia Project.

The Pilot phase shown on the next page has been modeled on the perimeter block approach with local parks at the core. Each cluster is tied to one another by pedestrian connections. The design has been predicated on public transportation however individual vehicular access is provided. The Medium Density use will adapt this model as its design basis, dependent on local spatial conditions and opportunities.
CORNUBIA FRAMEWORK

4.7 LAND USE ZONES

4.7.4 MEDIUM DENSITY RESIDENTIAL 1, 2 & INTERFACE ZONE continued…
4.7.5 SOCIAL AND COMMUNITY FACILITIES

4.7.5.1 Approach

Community facilities are considered essential to ensuring that a ‘complete’ livable environment is facilitated within Cornubia. In order to ensure that a compact urban environment is created and given the need to pursue higher densities, it is imperative that the traditional planning space standards are reviewed.

The diagram on the right indicates the approach adopted in determining the Social Facility requirements for the Cornubia Development. The KZN Provincial Guidelines Study, Ethekwini Guidelines and the CSIR Study were evaluated. The CSIR study was utilised as it incorporated elements of the eThekwini Planning Study under the direction of Mr. Ken Breetzke. The CSIR Space Planner had a “wish list” of recommended social facilities that needed to be provided. These uses were ordered into a table of compatibility which further reduced the land requirement per use.

Once this was compared, a screening process was undertaken to determine the possible sharing of facilities. In parallel with this a design exploration was undertaken to test the site sizes, precedent etc. This was then fed into the model to formulate the clusters. These clusters were then represented spatially on the framework plan and facilities were located within a 5 minute walking distance from each other.

(Please Note: The Social and Community Facilities study was done in conjunction with Ken Breetzke of the eThekwini Municipality and Anton Aiello of Anton Aiello Consultancy.)
4.7.5 SOCIAL AND COMMUNITY FACILITIES

4.7.5.1 Approach continued...

Following the initial process outlined in the previous page, through the directive from the Municipality it was agreed during this process to test each Social Facility cluster and to adjust where necessary these spatially to show how the uses could be achieved on site taking into account the additional sports fields required i.e. 2 Secondary school, 2 shared by 2 Primary schools. Strategies around the various shortfalls were discussed i.e. crèches could be a free entry use within the medium density zones, Old age Home could also be included within the High Density Corridor, Children’s Home within the medium density zone etc. Standards relating to schools i.e. 30 classrooms/admin etc were used to generate a school template i.e. primary and secondary schools being similar in size but primary schools have some single storey blocks, secondary school could have up to 3 storey’s if necessary. It was agreed that the Community Health Centre could be accommodated on a 1 Ha plot with 2 levels and 65 open parking bays, Clinic could be 500m2 with 16 bays on a 2000m2 site and libraries of 1100 m2 with 18 bays on a 2,600m2 site.

The individual application of the above will be undertaken at a detail design stage for each individual social facility cluster and appropriate parking layouts, circulation and access will be investigated in detail on a site by site basis. Table A on the right indicates all potential social facilities. The rational for the exclusions of uses have been provided. Uses such as Hospitals, Sports Stadia are not required as there was not sufficient threshold. A location will be determined at a regional level within the Northern Spatial Development Planning process. Uses such as Tertiary Training centres, Civic Centres, Municipal offices, Home Affairs will be provided when the need arises.

<table>
<thead>
<tr>
<th>TYPE OF FACILITY</th>
<th>POPULATION TRESHOLD</th>
<th>NO. OF FACILITIES REQUIRED AS PER ETHEKWINI STANDARDS FOR SOCIAL FACILITIES</th>
<th>PROPOSED IN FRAMEWORK PLAN</th>
<th>SHORTFALL IN NO. OF FACILITIES</th>
<th>PROPOSAL FOR DEALING WITH SHORTFALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital L1</td>
<td>450,000</td>
<td>0.2</td>
<td>0.0</td>
<td>0.2</td>
<td>Proposed that site is set aside in Cornubia North for Regional Hospital</td>
</tr>
<tr>
<td>Sports Stadia</td>
<td>200,000</td>
<td>0.5</td>
<td>0.0</td>
<td>0.5</td>
<td>Proposed that site is set aside in Cornubia North for sports stadia</td>
</tr>
<tr>
<td>Tertiary Training not University</td>
<td>100,000</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
<td>1 Ha will be allocated in mixed-use Town Centre (Regional Node), Residential &amp; Business yield has been adjusted accordingly</td>
</tr>
<tr>
<td>Government Offices / Civic Centre</td>
<td>100,000</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Station (Suburban)</td>
<td>100,000</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Health Centre &amp; ARV</td>
<td>60,000</td>
<td>1.7</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children’s Home</td>
<td>60,000</td>
<td>1.7</td>
<td>1.7</td>
<td></td>
<td>1 Ha will be set aside in medium-density residential area for a children’s home as &amp; when demand arises. This will be a free entry use. Residential yield has been adjusted accordingly</td>
</tr>
<tr>
<td>Police Station</td>
<td>60,000</td>
<td>1.7</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary School</td>
<td>60,000</td>
<td>1.7</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cemetery</td>
<td>50,000</td>
<td>8 Ha</td>
<td>8 Ha</td>
<td>8 Ha</td>
<td>Geotechnical study to be undertaken to identify possible sites within noise corridor</td>
</tr>
<tr>
<td>Old Age Home</td>
<td>50,000</td>
<td>2.0</td>
<td>2.0</td>
<td></td>
<td>3 Ha will be allocated for Old Age Home within high-density residential corridor as &amp; when demand arises. This will be a free entry use. Residential yield has been adjusted accordingly</td>
</tr>
<tr>
<td>Local Library</td>
<td>40,000</td>
<td>2.5</td>
<td>3.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Health Care</td>
<td>30,000</td>
<td>3.3</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Hall</td>
<td>30,000</td>
<td>3.3</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary School</td>
<td>12,500</td>
<td>8.0</td>
<td>7.0</td>
<td>1.0</td>
<td>For High Schools, each stream is 200 pupils (made up of 5 grades of 40 pupils each). The optimal size for HS’s is five streams i.e. 1,000 pupils, but six streams i.e. 1,200 pupils is acceptable under motivation. We are therefore, proposing that five of the HS’s accommodate 1,200 pupils each to make up for the shortfall.</td>
</tr>
<tr>
<td>Primary School</td>
<td>5,500</td>
<td>18.0</td>
<td>18.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crèche/ early Childhood Centre</td>
<td>3,500</td>
<td>33.3</td>
<td>0.0</td>
<td>33.3</td>
<td>A special consent application will be required to operate a crèche subject to applicable health &amp; safety regulations</td>
</tr>
<tr>
<td>Sports Fields</td>
<td>1,000</td>
<td>varies</td>
<td>32.0</td>
<td></td>
<td>Each Secondary School has 2 sports fields, and 2 sports fields are shared by 2 Primary Schools</td>
</tr>
<tr>
<td>Park Space</td>
<td>1,000</td>
<td>varies</td>
<td>32.0</td>
<td></td>
<td>An investigation will be undertaken to determine where parks can be created within the Open Space where this is conducive. The medium-density residential blocks are designed to create centrally located “courtyards” which can be used as play spaces with the necessary play equipment</td>
</tr>
</tbody>
</table>

