Draft Impact Assessment Report:

Amendment to Proposed Development of Cotswold Fenns Estate, Portion 734 of the Farm Upper End of Langefontein No. 980

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1. Introduction

Following the completion of an Environmental Scoping process conducted in terms of the 1997 EIA Regulations, Cotswold Fens Development Company (Pty) Ltd was granted Environmental Authorisation on 17 December 2008 to construct Cotswold Fens Equestrian Estate on Portion 734 of the Farm Upper End of Langefontein No. 980. This 60ha property is located in the Hillcrest / Waterfall area, some 35km west of the Durban city centre (see Annexure 1 for locality map).

Cotswold Fens Equestrian Estate targeted the high income housing segment and comprised 147 freehold title residential sites, a significant amount of common open space, and equestrian facilities. The development was to be designed to integrate aesthetically and spatially with Cotswold Downs estate.

Owing to a significant downturn in the market for high income residential housing in the area (and nationally) that took place shortly after the Environmental Authorisation was granted for Cotswold Fens, construction of the estate was never started.

Through a series of Applications for Amendment to the Environmental Authorisation for Cotswold Fens, the validity period of the Environmental Authorisation has been extended to its maximum possible timeframe of 10 years. This implies that construction of Cotswold Fens must begin by 16 December 2018 or the Environmental Authorisation for the development will lapse (note that the environmental authority has indicated that no further extension to these timeframes will be permitted).

Following re-assessment of market demand for residential housing in 2013, additional shareholders joined the Cotswold Fens Development Company (Pty) Ltd and a new legal entity - Specifield (Pty) Ltd - was established to take the development of Cotswold Fens forward. This new investor group is proposing to make a number of substantive changes to the Cotswold Fens development plan. These changes primarily aim to accommodate a more diverse range of housing typologies and price ranges, which is considered to be more in line with current market demand and need for housing in the Upper Highway area.

The proposed revised development plan includes a total of 650 units, 567 of which would be constructed in 2-, 3- and 4-storey apartment blocks, and 83 freehold residential units in the same layout as previously proposed. The proposed equestrian facilities have been removed from the development proposal, and instead a local community facility (child care facility / nursery school) and agricultural land uses (plant nursery, small scale vegetable farming) are proposed is its place.

Importantly, the above revised development proposal is proposed to be located within the previously approved development footprint. The amount of common area (much of which is environmentally sensitive) would therefore remain the same.

In accordance with the requirements of the 2014 EIA Regulations (GNR982 of 2014), an Application for Amendment to the Environmental Authorisation for Cotswold Fens has been lodged with the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (KZN DEDTEA), which seeks approval for the proposed changes to the development plan for Cotswold Fens.

These proposed changes to the development plan may result in significant changes in the intensity, type, scope or nature of environmental impacts associated with the development. As such, it is the purpose of this Environmental Impact Assessment Report to evaluate how the environmental impacts of the development would be altered with the proposed changes to the development plan. This report – when finalised - will be submitted to the KZN DEDTEA to inform its review of the Application for Amendment of Environmental Authorisation for Cotswold Fens that has been lodged.
2. **Proposed Changes to the Development Plan**

2.1 **Original Development Plan – as Authorised**

Cotswold Fens Estate, as authorised by the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (KZN DEDTEA) in December 2008, included:

- 147 freehold residential units.
- Equestrian facilities to house 45 horses, an equestrian club, events arena, and paddocks.
- An access road from Inanda Road opposite the Acutts Drive junction to the southwestern corner of the site.
- An access road from the eastern end of Cotswold Downs, providing access to 5 erven in the south-western corner of the Cotswold Fens Estate.
- Internal roads, electricity (underground), water reticulation, and telecom cables – including a bridge across the Nkutu River.
- Waterborne sewerage connecting to Fischer Road Wastewater Treatment Works.
- Rehabilitation of wetlands on the property.
- Internal landscaping.

The gross development density of Cotswold Fens as authorised would be 2.45 units per hectare (147 units on a 60 hectare property). Please see Annexure 1 for the Site Development Plan as authorised.

2.2 **Proposed Revisions to the Development Plan**

The revised development proposal includes:

- 83 freehold residential units as previously authorised.
- 567 residential units in the format of a series of 2-, 3-, and 4-storey walk-ups.
- An access road from Inanda Road / Acutts Drive junction to the southwestern corner of the site, via the traffic circle constructed at the new Curro School; and an access road from the eastern end of Cotswold Downs, providing access to 5 erven in the south-western corner of the Cotswold Fens estate.
  - While these access arrangements would serve the entire revised Cotswold Fens development, there is an alternative access proposal in which the 83 free-standing residential units would be accessed via the main Cotswold Downs access road system. This would depend on the agreement of the Cotswold Downs Management Association for the traffic from the 83 sites being routed through the internal roads of Cotswold Downs (note that 5 of these sites already gain access via Cotswold Downs, so the additional number would be 78 sites). In this case, there would be no access to the Low Density development from the JF Bailes Drive circle. Therefore, the length of main access road down the steep hillslope, from JF Bailes Drive to the Nkutu River, could be reduced by approximately 200m, reducing development cost, and reducing the environmental impact associated with this road.
- Electricity, sewerage, potable water and stormwater infrastructure (note that the infrastructure is similar to that previously authorised, but with the exception that with the increased number of units that would need to be serviced will require infrastructure with higher capacities).
- Removal of equestrian facilities from the development proposal.
• Social amenity building (i.e. a child care / nursery school facility) and agricultural uses on open space along Inanda Road (plant nursery / propagation facility, small scale vegetable farming etc.).
• Rehabilitation of wetlands on the property.
• Internal landscaping.

