



ENVIRONMENTAL IMPACT ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA)(AS AMENDED).

NAME OF APPLICANT: NEW LARGO COAL (PTY) LTD

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FILE REFERENCE NUMBER SAMRAD:MP 30/5/1/2/2/511MR

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting right or mining right if among others the mining “will not result in unacceptable pollution, ecological degradation or damage to the environment”.

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme in terms of the National Environmental Management Act (act 107 of 1998)(NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the competent authority and in terms of section 17(1)(c) the competent authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with uninterpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The objective of the environmental impact assessment process is to, through a consultative process-

- a) determined the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- b) Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- c) Identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment'
- d) Determine the-
 - i) Nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
 - ii) Degree to which these impact
 - (aa). Can be reversed;
 - (bb). May cause irreplaceable loss of resources, and
 - (cc). can be avoided, managed or mitigated;
- e) Identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- f) Identify, assess, and rank the impacts the activity will impose of the preferred location through the life of the activity;
- g) Identify suitable measures to manage, avoid or mitigate identified impacts; and
- h) Identify residual risks that need to be managed and monitored.



REPORT

Draft Environmental Management Programme (EMPr) Amendment for the New Largo Coal Project

New Largo Coal (Pty) Ltd.

Submitted to:

Department of Mineral Resources and Energy

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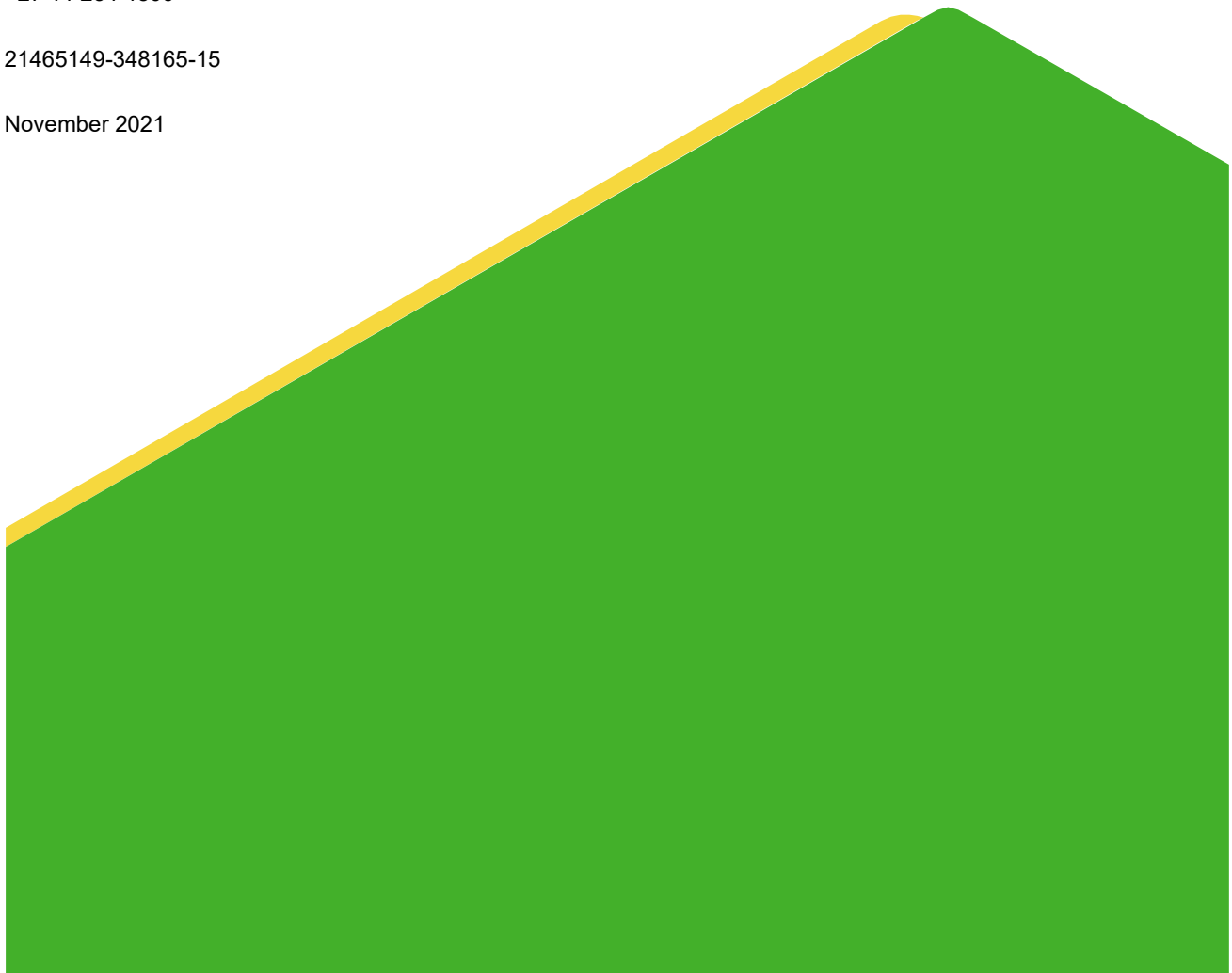
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Executive Summary