Design Population

| Estimated Households   | 24,320               |
| Household Size (Assumed)| 4                    |
| Projected Population   | 97,280 (excludes Children’s Homes & Old Age Homes) | 100,000 |

TABLE A: CSR Planner-Indicates all uses to be provided and methods dealing with the shortfall
4.7.5 SOCIAL AND COMMUNITY FACILITIES

4.7.5.1 Approach continued…

Some of the facilities could occur within the retail component of the mixed use category. Primary Schools and Secondary Schools contributed to the larger allocations of land such as 18 Primary Schools and 7 Secondary schools were provided.

Table B on the right indicates the various cluster combinations created. In total 9 clusters were formed with 2 duplicated. A conceptual Social Facility design exploration has been annexed with this report. It indicates that each cluster has to be treated individually and that the topography is a key influence in terms of cluster size. Some clusters have the same uses but the site size varies due to the irregular topography. In detail design this will again fluctuate through design refinement however it confirms at this level that the area allocated is sufficient to accommodate the Social Facilities proposed.

<table>
<thead>
<tr>
<th>SHARED CLUSTERS OF SOCIAL FACILITIES</th>
<th>NO. OF CLUSTERS</th>
<th>*POSSIBLE AREA REQUIRED PER CLUSTER (HA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Primary Schools + 1 Secondary School + 4 Sports Fields + Clinic + Swimming Pool</td>
<td>1</td>
<td>5.2 ha</td>
</tr>
<tr>
<td>Community Hall + Clinic + 2 Primary Schools + 1 Secondary School + 4 Sports Fields + Government Offices + Library</td>
<td>1</td>
<td>5 ha</td>
</tr>
<tr>
<td>2 Primary Schools + 1 Secondary School + 4 Sports Fields + Community Hall</td>
<td>1</td>
<td>6 ha</td>
</tr>
<tr>
<td>2 Primary Schools + 1 Secondary School + 4 Sports Fields</td>
<td>2</td>
<td>4 ha – 5.5 ha</td>
</tr>
<tr>
<td>2 Primary Schools + 1 Secondary School + 4 Sports Fields + Community Hall</td>
<td>2</td>
<td>5.2 ha – 5.6 ha</td>
</tr>
<tr>
<td>2 Primary Schools + 2 Sports Fields + Library + Clinic + Swimming Pool</td>
<td>1</td>
<td>4 ha</td>
</tr>
<tr>
<td>2 Primary Schools + 2 Sports Field + Library + Clinic</td>
<td>1</td>
<td>3.7 ha</td>
</tr>
<tr>
<td>Community Health &amp; ARV – Stand Alone</td>
<td>1</td>
<td>3 ha</td>
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<tr>
<td>Fire Station – Stand Alone</td>
<td>1</td>
<td>0.5 ha</td>
</tr>
<tr>
<td>Police Station – Stand Alone</td>
<td>1</td>
<td>1 ha</td>
</tr>
</tbody>
</table>

TABLE B: INDICATES SHARED AND CLUSTERED SOCIAL FACILITIES FOR CORNUBIA

(* POSSIBLE AREA REQUIRED PER CLUSTER (HA)- DEPENDANT ON SITE CONDITIONS AND EACH CLUSTER AREA MAY VARY IN DETAIL DESIGN- AREAS INDICATED ABOVE ARE BASED ON CONCEPTUAL DESIGN. SEE ANNEXURE FOR SOCIAL FACILITY EXPLORATIONS.)
4.7.5 SOCIAL AND COMMUNITY FACILITIES

4.7.5.2 Application

In order to maximize the development potential and to promote a more compact and urban form of development, the approach highlighted earlier in this report proposes that the general traditional standards for facilities are reviewed. For example, it is envisaged that schools, which represent a major land use, are modeled on shared use and a reduced footprint.