The main changes are therefore:

i) An increase in the number of residential units proposed, from a total of 147 units to a total of 650 units; and

ii) A change in the typology of residential units proposed, from 147 free-standing houses on erven of between 900m² and 1700m², to 83 of such properties plus 567 apartments, constructed in a series of 2-, 3- and 4-storey walk-up blocks; and

iii) The removal of the equestrian components of the development (including paddocks, a club house and stables), and replacement thereof with limited social amenities (i.e. a crèche or nursery school) and agricultural-related activities (i.e. market gardening, plant nursery etc.).

iv) The possible removal of the approx. 200m section of internal access road down the steep slope between the JF Bailes road circle and the low density portion of Cotswold Fenns, proposed that the Cotswold Downs Management Association were to agree to allow the 83 low density units of Cotswold Fenns to be access through the Cotswold Downs internal road network.

The development footprint (i.e. the defined area in which the units and other activities would be located) is proposed to remain the same, implying a significant increase in the density of units, but no significant change in the area proposed to be physically transformed by the development.

Please see Annexure 1 for the proposed Revised Site Development Plan.

3. Property Location and Description

3.1 Property Location

The property (known as Portion 734 of the Farm Upper End of Langefontein No. 980) is situated with the Outer West region of the eThekwini Municipal Area. It is located roughly at the interface of the suburbs of Hillcrest and Waterfall. The southern boundary of the property abuts Inanda Road (also known as Metropolitan Route M33 and Provincial Main Road P255), the major arterial route connecting Hillcrest and Waterfall / Crestholme. The property is approximately 4.5km from the Hillcrest CBD and 2.1km from the Waterfall CBD. A locality map is contained in Annexure 1.

To the north and northwest of the property is Cotswold Downs Estate. To the west is a proposed commercial area and site of the new Curro School (currently under construction). To the east is a single large residential / smallholding property; and to the northeast are further smallholdings and the Brackenhill Industrial Area.

The property is located within the Nkutu River catchment. The Nkutu River joins the Molweni River some 5km downstream of the property. The Molweni River joins the Umgeni River a short distance downstream of Inanda Dam.
3.2 Property Description

The Cotswold Fenns property is roughly 60 hectares in extent and was used for sugar cane production up until 2008, but has lain fallow since then. Prior its use for sugar cane production (some 35 years or more ago), the farm was used for plantation forestry (Black Wattle, Pine and Eucalyptus).

A section of the Nkutu River is contained within the property (downstream of Cotswold Downs and upstream of Eldorado Farm). Associated with the river are wetlands and riparian forest fringes. The land also contains patches of indigenous grassland (KZN Sandstone Sourveld) that have not previously been cultivated as a result of shallow rock and steep slopes. KZN Sandstone Sourveld Grassland (SVs5) is listed as “Endangered” in the National List of Threatened Ecosystems (GNR1002, 2011).

The property comprises north and south facing slopes of a section of the Nkutu River valley, and a number of smaller drainage lines collecting water from these slopes and channelling it to the Nkutu. Figure 1 shows the location of remaining natural habitats on the property.

Since 2008, the major part of the property has become heavily infested with invasive alien plants, mainly comprising Black Wattle (*Acacia mearnsii*), Lantana (*Lantana camara*) and Gum trees (*Eucalyptus* spp), including the KZN Sandstone Sourveld Grassland areas, riparian fringes, drainage lines, and fallow farmlands.

From an environmental policy perspective, the Nkutu River, its floodplains and certain areas of forest and grasslands on the property form part of the Durban Metropolitan Open Space System (DMOSS). Open spaces in the DMOSS are the core generators of ecosystem goods and services to the city’s residents (e.g. water cleansing, flood attenuation, biodiversity refuges etc.). In this regard, we note that certain areas of fallow agricultural land have been included erroneously in the DMOSS on the Cotswold Fenns property.
4. Changes to the Receiving Environment

Since the environmental impacts of Cotswold Fenns Equestrian Estate were assessed in 2007 / 8, the receiving environment for the development has changed. During the interceding years, there have been the following developments / investments in the area:

i) Substantial residential and commercial developments in Hillcrest and Waterfall, including 101 Acutts, Cotswold Downs Estate, Cotswold Energy Centre, Phase 1 of Watercrest Mall (50,000m²), and the upgrade / expansion of Link Hills Shopping Centre.

ii) Upgrading of the major arterial road serving the area (Inanda Road). Inanda Road is now a class 2 dual carriageway inter-district arterial route providing a high level of connectivity to the national road network and also to the major retail and service centres in the outer west sub-region.

iii) The acquisition of the Hillcrest Christian Academy by Curro Schools to establish a vastly upgraded junior and senior primary school just 1.7kms from Cotswold Fenns.

iv) The development of a new high school by Curro adjacent to the Cotswold Fenns site, currently under construction.
v) The recent rezonings approved for a convenience retail centre comprising some 6 500m² of gross leasable area and a new planned unit development zone at 25 units per hectare on the western boundary of the Cotswold Fenns site.

vi) The availability of a water borne sanitation system to dispose of sewage effluent to the Fischer Road Wastewater Treatment Plant. This facility is privately owned and operated by Fischer Road Water Services Provider Company (Pty) Ltd (FRWSP).

These changes in the area are expected to have resulted in increased traffic loadings on local and arterial roads, offset with improved arterial road carrying capacities, increased pressure on water and wastewater infrastructure, and increased pressure on natural ecosystems (especially rivers and wetlands).