New Largo Coal (Pty) Ltd (New Largo), a consortium comprised of Seriti New Largo (67.5%), the Industrial Development Corporation (22.5%), and the New Largo Coal Employee and New Largo Coal Community Trusts (5% each), is the holder of an existing right to mine coal over various farm portions within the Victor Khanye and eMalahleni Local Municipalities, Mpumalanga Province.

The New Largo Coal Mine was previously owned by Anglo American Inyosi Coal (AAIC). AAIC obtained a mining right for the New Largo Coal Mine through an environmental impact assessment (EIA) process undertaken in terms of the National Environmental Management Act 107 of 1998 (NEMA) and the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA). The Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET), now Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (M-DARDLEA), granted AAIC an Environmental Authorisation (EA) in 2012. The Department of Mineral Resources (DMR) in 2013 approved the environmental management plan (EMP). Furthermore, the Department of Water and Sanitation (DWS) issued three Water Use Licences (WULs) between 2013 and 2015. Thereafter, AAIC put the New Largo Coal Mine project on hold and submitted requests for extension of the validity of the authorisations to the Regulators.

New Largo Coal (Pty) Ltd acquired the New Largo Coal Mine Project from AAIC in August 2018 and subsequently commissioned a number of feasibility studies to re-evaluate the deposit as standalone mining operations, with the intent to generate capital to develop the rest of the mine. Mining has commenced at Pit D and is proposed to commence at Pit H in the near future. An update to the mine's environmental management programme report (EMPr) was submitted to the DMRE in March 2021, to accommodate the changes to the mining schedule and infrastructure layout.

New Largo now proposes to amend the original mine schedule to commence mining of Pit F at an earlier date than the timeframes stipulated in the original mining schedule. This earlier schedule will require the development of some infrastructure not previously included in the EMPr. The coal mined from Pit F will initially be trucked to Phola Coal Processing Plant (PCPP) for processing. New Largo plans to develop a coal washing plant at the Pit F site to process the coal; product coal will then be transported to a nearby coal siding.

To give effect to these proposed changes, New Largo must apply for amendments to its approved EMPr. New Largo must also apply for a WUL to accommodate additional water uses not previously authorised by the DWS. New Largo has appointed Golder Associates Africa (Pty) Ltd (Golder), an independent environmental assessment practitioner, to undertake the EMPr amendment process and water use licence application (WULA).

Key changes to existing authorised project

The following key changes to the existing authorised project are being applied for via the amendment application:

- The original EMPr indicated that mining at Pit F would start in 2045. It is now proposed that mining starts in quarter 2 of 2022, 23 years earlier than initially planned.
- The mining method will change from a dragline operation to truck and shovel.
- The overland conveyor system will not be constructed until later in the project lifetime. Instead, coal will initially be trucked to the PCPP for processing. New Largo plans to develop a beneficiation plant at the Pit F site to process the run of mine coal; product coal will then be transported to a nearby coal siding (e.g., Phola). For the base case scenario, the expected requirement of heavy vehicles is about 308 truckloads per day.