At a framework level portions of land have been identified for social facilities. These parcels are located generally within the flatter portions of the site and at key intercepory points. A key concept for facilities is the provision of recreational sites which encompasses a wide array of sporting codes. These are located within the Medium Density Residential zones.

SHARED & CLUSTERED SOCIAL FACILITIES

- 2 PRIMARY S. + 1 SECONDARY S. + 4 SPORTFIELDS + CLINIC + SWIMMING POOL
- COMM. HALL + CLINIC + 2 PRIMARY S. + 1 SECONDARY S. + 4 SPORTFIELDS + GOVERNMENT OFFICES + LIBRARY
- 2 PRIMARY S. + 1 SECONDARY S. + 4 SPORTFIELDS + COMM. HALL
- 2 PRIMARY S. + 1 SECONDARY S. + 4 SPORTFIELDS
- 2 PRIMARY S. + 2 SPORTFIELDS + LIBRARY
- 2 PRIMARY S. + 2 SPORTFIELDS + LIBRARY + CLINIC + SWIMMING POOL
- 2 PRIMARY S. + 2 SPORTFIELDS + LIBRARY + CLINIC

COMM. HEALTH & ARV

FIRE STATION

POLICE STATION
4.7 LAND USE ZONES

4.7.5 SOCIAL AND COMMUNITY FACILITIES

4.7.5.2 Application continued...

Importantly, at a framework level, the concept of walkability is key in locating centres for facilities particularly schools. The framework aims at distributing schools and other facilities within a 5 minute walk as indicated in blue circles on the plan to the right. This indicates a wide coverage of shared facilities for the Cornubia Development.

The framework is based on a ratio of two primary schools for every high school. This is determined by estimating the total population envisaged from the development as outlined earlier on in this section and applying the eThekwini standards for school provision.
4.7 LAND USE ZONES

4.7.6 LIGHT INDUSTRY
The “Ottawa Flats” area is earmarked for light industrial use which is in line with the Northern SDP. This area would ultimately enjoy good accessibility with the R102 and Dube Trade Port region. It is envisaged that the types of businesses located here would include a range of logistics, light industry in line with current trends.

The desired activities for this zone have been proposed such as a mixed use and retail zones along “Cornubia Boulevard” and a logistics and light industrial zone occurring within the remaining portions. Two Petrol filling stations are also proposed which are indicated on the Phase 1 layout in the next section.

This zone accounts for 13% of the total area and is 171ha in extent. An average FAR of 0.6 which yields approximately 820 800m2 of bulk is proposed. This zone will generate economic opportunities for the people within Cornubia and surrounds and is well located in relation to Waterloo and Ottawa. The overall EIA specialist report prepared by DR J McCarthy indicate that approximately 26 000 sustainable jobs would be created through this industrial development. The layout is sufficiently flexible to accommodate a consolidation of sites if necessary. The PDA application will be based on the smallest scale of site subdivision that can then be consolidated if necessary.
4.7.6 LIGHT INDUSTRY continued….
An example of the type of industry envisaged are those in the River Horse Business Valley Estate area (refer to images on the right). Apart of the built form and the mix of uses indicated in the precedent on the right, the quality of the public realm such as landscaped sidewalks i.e. treeplanting, hedge treatments, paving detail, choice of architectural materials etc. must be encouraged within the “Ottawa Flats” development.
The report has demonstrated the main structuring elements for Cornubia. i.e. the movement, land use and open space system. The movement and open space network represents the main structure for the land uses to develop. Whilst the framework has been guided in principle by the Bid Value modeling exercise, the uses have been determined by precedent as well as through the inputs of officials and consultants involved in the review process. The Framework Plan represents the overall framework which will guide detailed implementation and phasing substantially in accordance with the original intent set out in the framework.

The total gross developable area is 1331 hectares. Of this Medium Density Residential 1 + 2 occupies 16%, High Density Residential 2%, Mixed Use 1 - 2%, Mixed Use 2 - 2%, General Business 14% and Light Industry 13%. The balance of the framework is made up of Servitudes which constitutes 5%, Existing Use 1%, SASA Agricultural Testing Area 2% and a proposed Nursery. Proposed Private Cemetery and Highway planting all contribute 1% of the total area. Roads make up 9% of the study area. The largest percentage of land is taken up by open space at 29%.

The prime location of the site together with the diverse mix of uses creates an ideal opportunity for the people within Cornubia and those that surround this area to access a full set of urban and economic opportunity.
The primary corridors that structure development within Cornubia include:

1. **Blackburn Link** which provides access to the N2. It connects places such as Phoenix with new opportunity in the east. It is a significant route (Primary Arterial) as it provides overall connectivity within the Cornubia development. There are a mix of uses planned along its length.