In the 2008 Scoping Report for Cotswold Fenns, it was also identified that there were more than 33 ancestral graves on the Cotswold Fenns property. These graves have since been exhumed and relocated.

In addition, a High Voltage overhead powerline that ran across the southern parts of the property has been buried underground, and a substation established at the point where the line transitions from underground to overhead (note that the substation is on the Cotswold Fenns property).

When the property was assessed in 2007/8, it was still being used for sugar cane production. Immediately following the issuing of the Environmental Authorisation, the final harvest was made and the property has lain fallow ever since. Large tracts of the areas that were formerly sugar cane lands and natural grasslands have subsequently become heavily infested with Invasive Alien Plants (IAPs), including Black Wattle, Lantana and Eucalyptus. This, however, does not imply that the biodiversity value of the remaining natural areas on the Cotswold Fenns property is reduced, but rather that the likely cost to the landowner has increased of rehabilitating these natural ecosystems as part of the development process.

The evaluation of the environmental impacts associated with the proposed changes to the Cotswold Fenns development plan must therefore be responsive to the change in ‘baseline’ conditions which have occurred since the previous study was undertaken. A description of the property, and the general receiving environment for the Cotswold Fenns development, updated to reflect 2016 conditions, is provided in the following section.

5 Details of the Proposed Revised Cotswold Fenns Development

5.1 Layout and Architectural Design

The low density portion of the development (83 free-standing residential sites as previously authorised in 2008) effectively forms the third phase of the adjacent Cotswold Downs development; is contiguous and adjacent to Cotswold Downs on its eastern and downstream boundary; and is intended to match Cotswold Downs in architectural style, and in provision of roads and engineering services.

The proposed high density portion (567 apartments in a series of blocks) introduces an apartment style residential product aimed at a wider buyer community, offering opportunity to live in a secure estate at a more affordable price. The apartments portion of the development, although fenced off from the 83 site low density area, will be allocated a significant portion of the overall natural areas within the 59,7 ha, including over 50% of the Nkutu River’s length and wetlands area.

The building design principles for the apartment block development are as follows:
• Buildings forms designed to create a community feel;
• Views on the street promoted—balconies / terraces and windows face onto the street for safety;
• Street becomes a positive safe space;
• Will consist of a wide variety of architectural styles and treatments whilst retaining an overall integrity of character based primarily on existing residential developments within Cotswold Downs;
• A safe, permeable pedestrian walkway network to be the primary movement system, with private vehicles only being necessary for coming to and from the area;
• Special sensitivity to existing natural features, flora and topography;
• Besides the external walls, boundary walls will be designed to be permeable and include low picket fencing, low stone walls and/or hedgerow planting where required;
• High quality landscaping and public environment promoted.

Figure 3: Two portions of Cotswold Fenns development
5.2 Engineering Services

The Engineering Services Report contained in Annexure 3 refers.

The low density component of the proposed revised Cotswold Fenns development comprises exactly the same 83 residential erven / sites as previously authorised by the KZN DEDTEA in 2008 and therefore
comprises almost exactly the same infrastructure as was previously proposed. As such, there is almost no change to this low density development area’s infrastructure as was authorised under EIA/7396.

The new high density component proposed to form part of the Cotswold Fens development covers the same development footprint as was previously authorised in the ROD (incorporating 567 apartment units in the place of 64 free-standing residential sites), but has a different configuration of roads and services, and slightly larger size requirements of these, to cater for the increased number of residents.

The urban design philosophy for the Estate dictates a minimalist approach to engineering services design where possible. This requires:

- Roads to be relatively narrow with soft verges.
- “Cobbled street” appearances in the villages.
- Hidden services wherever possible.
- Natural appearances using indigenous plantings.
- Synergy between services and the natural assets e.g. between stormwater control and water features, streams, ponds and wetlands.
- Aesthetically pleasing, in keeping with architectural themes.

However, within this approach, services are required to be:

- Robust and long lasting.
- Low maintenance.
- Generally, in accordance with Local Authority standards.
- Constructed with minimal environmental disruption.

Environmental requirements of the estate Environmental Management Programme (EMPr) will dictate the following specific objectives in services provision:

- Minimum damage to existing environmental assets on the site.
- Maximum enhancement of the natural environment wherever possible in the process of services design and provision.

This has resulted in conceptual designs which provide the following outcomes:

- Formal road network using the routes of existing tracks where possible – including the river crossing position.
- Rain and stormwater control via enhancing natural streams, ponded areas and water features, reducing erosion and flood damage risk on site and downstream.
- Recycled wastewater from FRWSP used to supplement irrigation of open spaces, verges, and wetland fringes.
- Potable water supply from Municipal supply – which then introduces additional water into the surface and groundwater systems via garden watering and wastewater recycling.
- Security fencing of the site designed to allow small animal passage between Cotswold Fens and safe neighbouring properties, and protecting natural fauna and flora from damage (poaching / destruction).
- Management of the water courses to reduce erosion, protect banks, protect and encourage wetland function, improve hydrology / flow patterns in the streams, and maximise riverine flora and fauna habitats.
It is proposed that the internal roads and engineering services within Cotswold Fenns be similar to those implemented in Cotswold Downs. To this end these will include:

- Asphalt surfaced roads ranging in width from 3,5m to 5,5m, with piped stormwater control, servicing all sites;
- A low level bridge crossing the Nkutu River as already approved in the 2008 Environmental Authorisation for Cotswold Fenns;
- Limiting of all runoff from hardened areas to 1:50 yr pre-development flow rates via a system of “white” and “blue” site classifications as per Cotswold Downs, whereby “white” sites are required to attenuate peak flows (without infiltration into the ground), and “blue” sites are required to infiltrate storm runoff on-site;
- Stormwater attenuation / infiltration on-site for all 83 Low Density sites;
- Where possible attenuation / infiltration on the High Density sites – with additional attenuation provided in open spaces where environmentally advantageous;
- Wetland rehabilitation in the Nkutu River system to increase environmental functionality as well as provide added flood flow control via construction of approximately 5 gabion weirs;
- 500 kl/d of potable and firefighting water supply from the Municipal bulk reticulation main on Inanda Road;
- Disposal of 430 kl/d of wastewater from the development via waterborne sewerage to the existing, private FRWSP system;
- Solid waste management via Durban Solid Waste (DSW);
- A buried electrical supply to all sites sourced from the eThekweni Electricity Department off the existing infrastructure on Inanda Road;
- A buried network of telecommunications to all sites.

Access to the development is proposed to be off Inanda Road, via the new J F Bailes Drive. Upgrading of the J F Bailes / Inanda Rd intersection, as well as some of J F Bailes Drive, will be required in order to provide adequate access to Cotswold Fenns once fully developed. It is proposed that these upgrades are to be phased in, according to the eventual pace of development.

An alternative access arrangement is for the 78 of the low density units to be accessed through the internal road network of Cotswold Downs, removing the need to construct a connecting road between the JF Bailes Road circle and low density component of the development1. This arrangement is technically feasible but would require the permission of the Cotswold Downs Homeowners Association. The link between the Cotswold Downs development and the Cotswold Fenns low density units would be created at the point shown on the map below.

1 Note that 5 of the low density units are already intended to gain access via the Cotswold Downs internal road network. See Figure 6.
5.3 Property Zoning and Planning Applications Required

The Report prepared by Elliott Duckworth Associated contained in Annexure 3 refers.

The Cotswold Fenns property is situated within the jurisdiction of the Outer West Town Planning Scheme of the eThekwini Municipality. In order to accommodate the development of the proposed equestrian estate, the scheme was amended to zone the major portion of the land from agriculture to a Planned Unit Development (PUD) 2 zone. However, as the natural drainage line running through the property had a number of environmental sensitivities associated with it, the valley line was included into the amended scheme as a conservation reservation.

It might therefore be noted that the conservation reserve depicted on the scheme map is a land reservation as opposed to a zoning right and should be considered as indicative that parts of the site are to be protected as environmental conservation areas. The intent is to ensure the protection of the Nkutu River valley and whilst the conservation zone shown on the scheme map does not represent the defined wetlands and sensitive environmental areas it is to ensure that any development of the site takes account of the environmental conservation areas. The environmentally important areas were identified and delineated in the environmental impact assessment process for the approval of the Cotswold Fenns equestrian estate and were to be protected by the registration of conservation servitudes.

The Planned Unit Development 2 zone contained in section 7 of the Outer West Scheme of the eThekwini Municipality sets out the development controls currently applicable to the Cotswold Fenns property. These controls permit a development density of 15 units per hectare. As the property is some 59,708ha in extent
and thus at 15 units / ha, the potential yield is 895 residential units. The provisions of clause 9.6 of the Outer West Scheme allow the gross site area to be used for density calculations, thus the delineated environmentally sensitive areas are included for the purpose of calculating the potential yield.

Therefore, notwithstanding the number of residential units that have been approved on the property in terms of the existing environmental authorisation (a total of 147), the land use zoning that was adopted to accommodate that development proposal makes provision for a total yield of at least 895 residential units.

However, the freely permitted land uses include: ‘a dwelling house’, and ‘multiple unit development’ only. Apartments are therefore precluded in terms of the current development controls. In order to obtain permission to construct the apartment buildings as proposed in the revised Cotswold Fenns development proposal, it will therefore be necessary to amend the development controls applicable to the existing zoning of the site (PUD 2) so as to freely permit “flats” as a land use in the PUD 2 zone. As such, an application to the municipality in terms of the provisions of the Spatial Planning and Land Use Management Act, No 16 of 2013 and the municipality’s Planning and Land Use Management by-laws will be required to amend the provisions of the PUD 2 zone as necessary.

6. Environmental Impact Assessment

6.1 Key Impacts Identified Previously

In the 2008 Environmental Scoping Report for Cotswold Fenns Estate, the following key issues were identified:

- **Job creation.** Cotswold Fenns was deemed to offer significantly more short and long term job opportunities than the use of the land for sugar cane production had.

- **Cultural heritage impacts.** There were more than 33 graves on the property with significant cultural heritage value. This issue was subsequently resolved with the exhumation and re-interment of the graves, in accordance with the requirements of AMAFA Heritage aKwazulu-Natali.

- **Traffic impacts.** Cotswold Fenns was predicted to contribute to increased traffic flows and congestion in the area, which at the time was becoming increasingly problematic given that Inanda Road had not yet been upgraded. It was concluded that the significance of this impact would be reduced by the implementation of planned traffic system upgrades.

- **Aesthetic / visual impacts.** The low density development was deemed to be in keeping with the local landscape character and would not negatively impact on local sense of place.