- For mining to start at Pit F, the following infrastructure is necessary to support mining at this location:
 - Haul roads, access roads, product stockpiles, temporary discard stockpiles, crusher, coal washing plant, workshop, change houses, Pollution Control Dams (PCD's), with silt traps for dirty water management, office block, parking area, and sewerage management facility.

The amendment to the mine schedule and development of additional infrastructure will enable New Largo to access higher grade coal reserves at an earlier stage of the life of mine than envisaged in the original mine plan.

Key findings of the impact assessment

The following key potential negative impacts are associated with the proposed changes:

- Impacts on air quality and noise levels due to the construction and operation of the Pit F activities.
- Impacts on terrestrial ecology, soil and heritage resources as a result of the additional infrastructure required at Pit F, e.g. PCDs, workshops, offices, crusher, coal washing plant, etc.
- Impacts on traffic on local roads as a result of trucking coal from Pit F to the PCPP and to the nearest siding.
- Impacts on groundwater quality as a result of seepage from discard and ROM stockpiles, and other coal handling activities associated with ore processing activities on site.

The necessary specialist studies have been conducted to assess the impacts of the proposed changes. The environmental baseline conditions (where relevant to the proposed changes) have also been updated as part of the specialist studies, since the original studies were conducted in 2012 and in some cases are considered to be outdated. The key findings of the specialist studies can be summarised as follows:

- Air quality:
 - There have been significant changes in the emission sources within the project area since the original 2012 EIA, especially in terms of mining and power generation activities in the study area.
 - The distribution of sensitive receptors within the local area have remained relatively unchanged since 2012 other than natural expansion and growth of the residential areas over time. Most of the individual farm residences remain throughout the MRA; and the only "new" significant sensitive receptor identified is the informal settlement behind Vlakfontein mine and adjacent to the R545. This community originated from the old farm workers accommodations pre 2012 and has subsequently become an informal settlement over the last eight years.
 - Dust fallout monitoring at New Largo is currently conducted at eleven monitoring locations. The most current dust fallout monitoring results (August 2020 to July 2021) indicated that dust fallout averages at the New Largo site are below the (non-residential and residential) dust fallout guidelines.
 - New Largo does not undertake any particulate matter monitoring. As such, particulate matter data was sourced from a neighbouring colliery, located approximately 1 km south east of the proposed New Largo Pit F operations. For the period January to December 2020, the PM₁₀ 24-hour and annual average was non-compliant with the PM₁₀ standards. The PM_{2.5} 24-hour and annual average was however compliant with the PM_{2.5} standards.
 - The construction and decommissioning activities at Pit F will be a source of dust emissions. Based on a qualitative risk assessment, impacts during the construction and decommissioning and closure phases for dust and PM₁₀ are expected to result in a moderate impact, even with mitigation. These

impacts are however anticipated to be experienced in the short term. Impacts during the construction and decommissioning and closure phases, with mitigation, in place for PM_{2.5} is expected to be low.