2. **Dube West-Business Corridor** - elaborated in detail earlier in this report, allows for a business zone to develop along 'Dube West'. It is also a key Public Transportation Route. Whilst this corridor restricts a vertical mix of residential within the 2035 noise contour, a horizontal mix is pursued, i.e. residential development within a 5 to 10 minute walking distance will support this corridor, see local precedent on the next page. Four local cases were evaluated. These are Umgeni Road, Brickfield Road, Gale Street and North Coast Road. Each example represents a Business Corridor, similar to the type proposed for Cornubia. Each case illustrates predominantly business uses along the corridor with no residential. All the examples indicate that approximately 400m i.e. a 5 minute walking distance from the corridor are supported by residential development. This has informed the horizontal assignment of mixed use.

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**CORNUBIA FRAMEWORK PLAN AND PHASE 1 DESIGN REPORT**

**MARCH 2011**
BUSINESS CORRIDOR PRECEDENT STUDY
3. The next major element is a Residential Corridor also elaborated in detail earlier on in this report, *‘Dube East’*, will be developed into a residential corridor which along its interface will permit social housing. Gap housing at yields of approximately 200 du/ha. The extension of this corridor towards the north could overtime develop into a mixed use corridor permitting retail development along the ground floor. The potential extension of this route will form part of a larger corridor assessment.

4. The final significant structuring device is the **M41 / R102 corridor** which includes Cornubia Boulevard (indicated as a red hatch on the diagram to the right) with part of Cornubia Boulevard serving as a Public Transportation Route. This is a major urban corridor which encompasses a variety of uses along its length and includes the two primary nodes i.e. Marshall Dam/Phoenix Node and the node along the N2/M41 with its linkages to Umhlanga New Town Centre as well as the mobility of the M41 and the accessibility of “Cornubia Boulevard.” The uses proposed include offices, to a variety of residential catering for different income groups, light industry and service industry areas. This zone indicated in red presents a multitude of opportunity that will enhance the areas that it surrounds whilst providing new opportunities for residents that live in close proximity.
The following tables below reflects the bulk schedule, mixed use and total commercial and residential split for the Cornubia Development. Please refer to the next page for a detailed supporting text.

Please Note: Estimate of yield has been developed at a framework level, and subject to refinement based on detail design.

<table>
<thead>
<tr>
<th>LAND USE CATEGORY &amp; QUANTIFICATION</th>
<th>BULK</th>
<th>RESIDENTIAL YIELD</th>
<th>HOUSING CATEGORIES %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USE</strong></td>
<td>2010/12/22</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GROSS DEVELOPABLE AREA</strong></td>
<td>TOTAL BULK</td>
<td>COMMERCIAL BULK</td>
<td>RESIDENTIAL BULK</td>
</tr>
<tr>
<td><strong>%</strong></td>
<td>0.2 &amp; 0.4</td>
<td>0.8 &amp; 0.6</td>
<td></td>
</tr>
<tr>
<td><strong>PROPOSED FAR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Medium Density Residential 1 - Subsidised Housing</strong></td>
<td>(0 - R3,500)</td>
<td>161</td>
<td>12</td>
</tr>
<tr>
<td><strong>Medium Density Residential 1 - Subsidised Housing-Interface Zone</strong></td>
<td>(0 - R3,500)</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td><strong>Medium Density Residential 2 - Partial Subsidy</strong></td>
<td>(R3,501 - R7000)</td>
<td>45</td>
<td>3</td>
</tr>
<tr>
<td><strong>High Density Residential 1</strong> (GAP housing - social housing)</td>
<td>(R7,001 - R15,000)</td>
<td>22</td>
<td>2</td>
</tr>
<tr>
<td><strong>Mixed Use 1 (High Density Residential + retail) - 80% / 20% split</strong> (Sectional title )</td>
<td>(+R15,000)</td>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td><strong>Mixed Use 2 (High Density Residential + retail) -60% 40% split</strong> (Sectional title )</td>
<td>(+R15,000)</td>
<td>24</td>
<td>2</td>
</tr>
<tr>
<td><strong>Social Facilities</strong></td>
<td>56</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>General Business (offices, office park, retail)</strong></td>
<td>186</td>
<td>14</td>
<td>149</td>
</tr>
<tr>
<td><strong>Light Industry</strong></td>
<td>171</td>
<td>13</td>
<td>157</td>
</tr>
<tr>
<td><strong>Servitudes</strong></td>
<td>63</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td><strong>Open Space</strong></td>
<td>392</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td><strong>Existing</strong></td>
<td>9</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>SASA Agricultural Future Testing Area</strong></td>
<td>22</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Nursery</strong></td>
<td>4</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td><strong>Private Cemetery</strong></td>
<td>9</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Highway Planting</strong></td>
<td>11</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Roads</strong></td>
<td>115</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1331</td>
<td>100</td>
<td>570</td>
</tr>
<tr>
<td><strong>TOTAL PROPOSED THRESHOLD (4 P/P/DU)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The total bulk anticipated from the overall development is 3,771,200m². The Mixed Use 1 and 2 category yields a mixed use split between commercial and residential bulk of 276 480m² and 645 120m² respectively with the total residential bulk in the region of 1,781,120m². A total split of 20% and 40% for commercial and 60% and 80% for residential have been proposed within these mixed use categories. This indicates a greater residential allocation within the Cornubia development.

Within the mixed use zoning, high density residential comprises with an average of 50m² apartment could yield approximately 4400 units and assuming a density of 80 and 100 dwelling units per hectare for the medium /high density residential uses (1+2 and the interface zone) the site will yield approximately 14,544 units. The residential apartments in mixed use zone and units in the medium/ high density residential in total yields approximately 24,320 units. Applying a ratio of four people per unit, generates a population estimate of 97,280 people over the 1331 hectare of land. In establishing the social facility requirements the authors have assumed a design population of 100,000 people after calculating an estimated 97,280 people at 4 people per dwelling unit.