- **Protection and rehabilitation of best quality remnant natural habitats on the property to achieve nett ecological gain.** Remnant patches of grassland and forest on the property were mapped prior to the development layout being designed in 2007. While every effort was made to ensure that there was no encroachment into wetland areas, there were some incursions into patches of remnant grassland where it was deemed that this was possible (owing to these areas being secondary grasslands or in a disturbed state) provided that the remaining pieces and ex-sugar cane areas left undeveloped would be properly rehabilitated and managed to achieve a nett gain in grassland habitat functionality on the property. There was no development proposed for any remnant forest patches on the property.
• **The need to reduce development density.** The initial 2007 development designs for Cotswold Fenns Equestrian Estate had proposed 300 residential dwelling sites (a combination of free-standing and multi-unit sites). Even though this development density was within the gross threshold of 5 units per hectare that was considered appropriate at the time, issues identified around wetlands, traffic, stormwater and wastewater impacts resulted in the development being reduced to 147 free-standing residential units, as well as equestrian facilities. The option of connecting to the Fischer Rd wastewater treatment works was also confirmed as being feasible, which eliminated the need to plan for on-site sanitation.

• **The need to protect wetlands.** A wetland delineation exercise was completed early in the development design process in 2007. The wetland areas plus a 20m buffer on minor drainage line wetlands, and a 30m buffer on wetlands associated with the Nkutu River, were excluded from the development footprint. This substantially reduced the amount of developable land available, hence a need to reduce the proposed number of units (which were space-intensive, being free-standing sites of between 900m² and 1700m² per unit). The original plan had been to develop some 250 units, but this was reduced to 147 following the removal of wetlands, grasslands and forest areas from the developable area.

### 6.2 Summary of how the Impacts are anticipated to Change

The proposed changes to the Cotswold Fenns development plan are predicted to result in an **intensification** of the following impacts or issues:

• **Job creation.** The job creation benefits of the proposed development will intensify in the short term, as construction of the increased number of units (including apartment blocks) on the site would yield a greater opportunity for construction related jobs.

  In the medium to long term, the additional number of units proposed may only slightly increase the number of jobs offered by the development as a whole. This is based on the assumption that high income homes with expansive gardens usually create between 0.5 and 2 full time jobs per home, whereas apartments targeting middle income owners tend to create significantly fewer employment opportunities per household. While the number of jobs created by the 83 remaining free-standing residential sites would generate the same number of jobs, the substitution of 64 free-standing homes with 567 apartments is therefore anticipated to result in only a marginal increase in domestic helper type jobs.

• **Social equity.** The revised Cotswold Fenns development proposed represents a significant contribution towards increasing opportunities for middle income earners to enter the property market and / or live in Hillcrest, which has historically been an area where property prices and rentals are generally considered out of reach for this market segment.

  This implies that the development offers important social equity benefits in the context of the eThekwini Municipality’s objectives of achieving more inclusive, equitable and integrated settlement patterns in the greater Durban region. In its revised from, Cotswold Fenns would permit a greater number of people that work in middle-income positions (e.g. such as shop assistants, junior professionals, and administrative personnel) in Hillcrest, Kloof and Waterfall to live closer to work, and so reduce travel costs and time.

• **Traffic impacts.** According to the Traffic Impact Assessment included in Annexure 3, the proposed 650 units at Cotswold Fenns will contribute towards a need to upgrade the intersections at Inanda Road / Acutts Drive and Inanda Road / Cotswold Drive. These upgrades will involve the construction of left-turn...
slip lanes into Cotswold Drive from Inanda Road, into the access road to Cotswold Fenns from Inanda Rd, and from La Domaine into Inanda Road. The Traffic Impact Assessment Report concludes that the local and regional road network has the capacity to accommodate the additional traffic otherwise.

- **Stormwater impacts.** While there would be no change in respect of stormwater impact from the 83 free-standing residential sites, the replacement of 64 free-standing houses with a series of apartment blocks containing 567 units will result in significantly increased hard-surface area within the development footprint. This will result in intensified urban stormwater run-off that will need to be properly attenuated to avoid degraded the natural streams and rivers that receive these flows.

- **Aesthetic / visual impacts.** The aesthetic / visual impacts of development will be intensified with the proposed 2, 3 and 4-storey walk-up apartment blocks in place of 64 low density free-standing units that were previously authorised as part of Cotswold Fenns. This building form is new for the area, and may be perceived as causing a change in the local landscape amenity of the area.

- **Issues associated with fencing.** Given that the apartment block component of the development could be fenced off from the remainder of the development (the free-standing units), there may be a substantial increase in the length of fencing associated with the development, as well as at least one additional point where the fence will need to cross the Nkutu River. While undoubtedly improving the safety and security of residents, fencing of estate developments causes the following negative impacts on the environment: (i) blocks off wildlife movement corridors, (ii) creates often extensive zones through natural habitats and following the fenceline that have to be kept mown and free of trees, impacting negatively on the function and continuity of natural ecosystems, and (iii) river crossings of streams / rivers are points of intense long term impact on the river banks and aquatic ecosystems. Such crossing points are often constructed as weirs, and may be points of erosion or ongoing damage to the fence infrastructure during floods.

The revised development proposal is **not associated with any significant change** in the following impacts or issues:

- **Transformation / rehabilitation of natural ecosystems.** Although the revised development proposal includes significantly more residential units, the physical footprint of the proposed development remains the same. As such the revised development proposal is not associated with any change in the previously identified physical impacts on natural ecosystems. In addition, the revised development proposal incorporates the previously proposed ecosystem restoration activities (wetlands, grasslands, riverine forests), and therefore the previously identified opportunity for achieving ‘net ecological gain’ through the development, remains.