- Fugitive emissions from the proposed Pit F operations have the potential to arise from the following sources:
 - Materials handling activities, including ore processing;
 - Wind erosion from stockpiles;
 - Drilling;
 - Blasting; and
 - Crushing.
- Dispersion modelling simulations for the mitigated operational phase activities at Pit F indicated that:
 - Dust Fallout:
 - Predicted dust fallout rates are below the South African Residential Dust Control Regulations at all modelled sensitive receptors;
 - Cumulative dust fallout rates at most sensitive receptors are below the NEM: AQA Residential Dust Control Regulations, with the exception of SR21 (Mr Truter's residence), because of the high (annual average of 560 mg/m²/day) existing background concentrations in the general area; and
 - Dust fallout contributions from the proposed Pit F operations contribute minimally (less than 10%) to the overall cumulative impact at each receptor.
 - PM Concentrations:
 - Predicted PM₁₀ and PM_{2.5} concentrations are below the NAAQS for PM₁₀ and PM_{2.5} at all sensitive receptors;
 - Cumulative P99 24-hour and annual average PM₁₀ concentrations are expected to be non-compliant with the 24-hour and annual average National Ambient Air Quality Standard (NAAQS) for PM₁₀ at all sensitive receptors, as a result of the high existing PM₁₀ background concentrations (annual average of 44 µg/m³). The PM₁₀ contributions from the proposed Pit F operations contribute minimally (less than 20%) to the overall cumulative impact at each receptor; and
 - Cumulative P99 24-hour and annual average PM_{2.5} concentrations are expected to be compliant with the 24-hour and annual average NAAQS for PM_{2.5} at all sensitive receptors, except for SR21 (Mr Truter's residence) during the 24-hour averaging period, as a result of the high existing PM_{2.5} background concentrations (annual average of 14 µg/m³) in the general area. The PM_{2.5} contributions from the proposed operations contribute minimally (less than 11%) to the overall cumulative impact at each receptor.
- Based on the above, the Pit F operational phase impacts of dust fallout and PM₁₀ on sensitive receptors is expected to be moderate, but could be mitigated to low, should the appropriate mitigation measures outlined in the EMP_r be implemented. Operational phase impacts PM_{2.5} are expected to be low, both pre-mitigation and post-mitigation.

- Given the high existing background dust and PM concentrations in the general area, it is critical that the mitigation measures outlined in the EMP related to Air Quality Management and Blasting are adhered to, to ensure concentrations are within acceptable standards at all receptors, especially at SR21 (Mr Truter's residence), the closest sensitive receptor to the Pit F site.
- Additional monitoring locations should also be included for the proposed Pit F operations once operations commence. Dust fallout buckets should be located in the residential areas North and East of the Pit F operations to monitor dust fallout.
- Noise:
 - Changes in the land use noise sources within a 10 km radius of the project area are likely to have occurred between 2012 and 2021, due to expansion of the power generation activities (Kusile Power Station), residential areas, and individual mining and/or industrial activities – and associated vehicular traffic.
 - The distribution of sensitive receptors within the local area have remained relatively unchanged since 2012 other than natural expansion and growth of the residential areas over time. Most of the individual farm residences remain throughout the MRA; and the only “new” significant sensitive receptor identified is the informal settlement behind Vlakfontein mine and adjacent to the R545. This community originated from the old farm workers accommodations pre 2012 and has subsequently become an informal settlement over the last eight years.
 - Based on 2012 noise monitoring data, it is evident that baseline noise levels within the MRA and at nearby sensitive receptors are elevated (both the day-time and night-time noise levels). Exceedance of the SANS 10103 “Suburban – With little road traffic” limits are anticipated to occur frequently and/or remain persistent.
 - Based on a worst-case cumulative sound power level of 114 dB(A) stemming from all construction equipment operating concurrently during the day, day-time noise levels in the immediate vicinity of the construction activities at Pit F are predicted to be high, as would be expected. However, from 500 m from the source, noise levels will reduce considerably, with noise levels at 625 m from the source dropping below the day-time suburban guideline rating level of 50 dB(A).
 - Increases in noise levels at the receptor locations as a result of the construction activities will range from 0.1 to 4.3 dB(A). Such increases will result in “little” responses at the receptor locations. Further, these increases are below the 7 dB(A) threshold for annoyance as per the South African Noise Control Regulations.
 - Based on the above, the construction phase is expected to have impacts of low magnitude, be short-lived and have a low probability. As such, the overall significance results in a low impact.
 - The following noise sources (equipment and activities) are anticipated for the operational phase at Pit F: drilling and blasting, operation of the crusher and coal washing plant, and operation of mining related vehicles and equipment (ADT, water bowser, excavators, dozer, etc.).
 - Based on the results of noise modelling conducted for the operational phase, the following findings were made:
 - During both the day-time and night-time increases in noise levels at receptor locations as a result of the operational activities will result in “little” responses at all the receptor locations, with impacts observed to be the greatest at SR21 (Mr Truter's residence). Further, these increases are below the 7 dB(A) threshold for annoyance as per the South African Noise Control Regulations. As such,

it is likely that the noise levels from the Pit F operations will be absorbed into the existing ambient environment and will not contribute significantly to the current existing noise levels.