A range of housing options from full subsidy units - low income, “GAP” housing and middle to upper income have been provided within various household income bands.

The following household income brackets have been accommodated i.e. R0 - R3500, R3501- R7000, R7001- R15000, and over R15 000. It is proposed that:

- 48% of the housing will be accommodated within Medium Density Residential 1 and Interface Zone Category (R0 - R3500 income category). This will encompass fully subsidised units of approximately 11,664 units at 80 du/ha and 100 du/ha.

- 12% of the housing will be accommodated within Medium Density Residential 2 Category (R3501-R7000 income category). This will encompass partial subsidised units of approximately 2,880 units at 80 du/ha.

- 4400 units within the GAP /Social housing category (High Density Residential 1 - R7001- R15000 income category) is proposed at 250 du/ha.

- The balance of units is provided within the Mixed Use 1 and 2 category (over R15000 income category) designated for sectional title units. Together approximately 5376 units are proposed at 200 du/ha.

The total number of units proposed for the development is approximately 24,320 units. It was agreed that any shortfalls against initial estimates in regard to the housing provision within Cornubia will be investigated in the planning for Cornubia North.

The remaining uses are as follows:

- Social Facilities: 56ha;
- General Business: 186ha which yields approximately 892,800m² of bulk at 0.6 FAR;
- Light Industry: 171ha which yields approximately 820,800m² of bulk at 0.6 FAR;
- Servitudes: 63ha
- Open Space: 392ha
- Existing: 9ha
- SASA Agricultural Testing fields: 22ha
- Nursery: 4ha
- Private Cemetery: 9ha
- Highway Planting: 11ha, and
- Roads: 115ha

In summary there is a total development yield of 3,771,200m² with the split of 1,169,280m² of commercial and 1,781,120m² for residential as well as 820,800m² for Light Industrial Uses.

These assumptions will be tested further in detail design however it does provide an insight as to the significance of this development with regard to the future population potentially accommodated, infrastructural and social needs but most importantly the framework demonstrates the potential of the area as a new and vibrant part of the city.
The diagram on the right indicates the proposed phasing for the Cornubia project. As it stands, eThekwini owns 517ha of land, Tongaat Hulett Developments 717ha, SASA 69ha and the Blackburn Village a further 28ha which is understood that eThekwini plans to purchase this land in the future.

There are basically four main phases indicated in blue on the plan to the right. Phase 1 (“Ottawa Flats and Residential area”) has been identified as the first phase given it has been least affected by the revised framework and the noise contours. The subsequent phases (phases 2,3,4) needs to be workshopped between the Municipality and the land owners and therefore the phasing numbers are notional and any one of these phases could be released for development.

The intention is for all land owners to work in unison to ensure an integrated development that provides a range of social, economic and housing opportunity for all.
CORNUBIA PHASE 1

5.1 BACKGROUND

Following the Framework Report and synopsis of the development proposals and process that has transpired thus far, this section provides a brief overview for Cornubia Phase 1 conceptual planning. The project planning as well as land assembly would be jointly undertaken by the eThekwini Municipality and Tongaat Hulett and aims at providing some 2776 housing opportunities. The intention for Phase 1 is to provide majority fully subsidised units for residents within the lowest subsidy brackets.

This section presents the overall design intention for Phase 1. The area comprising Phase 1 measures approximately 295ha in extent and is indicated in the blue outline on the plan on the right. It is located within the north western portions of the overall Cornubia and includes both “Ottawa Residential” and “Ottawa Flats areas.”

Please note that the Phase 1 Plan indicated in this section is still subject to a Planning Development Act (PDA) process where the necessary traffic and transportation design details will be finalised in terms of detail TRL layout, public transport, individual site points, etc.
05 CORNUBIA PHASE 1

5.2 SITE CONDITIONS

The study area for Phase 1 measures some 295ha in extent and is indicated by the yellow boundary line on the right. The study area contains a range of topographic conditions including slopes steeper than 1:3 shown in pink. The landform comprises of undulating topography which represents a constraint in some respects, but also allows for the creation of an interesting settlement form through the diversity of landform.

The 2035 55dB noise contour does not impact entirely on Phase 1 and lies just outside Phase 1 boundary with only a small portion effected south of the Pilot Phase.

Phase 1 is effected by the mineral rights area indicated as a yellow hatch on the plan to the right. Development of Phase 1 may be phased to avoid this area until such time it becomes available. Page 29 and 30 of this report provides further details in regard to the mineral rights area.
CORNUBIA PHASE 1

5.2 SITE CONDITIONS

The other key environmental aspect considered important in giving shape to future settlement is the wetland system and its buffers. Indicated as a green line on the plan on the right, this system provides a basis for establishing an open space system for Cornubia. The design framework seeks to establish continuities in the green structure and additional linkages are planned so as to create a connected system within Cornubia which includes the servitude zones.

Those drainage and wetland systems that are not hatched have been utilised for development and have been workshopped with the Environmental Branch as to its removal. The 100 year flood line and buffer (dark blue line and light blue line respectively) effects the industrial zone. The land parcels have been adjusted to accommodate this constraint.