- **Cultural heritage impacts.** There were more than 33 graves on the property with significant cultural heritage value. This issue was subsequently resolved with the exhumation and re-interment of the graves, in accordance with the requirements of AMAFA Heritage aKwazulu-Natali.

- **Wastewater impacts.** The proposed changes to the development plan will result in an increase in the average volumes wastewater generated by the development from 157kl / day / day to 430kl / day (270% increase). While the infrastructure to convey this wastewater to the Fisher Road Wastewater Treatment Works (FRWWTW) remains in the same position, the pipeline sizes and two approved sewage pump stations would need to be larger than previously authorised. The risk of sewage overflows / spillage is not significantly increased provided that the emergency (power outage) storage capacities at the
pumpstations is similarly increased. The additional wastewater can be accepted and treated at the FRWWTW, as the development falls within the “contract area” that this privately owned and operated treatment plant may service, and is within the approved capacity (1,95MI / day) of the works to treat (see Engineering Services Report in Annexure 3). The additional wastewater, being domestic in nature, would be unlikely to impact negatively on the function of the works or the quality of the treated effluent produced by it. The environmental impacts associated with the discharge of treated wastewater effluent from the plant (or its use for landscape and golf course irrigation) has been assessed in previous Environmental Impact Studies and Water Use License Applications and found to be acceptable.
### 6.3 Assessment of the Change in Development Impacts

The following table presents an assessment of how the revised development proposal for Cotswold Fenns will CHANGE the impacts of the development that was previously authorised by the KZN DEDTEA in 2008.

<table>
<thead>
<tr>
<th>Nature of Impact (description)</th>
<th>Extent of Impact (what/who is affected and to what degree, including any irreplaceable loss of resources)</th>
<th>How does the Impact Change?</th>
<th>Duration and Probability of Impact Occurring</th>
<th>Intensity of Impact</th>
<th>Significance of Impact without Mitigation</th>
<th>Recommended Mitigation Measures</th>
<th>Significance of Impact with Mitigation</th>
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</thead>
<tbody>
<tr>
<td><strong>A. Social and economic impacts</strong></td>
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<tr>
<td>A1 Job creation</td>
<td>Significant increase in short term job opportunities with increased construction intensity of 567 apartments. In the current economic climate, this could offer an important boost to cash-strapped local households. Insignificant / very low increase in the number of domestic helper jobs with the increased number of units in the estate. Apartments are not anticipated to generate as many jobs per unit as single residential homes per unit.</td>
<td>Significant increase in positive short term job creation benefits</td>
<td>Short term - Highly probable</td>
<td>High</td>
<td>High (+ve)</td>
<td>Local labour to be employed where possible to maximise local benefits.</td>
<td>High (+ve)</td>
</tr>
<tr>
<td>A2 Contribution to making a sustainable city with varied lifestyle choices</td>
<td>Provision of residential housing that is more accessible price-wise to middle income earners fills an obvious gap in the current residential stock available in Hillcrest that the original development plan did not address. Represents an important contribution towards achieving a more inclusive, equitable and integrated settlement form in Hillcrest rather than perpetuating only the exclusive residential estate settlement form. The proposed apartment blocks are set in a development that offers an excellent Long term - Definite</td>
<td>Significant improvement in social equity, inclusion and integration benefits</td>
<td>Long term - Probable</td>
<td>Moderate</td>
<td>High (+ve)</td>
<td>Ensure that the development targets this market segment and doesn’t seek exclusivity.</td>
<td>High (+ve)</td>
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<td>Ensure that the apartment development is not spatially separated from the green belt along the Nkutu River by fencing etc.</td>
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<td><strong>A3</strong> Impacts on municipal / infrastructure services, including wastewater</td>
<td>The proposed development of 650 units instead of 147 units will result in a significant increase in demand for electricity and potable water to service the development. This may place local municipal infrastructure under significantly greater strain.</td>
<td>An increase in pressure on local municipal infrastructure</td>
<td>Long term – Probable</td>
<td>Low (-ve)</td>
<td>Low (-ve)</td>
<td>The apartments and houses must be designed with energy efficiency and water conservation measures in place.</td>
<td>Low (-ve)</td>
</tr>
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<td>lifestyle amenity, with open spaces to walk in and areas for children to play in safety. Such high quality lifestyle choices would otherwise not have been made available at Cotswold Fens to the middle-income market segment.</td>
<td>in access to quality residential housing for middle income families</td>
<td>Important local contribution towards achieving a more sustainable city form, with efficient use of land and infrastructure</td>
<td>Long term – Definite</td>
<td>Low</td>
<td>Moderate (+ve)</td>
<td>None</td>
<td>Moderate (+ve)</td>
</tr>
<tr>
<td>The development, which is proposed to comprise a combination of both low density and high density residential components, is more supportive than the previous development plan was of the city’s approach of ‘densification’ in appropriate locations – i.e. efficient use of land resources and discouraging urban sprawl – and in offering a ‘diversity of lifestyle choice options’. This site can be adequately serviced with waterborne sewerage and there is sufficient open space to allow for effective attenuation of accelerated urban stormwater flows, and to provide soft green spaces for recreation, suggesting that the site is appropriate for a certain amount of high density development.</td>
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<td>A4 Impact on the local economy</td>
<td>The increased number of units will boost the local resident population and create additional market in the local economy. The additional units will also support enhanced injection into the local construction and services sector during the construction phase.</td>
<td>Enhanced injection into the local economy in the short and long term</td>
<td>Short term and long term – Highly probable</td>
<td>Low (+ve)</td>
<td>Low (+ve)</td>
<td>None.</td>
<td>Low (+ve)</td>
</tr>
<tr>
<td>A5 Traffic impacts</td>
<td>The increased number of units proposed would significantly increase the traffic impacts of the development. The regional arterial road system can accommodate this volume of traffic (although levels of congestion could increase significantly in Waterfall and Hillcrest CBDs), but existing local intersections at the Fenns access onto Inanda Rd, and at Cotswold Dv, would not cope adequately at peak times and would need to be upgraded.</td>
<td>Significant increase in peak traffic on local and regional road networks. Local intersections cannot cope with peak traffic.</td>
<td>Long term - Highly probable</td>
<td>High</td>
<td>High (-ve)</td>
<td>Inanda Rd/Acutts Dv-JF Bailes Rd and Inanda Rd/Cotswold Dv intersections must be upgraded to include left-turn slip lanes as shown in the TIA Report (Annexure 3).</td>
<td>Moderate (-ve)</td>
</tr>
<tr>
<td>A6 Visual impacts</td>
<td>The proposed 2, 3 and 4 storey apartment blocks will result in the development being significantly more visible than the previously approved development. Apartment blocks of up to 4 storeys are not an existing feature in the Hillcrest/Waterfall landscape, and the introduction of buildings of this scale may be perceived to change the local landscape.</td>
<td>The development will be significantly more visible in the local landscape, and may be perceived to</td>
<td>Long term - Probable</td>
<td>High</td>
<td>Moderate (-ve)</td>
<td>Architectural style to be aligned with Cotswold Downs, stepping of apartments down the slope should be undertaken to limit height (particularly 4 storey blocks) above natural ground level, landscaping to be undertaken to screen impact of buildings on the landscape, colours to be natural and blend into the landscape, reflective materials to be prohibited in architectural code.</td>
<td>Moderate (-ve)</td>
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<td><strong>Noise &amp; air quality impacts</strong></td>
<td>The increased number of residential units proposed is likely to increase the duration and intensity of the construction phase, and associated construction noise impacts. The increased number of vehicles associated with the higher density development will result in increased traffic noise and air emissions impacts locally. Inanda Road is already associated with noise impacts, and the revised</td>
<td>change the local landscape character.</td>
<td>Short term - Probable</td>
<td>Moderate (-ve)</td>
<td>Low (-ve)</td>
<td>Implementation of the EMPR which contains controls designed to limit construction noise.</td>
<td>Low (-ve)</td>
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<td></td>
<td>Surrounding residential properties may experience longer duration and intensity of construction noise impacts. Increased traffic noise and air emissions would be</td>
<td>Long term - Possible</td>
<td>Low (-ve)</td>
<td>Low (-ve)</td>
<td>Speed limits within the development to be set at maximum 40kph.</td>
<td>Very low (-ve)</td>
<td></td>
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<tr>
<td>A8 Cultural heritage impacts</td>
<td>Development proposal is unlikely to materially increase the intensity of existing noise impacts along this road.</td>
<td>Experienced on the Cotswold Fenns site as associated with the increased number of units.</td>
<td>Long term - Definite</td>
<td>Moderate (+ve)</td>
<td>Low (+ve)</td>
<td>EMP includes controls requiring that any artefacts / grave sites etc. found during construction are to be reported to AMAFA and construction to stop if required until the artefact / grave has been assessed and moved.</td>
<td>Insignificant</td>
</tr>
</tbody>
</table>