- It must be noted that many of the receptors are far away from the noise emitting sources, which has resulted in no predicted noise impacts.

- Based on the above, the operational phase impacts on noise are expected to be **low**.
- With such minimal increases in noise levels during both the construction and operational phase, no mitigation recommendations for the operation of the proposed Pit F are anticipated.
- A current noise survey must be undertaken before mining commences at Pit H and Pit F at key selected sensitive receptors, in alignment with the SANS methods to confirm historic noise level data. As per the recently published GNR 320 of the NEMA, night-time monitoring must take place over a minimum of two nights, with each sample taken at two different times of the night in order to record the typical ambient sound levels at the different time of night.

■ Heritage:

- A number of known cultural heritage (archaeological and historical) sites exist in the larger geographical area within which the study area falls, including a known grave site (Site CC) located close to the southern boundary of the proposed Pit F. Over and above this site, no other sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified during the assessment in the Pit F study area.
- Site CC is unlikely to be directly impacted by future mining operations. However, there could be indirect impacts due to blasting, dust and access to graves for potential descendants and family members. The possibility of accidental damage to the site and graves through development activities and increased movement of people and vehicles in the area will increase and hence appropriate mitigation measures will have to be implemented.
- It is recommended that the site be fenced-in properly and that a Buffer Zone of 30 m be placed around the outer perimeter fence in which no development and mine related activities should be allowed. The site should also be signposted indicating it as a Cemetery. Access to the site and Graves for potential descendants/family should be provided unhindered.
- Graves always carry a High Significance Rating in terms of Cultural Heritage; however, with the implementation of the recommended mitigation measures the probability of impact is likely to be low, resulting in an overall **low** impact significance.

■ Palaeontology:

- The proposed infrastructure area for Pit F lies on moderately sensitive rocks of the Dwyka Group but these are unlikely to have any fossils. The mining area of Pit F lies on palaeontologically very highly sensitive rocks of the Vryheid Formation (Ecca Group, Karoo Supergroup) that contain coal seams (non-fossiliferous) and shale lenses that might preserve fossil plants of the *Glossopteris* flora. The Vryheid Formation, however, is covered by soils that have been ploughed and cultivated so no fossils are visible in the soils. Borehole cores from the area indicate that the uppermost shales are between 5-7 m below the surface so no fossils would be visible until excavations commence.
- Excavations associated with the development of the proposed infrastructure may impact on fossils, if they are present. Impact significance is considered **low**, given that the excavations associated with the infrastructure development will likely be shallow and hence not impact on any fossils.