Importantly, in order to ensure that the open space system becomes a viable asset, it is envisaged that a close relationship with urban development be sought and that particular portions are developed as useable open space. A 300m buffer from the PWWTW has to be observed were no residential development can occur.
A key concern in the development of Cornubia is the need to foster greater physical integration. To this end, a series of higher order arterials are proposed linking Phase 1 with the broader Cornubia development and with the surrounding communities.

The main routes affecting Cornubia Phase 1 are the Blackburn Link identified as a Primary arterial. The Blackburn link provides access to the N2 and will function as a mobility route. As indicated earlier on in this report, a new interchange is proposed at the Blackburn link and N2 juncture. Also proposed is a proposed interchange along R102/Northern Drive and the Blackburn Link as well as a partial intersection upgrade at the intersection of Old Main Road and the Blackburn Link. A 40m wide road reserve is proposed for Blackburn link which transverses through the Light Industrial area of Phase 1.

The other significant route affecting Phase 1 is Cornubia Boulevard-west which will serves as a Collector Access Route. It is proposed that this portion of the Cornubia Boulevard has a 40m reserve as well. Blackburn link will eventually intersect with “Dube West” which has been identified for as a Priority Public Transportation spine.

(Please Note: the above is a preliminary design for Phase 1 and meets the requirements of the EIA process. The Phase 1 Plan is still subject to a full PDA process where the necessary Traffic and Transportation Design details will be finalised.)
CORNUBIA PHASE 1

5.3 MOVEMENT LATTICE

The secondary level internal access is facilitated by a series of internal collector routes. These are identified as a white line on the plan to the right. These routes would link the various neighbourhoods. At a local or neighbourhood level, a series of access routes are proposed establishing the local block structure. This finer grain block structure favours pedestrian permeability. A new link road to provide connectivity to the Pilot Phase for some 486 units is being planned.

The industrial area will be serviced via 24m road reserves. It is envisaged that Phase 1 would likely be serviced by a series of Public Transport lay bys. Phase 1 will be designed in a manner to promote “walk ability” to enable people to access conformability to a PT point within walking distance. A detailed PT Operational Design would be required at the next level of transport planning and design.
5.4.1 LIGHT INDUSTRY

The key land use proposals that are located within and defined by the movement lattice and open space system include:

- Light Industrial: providing for a range of light industrial, service, logistics and warehousing. Along Blackburn Link it is envisaged that a more mixed use retail development will occur. Also included are two Petrol Filling Stations to serve the needs of the broader area. The type of development envisaged for the “Ottawa Industrial” area is as described earlier in this report in pages 57 and 58. The detailed subdivisional plan for Phase 1 will follow a separate PDA application process. Various pedestrian connections are proposed to ensure the development is easily accessible to the community of Waterloo and Ottawa. The heritage site has been retained with pedestrian access.

- Open Space providing for the retention of wetland areas, their associated buffers and new green linkages. There is a proposal to develop a nursery to serve the needs of the community. This lies within the floodplain of the Othlanga River. This will be subject to various specialist studies and approvals at a detail design stage.
5.4 LAND USE STRUCTURE

5.4.2 MEDIUM DENSITY 1, HIGH DENSITY RESIDENTIAL 1 AND INTERFACE ZONE

- High Density Residential located along a Local Collector route (indicated as a dark orange hatch on the plan to the right) caters for the “Gap” Housing or Social Housing market. The High Density (3 to 4 storey’s) provides a suitable transition of built form from the Industrial uses to the 2 storey Medium Density proposed south of the High Density residential Zone. This zone is also out of the 300m buffer for the PWWTW.

- Medium Density Residential 1 (indicated as light yellow hatch on the plan to the right) is proposed for the balance of land located within the “Ottawa Residential” area. Due to the limited land available within Phase 1 and demand to provide fully subsidised housing, Medium Density Residential 1 was favoured over the partial subsidised housing (Medium Residential 2). The Medium Residential 1 zone indicated as conceptual block subdivisions on the plan has a yield of 80 du/ha with the Interface zone (darker yellow hatch on the plan to the right) in the region of 100 du/ha.

- Local parks have been proposed with the neighbourhood clusters. These will serve the community. There is a proposal to develop a private cemetery within the “Ottawa Residential” area within the EPTL servitude zone. This will be subject to various specialist studies and approvals.
5.4.3 SOCIAL FACILITIES

Community facilities are considered essential to ensuring that a ‘complete’ liveable environment is facilitated within Cornubia. In order to ensure that a compact urban environment is created and given the need to pursue higher densities, it is imperative that the traditional planning space standards are reviewed. This exercise was undertaken and presented earlier on in this report, refer to pages 52-56.

Phase 1 has basically two social facility clusters i.e.,

- A cluster which lies centrally within the development (represented as a pink outline) contains 2 Primary Schools, 1 Secondary School, 4 Sports fields and 1 Clinic. This is the favoured cluster in Phase 1 and should be ideally developed first.

- The second cluster which (represented as a blue outline) straddles the 2035 noise contour, contains 2 Primary Schools, 1 Secondary School, 4 Sports fields. This also part of this cluster and within the Phase 1 boundary is a Police and Fire Station. There is scope in detail design to mitigate against noise impacts in terms of the design of the facility itself, placement of buildings etc. This cluster should be released when there are sufficient thresholds to support the facilities proposed.
The insets on the right indicate conceptual plans for the individual clusters. Each cluster is unique and has to be designed separately due to the study areas unique topography which makes it extremely difficult to get a, “One size fits all” module and therefore individual tests have been conducted for the social facility clusters. These have been annexed at the end of this report.