B. Impacts on ecological systems and resources

| B1 Stormwater impacts | Urban stormwater run-off would be more intense, and may result in increased negative impacts on local aquatic ecosystems if not properly attenuated. | Significant intensification of urban stormwater run-off from the development site associated with higher density development | Long term – Highly probable | Moderate (-ve) | Moderate (-ve) | Stormwater management plan indicates attenuation measures that will limit local and regional stormwater impacts. The wetland rehabilitation plan is to be implemented. Functional wetlands on the property will provide an important buffer for possible water quality and flood impacts from the proposed development. | Low (-ve) |

<p>| B2 Wastewater impacts | 270% increase in wastewater generated by the development as a result of the increased number of units may increase risks associated with wastewater spills. | Elevated risk of environmental pollution from | Long term – Low probability | Moderate (-ve) | Moderate (-ve) | Sewage pumpstations to be designed to have capacity to store sewage during power outages, back up equipment to be present. | Low (-ve) |</p>
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| and also discharge to the natural environment. No additional infrastructure required, but pipelines and pumpstations need to have increased capacities. | sewage spillage / overflow or discharge of treated effluent | G3 Impacts on terrestrial ecosystems The development footprint has been contained within the area defined for development previously. There will be no change in the area of terrestrial ecosystem directly transformed by the development.  
There is no change in the proposal to rehabilitate terrestrial ecosystems as part of the development process, and to manage these as part of the development on an ongoing basis. The opportunity to achieve nett ecological gain through the development therefore remains.  
The option to gain access to 78 of the low density residential units through Cotswold Downs would remove the need to construct a 200m section of road from JF Bailes down to this component of the development, resulting in opportunity to reinstate grassland at the site of the existing jeep track where the road was positioned.  
The fencing off of the low density component of the development from the high density component would increase wildlife barriers and create a bigger zone of ecosystem disturbance associated with | Increased fencing may impact negatively on wildlife movement corridors and may expand the area of natural ecosystem impacted as a result of the need to keep the fenceline free of bushy vegetation  
Opportunity to gain access for 78 units through Cotswold Downs would create an additional 1000m² of area that could be | Long term – Highly probable | Moderate (-ve) | Moderate (-ve) | Spillage control bunds to form part of the design.  
Fencing to be constructed along the boundaries of residential ERVEN where possible, limiting lengths of fenceline through environmental conservation zones.  
Animal openings in the fence, similar to those successfully used at Cotswold Downs, are to be incorporated into the fencing design, particularly along the riverine corridor area, and at key points identified by the Environmental Control Officer. | Low (-ve) |
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<tr>
<td>B4 Impacts on aquatic ecosystems</td>
<td>Increased urban stormwater run-off and wastewater produced by the development presents created risk of spills / pollution of local aquatic ecosystems. Additional fenceline crossing of Nkutu River creates additional point of disturbance and a barrier to wildlife movement.</td>
<td>Elevated risks to local aquatic ecosystems as a result of accelerated urban stormwater and fenceline crossings</td>
<td>Long term - Possible</td>
<td>Moderate (-ve)</td>
<td>Moderate (-ve)</td>
<td>The wetland rehabilitation plan is to be implemented. Functional wetlands on the property will provide an important buffer for possible water quality and flood impacts from the proposed development. The additional fenceline crossing must be aligned either with the low level bridge across the Nkutu, or one of the wetland rehabilitation weirs proposed for the Nkutu River. The fenceline crossing point must allow for the movement of small wildlife such as Water Mongoose, birds, Grey Duiker, Blue Duiker, and Bush Pig.</td>
<td>Low (-ve)</td>
</tr>
</tbody>
</table>
7. Summary of Advantages and Disadvantages

The primary advantages and disadvantages associated with the proposed changes to the development plan are summarised as follows:

ADVANTAGES:

1. Increased equity in access to high quality housing opportunities and living environments in Hillcrest
2. Enhanced job creation opportunities in the short (significant) and long term (limited significance)
3. Inclusion of a social service amenity in the development plan
4. Efficient use of land and infrastructure through densification of housing opportunities on same development footprint
5. Retention of proposal to achieve nett ecological gain through the development

DISADVANTAGES:

1. Increased traffic on Inanda Road and local intersections, resulting in increased congestion and delays during peak hours, even with proposed intersection upgrades
2. Change to visual landscape amenity
3. Increased urban stormwater runoff and associated risks to aquatic ecosystems
4. Increased length of fenceline if the low density and high density components of the development are to be fenced off from eachother, with associated impacts on wildlife movement and ecosystem functionality

8. Summary of Additional Mitigation Measures

The following mitigation measures must be implemented in addition to those already identified in the Environmental Authorisation for Cotswold Fens, to ensure that all potentially significant negative impacts associated with the proposed changes to the development plan are appropriately mitigated:

1.1 Mitigation of traffic impacts.

1.1.1 As per the recommendations of the Traffic Impact Report, the developer of Cotswold Fens must construct left-turn slip lanes into Cotswold Drive from Inanda Road, into the access road to Cotswold Fens (JF Bailes Rd) from Inanda Rd, and from La Domaine into Inanda Road.

1.2 Mitigation of ecological impacts associated with fencing.

1.2.1 The additional fenceline crossing across the Nkutu River must be aligned either with the low level road bridge across the Nkutu, or one of the wetland rehabilitation weirs proposed for the Nkutu River. The fenceline crossing point must allow for the movement of small wildlife such as Water Mongoose, birds, Grey Duiker, Blue Duiker, and Bush Pig.

1.2.2 Fencing between the high density and low density components of the development are to be to be constructed along the boundaries of residential ERVEN where possible, limiting lengths of fenceline through environmental conservation zones.

1.2.3 Animal openings in the fence, similar to those successfully used at Cotswold Downs, are to be incorporated into the fencing design, particularly along the riverine corridor area, and at key points identified by the Environmental Control Officer.
1.3 Limitation of elevated wastewater pollution risks.

1.3.1 Sewerage pumpstations to be designed to have capacity to store sewage during power outages, backup equipment to be present, spillage control bunds to form part of the design.

1.4 Exploring further opportunities for nett ecological gain.

1.4.1 The possibility of permitting the 78 low density residential units at Cotswold Fenns to gain access through Cotswold Downs should be explored. If agreed to by Cotswold Downs Management Association, grasslands should be restored in the area where the internal access road between JF Bailes Dv and the low density component of the development would have been constructed.

1.5 Mitigation of visual amenity impacts.

1.5.1 The architectural style of all buildings in the development are to be aligned with Cotswold Downs. Apartments are to be stepped down the slope to limit height (particularly 4 storey blocks) above natural ground level). Landscaping to be undertaken to screen impact of buildings on the landscape, and building colours and roofing to be natural colours and blend into the landscape. Reflective materials to be prohibited in the architectural code.

1.6 Compliance with Water Use Licensing Requirements.

1.6.1 In accordance with the requirements of the National Water Act, a Water Use License must be obtained prior to the undertaking of any activities requiring registration or licensing. This includes all crossings of wetlands and rivers, construction of weirs in wetlands, and any irrigation of treated wastewater effluent on the property.

9. Cotswold Fenns EMPR

The Environmental Management Programme for Cotswold Fenns that was submitted with the original Scoping Report was never approved. A key element that needed to be added to this plan before the Environmental Authorities would approve it was a Wetland Rehabilitation Plan.

The Draft EMPR has been updated to reflect the requirements of the 2014 EIA Regulations, a Wetland Rehabilitation Plan, as well as the additional mitigation measures associated with the proposed changes to the development plan. This updated EMPR has been included as Annexure 4.