The clusters presented on the right give an impression of what the social facility clusters can look like and that the site sizes allocated to the social facilities are feasible.

In total Phase 1 provision has made for, 4 Primary Schools, 2 Secondary Schools, 8 Sports fields, 1 Clinic, 1 Police and Fire Station for an estimated population of 11 000 people.

Detail site development plans with associated building placement, bulk, parking layout and ratios, etc will need to be established for each social facility cluster.
CORNUBIA PHASE 1

5.5 PHASE 1 - SUMMARY

The overall yield for Phase 1 is depicted on the page 78. It indicates that approximately 36 ha or 12% of the area being dedicated to housing. At a density of 80 du/ha and 100 du/ha for Medium Residential 1 and the Interface zone respectively this would suggest an residential yield of approximately 2176 units. Together with the High Density Residential 1 zone at a yield of 250 du/ha this would yield approximately 600 units. In total 2776 units can be achieved in Phase 1. A population of 11,104 is anticipated using the norm of 4 people per household. Apart from the residential summary above, the following uses are contained in Phase 1. These are as follows;

- Social Facilities: 11ha;
- General Business: 111ha which yields approximately 52,800million m² of bulk at 0.6 FAR;
- Light Industry: 85ha which yields approximately 408,000m² of bulk at 0.6 FAR;
- Servitudes: 24ha
- Open Space: 81ha
- Fire Station: 1ha
- Police Station: 1ha
- Nursery: 4ha
- Private Cemetery: 9ha
- Petrol Filling Station: 1ha
- Heritage Site: 0.34ha, and
- Roads: 115ha

The PDA application for Phase 1 will need to be undertaken and will verify the exact land use yield associated with this, will be a focused TIA study. Therefore the above proposes a broad indication only at the framework planning level.
CORNUBIA PHASE 1

5.5 PHASE 1 – SUMMARY continued....

It can be interpreted from the above summary, that the collective open space structure accounts for approximately 27% of the overall land budget for Phase 1 with approximately 13% being allocated to community facilities including sportsfields and playlots.

In summary there is a total development yield for Phase 1 of 624,000m2 with a split of 52,800m2 for commercial, 163,200 m2 for residential, and 408 000m2 for Light Industrial uses.

At an overall level, the land use breakdown indicates a balanced distribution across housing, employment and recreation sectors.

( Please Note: the plan on the right is a preliminary design for Phase 1 and meets the requirements of the EIA process. The Phase 1 Plan is still subject to a full PDA process where the necessary Traffic and Transportation Design details and related detailed TIA will be undertaken.)
## CORNUBIA PHASE 1
### 5.5 PHASE 1 - SUMMARY

<table>
<thead>
<tr>
<th>USE</th>
<th>INCOME LEVELS</th>
<th>GROSS DEVELOPABLE AREA (HA)</th>
<th>%</th>
<th>NET DEVELOPABLE AREA @ 20% (LESS INTERNAL OPS, STEEP AREAS, PARKS ETC)</th>
<th>PROPOSED FAR</th>
<th>TOTAL BULK</th>
<th>COMMERCIAL BULK</th>
<th>RESIDENTIAL BULK</th>
<th>RESIDENTIAL DENSITY (DU/HA)</th>
<th>YIELD: NO OF UNITS</th>
<th>HOUSING CATEGORIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium Density Residential 1 - Subsidised Housing</td>
<td>(0 - R3,500)</td>
<td>29</td>
<td>10</td>
<td>23</td>
<td>4</td>
<td>92,800</td>
<td>92800</td>
<td>80</td>
<td>1,856</td>
<td>67</td>
<td></td>
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<tr>
<td>Medium Density Residential 1 - Subsidised Housing - Interface Zone</td>
<td>(0 - R3,500)</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>12,800</td>
<td>12800</td>
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<td>High Density Residential 1 (GAP housing - social housing)</td>
<td>(R7,001 - R15,000)</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>57600</td>
<td>57600</td>
<td>250</td>
<td>600</td>
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<td>Social Facilities</td>
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<tr>
<td>General Business (offices, office park, retail)</td>
<td></td>
<td>11</td>
<td>4</td>
<td>9</td>
<td>0.6</td>
<td>52,800</td>
<td>52800</td>
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<td>Light Industry</td>
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<td>85</td>
<td>29</td>
<td>68</td>
<td>0.6</td>
<td>408,000</td>
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<td>Servitudes</td>
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<td>Open Space</td>
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<td>Fire Station</td>
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<td>Police Station</td>
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<td>1.4</td>
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<td>Private Cemetery</td>
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<td>9</td>
<td>3</td>
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<td>Heritage Site</td>
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<td>Petrol Filling Station</td>
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<td>Roads</td>
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<td>TOTAL</td>
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<td>295</td>
<td>100</td>
<td>125</td>
<td>624,000</td>
<td>52,800</td>
<td>163,200</td>
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<td>2,776</td>
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**Total Proposed Threshold (4 P/P/DU)**: 11104

**Note:** This table will inform the detailed TIA study for Phase 1.
CONCLUSION

Cornubia is a national priority project which has support from the National Minister. The project was presented at the Parliamentary Portfolio Committee together with the N2 Gateway Project. This report has indicated the importance of Cornubia from a regional, district and local level. It has also indicated the intention of the various stakeholders and the development potential of this project.

Cornubia has the real potential of creating substantial housing opportunities as well as employment and economic opportunities and will serve as a benchmark for future developments in South Africa. The framework makes provision for 24,320 units, of which 14,544 units are proposed for subsidised and partially subsidised housing, 4,400 units identified for social and GAP housing market and the balance earmarked for mixed use development. A mix diversity of housing has been proposed for the Cornubia Development.

The socio-economic dividends of this project is significant. The development is envisaged to create around 48,000 permanent jobs and approximately 15,000 construction jobs sustained over a 15 year period. The total estimated investment in buildings and infrastructure is R24 billion at current prices. Rates generation will amount to over R300 million per annum with other public benefits including VAT of R2.1 billion and tax receipts of a further R0.8 billion during the construction phases only.

Apart from the diverse, mix of land uses Cornubia focuses on the public realm and a concerted effort is placed on creating better environments through the concepts of walkability, convenience, connectivity, increased density and sustainability.

The open space which comprises almost 29% of the site plays an important role within the overall development. Careful planning has created value by incorporating the open space within the design which is conceived in a manner that serves as a lattice that allows for continuity for habitat and for recreational purposes.

A significant aspect of the overall framework is a focus on district integration facilitated through the proposed higher order routes that embodies the framework. A focus on public transportation is a key priority for the Cornubia development. Blackburn link and Dube West have been identified as primary arterials and connect with places of significance. Cornubia Boulevard –East and Dube West have been identified as Priority Public Transportation routes and these will serve the Cornubia development as well will contribute to the overall planning vision for the north.

The sharing of facilities have been proposed. In the past social facility provision has often led to over design and over allocation of land. This has led to sterile environments being created were school sites are not used, community halls are empty and over sized parks are alienating spaces within communities. For this reason in the planning of Cornubia, a new model has been developed with eThekwin Municipality to enable the efficient utilisation of land for social facility provision which is based on a clustering and shared model for facilities.

In many respects, Cornubia is therefore a bold undertaking that will serve as a model for similar initiatives across the country.
REFERENCES

Anton Aiello, Susanna Godehart, 2010. The space standards for the social facilities in eThekweni in the optimised locations for an Investment Program for Social Facilities in eThekweni


eThekweni Municipality, 2010. Northern Spatial Development Plan


K. Breetzke, 2009. eThekweni Study on Social Facilities


ANNEXURE A – SOCIAL FACILITIES – CONCEPTUAL EXPLORATIONS
ANNEXURE A
SOCIAL FACILITY CONCEPTUAL DESIGN CLUSTERS

The following represents a series of conceptual plans for the Social Facility clusters for Cornubia.

site: 5.0 ha

Note: The above diagrams are indicative only and full site development plans with associated bulk projections, parking layout and parking ratios, etc will need to be undertaken.
ANNEXURE A
SOCIAL FACILITY CONCEPTUAL DESIGN CLUSTERS

**site:** 6.0 ha

2 PRIMARY S. + 1 SECONDARY S. + 4
SPORTSFIELDS + COMM. HALL

**Note:** The above diagrams are indicative only and full site development plans with associated bulk projections, parking layout and parking ratios, etc will need to be undertaken.
ANNEXURE A
SOCIAL FACILITY CONCEPTUAL DESIGN CLUSTERS

site: 4.0 ha

Note: The above diagrams are indicative only and full site development plans with associated bulk projections, parking layout and parking ratios, etc will need to be undertaken.
ANNEXURE A
SOCIAL FACILITY CONCEPTUAL DESIGN CLUSTERS

site: 5.2 ha

2 PRIMARY S. + 1 SECONDARY S. + 4 SPORTSFIELDS + COMM. HALL

Note: The above diagrams are indicative only and full site development plans with associated bulk projections, parking layout and parking ratios, etc will need to be undertaken.
ANNEXURE A
SOCIAL FACILITY CONCEPTUAL DESIGN CLUSTERS

**Site:** 4.0 ha

**Note:** The above diagrams are indicative only and full site development plans with associated bulk projections, parking layout and parking ratios, etc will need to be undertaken.
ANEXURE A
SOCIAL FACILITY CONCEPTUAL DESIGN CLUSTERS

Note: The above diagrams are indicative only and full site development plans with associated bulk projections, parking layout and parking ratios, etc will need to be undertaken.

site: 3.7 ha

2 PRIMARY S. + 2 SPORTSFIELDS + LIBRARY + CLINIC
ANNEXURE A
SOCIAL FACILITY CONCEPTUAL DESIGN CLUSTERS

site: 5.6 ha

Note: The above diagrams are indicative only and full site development plans with associated bulk projections, parking layout and parking ratios, etc will need to be undertaken.
ANNEXURE A
SOCIAL FACILITY CONCEPTUAL DESIGN CLUSTERS

**site:** 5.5 ha

**Note:** The above diagrams are indicative only and full site development plans with associated bulk projections, parking layout and parking ratios, etc. will need to be undertaken.
ANNEXURE A
SOCIAL FACILITY CONCEPTUAL DESIGN CLUSTERS

site: 5.2 ha

2 PRIMARY S. + 1 SECONDARY S. + 4 SPORTSFIELDS + CLINIC + SWIMMING POOL

Note: The above diagrams are indicative only and full site development plans with associated bulk projections, parking layout and parking ratios, etc will need to be undertaken.