- If the fossils are present in the pit area, impact significance associated with the opencast mining of the pit is considered **moderate**, pre-mitigation.
- It is recommended that the regular visual inspections of the rocks from the box-cut be conducted as this will give an indication if fossils are present and at what level. In the event that fossils are found, a palaeontologist should be called to assess the fossils and to collect a representative sample (with a SAHRA permit). Continued visual inspections of the shales from the same levels, when extracted during the mining operation, should be undertaken.
- Terrestrial ecology:
 - The New Largo MRA is dominated by cultivated fields, with natural and semi-natural habitat comprising grassland and wetlands, as well as alien species woodlots confined to small and fragmented areas located between cultivated fields. This highly modified and fragmented land cover pattern is reflected at a local-scale at the Pit F site. Virtually the entire development footprint comprises cultivated fields, with small and generally isolated patches of grassland and wetland habitats present along the periphery of the site.
 - Apart from the clearing and conversion of an area of alien tree woodlots to cultivated fields, the Pit F site has remained largely unchanged from the 2012 baseline condition. Several flora and fauna species of conservation concern were recorded in the broader MRA during the 2012 field survey. Of these, Serval (Near Threatened) was noted to be present at the Pit F site during a 2021 field visit, based on scat remains. This species is likely to use the grassland and wetland habitats present adjacent to the development footprint to hunt.
 - Considering the highly modified and disturbed character of the site, coupled with the various anthropogenic disturbances occurring across the surrounding landscape, it is mostly considered 'unlikely', and in certain cases 'possible' that Red List flora species occur on-site, or that the site comprises habitat for any Red List fauna species. Both the animal and plant sensitivity of the development footprint is therefore regarded as being 'low'. The terrestrial biodiversity theme of the site is also considered to be 'low' sensitivity.
 - A review of proposed project changes indicates that all new project infrastructure will be located on cultivated land, and as such, no additional impacts on terrestrial ecosystems and biodiversity are anticipated. The impact assessment conducted in support of the original Project authorisation sufficiently addressed potential impacts on terrestrial habitats and associated flora and fauna communities, and provided that the originally-recommended mitigation measures are implemented, no additional mitigation measures are considered necessary for Pit F.
- Wetlands:
 - Wetlands occurring in the Pit F study area (i.e. within 500 m of the proposed infrastructure and pit) consist of an extensive channelled valley bottom system to the south, associated hillslope seepages linked to the channel, as well as several remnant patches of hillslope seep in areas too wet to cultivate, that are almost completely transformed. These remnant hillslope seepage systems in the Pit F study area are all PES Category D due to large changes in ecosystem processes and loss of natural habitat and biota having occurred due to crop cultivation (both within the hydrogeomorphic (HGM) unit, and its catchment); while the hillslope seeps linked to the valley bottom, and the valley bottom itself, are PES Category C, representing systems where a moderate change in ecosystem processes and loss of natural habitats had taken place but the natural habitat remains mostly intact.

- The ecological importance of the channelled valley bottom system and linked hillslope seepages is considered Moderate (EIS Class C) due to the role they play in biodiversity support, and landscape linkages; whilst the remnant patches of seep are of Low/Marginal importance and sensitivity.
- From a construction perspective, the mining of Pit F and the main mine and subsequent effects on wetlands was assessed in the original 2012 wetland impact assessment. The changes relevant to the current assessment include:
 - The development of mine infrastructure, such as PCD's and a coal washing plant adjacent to the pit, results in a larger infrastructure footprint within which construction and operation activities will take place; however, the footprint of Pit F itself has been reduced, resulting in a reduction in the extent of wetlands that will be directly affected (lost) by the pit. Since the impact of wetland loss to Pit F was included in the previous 2012 impact assessment, and the impact is now reduced, no additional impacts of direct wetland loss at Pit F were identified during this assessment; and
 - Although the infrastructure is sited in an area that is currently occupied by maize fields, two hillslope seepage wetlands occur in close proximity to the proposed plant infrastructure and topsoil berm; these wetlands will consequently incur an increase in surface area of spoil heaps and hardstanding in extent of their catchment, potentially further reducing their PES scores.
- From an operation perspective, the activities associated with mining of Pit F were assessed in the original 2012 ecological impact assessment. The only changes relevant to the 2021 assessment include:
 - Potential impacts associated with the operation of the plant at Pit F relate to the effects of dust deposition on wetlands. Although the amount of dust being generated may increase, the lands in the area where the plant will be operating are currently under maize, and sensitive wetland ecosystems (those with a moderate or high EIS) unaffected by mining are located beyond the area within which any potential dust contamination may occur; therefore, no significant additional dust impacts on wetland ecosystems to those previously assessed are anticipated; and
 - The presence of, and dewatering of, Pit F in proximity to the valley bottom wetland to the south of the pit, will result in reduction in the catchment of the wetland, and thus a reduction in quantity of water reaching the valley bottom system in this region, resulting in effects on the condition of the wetland habitat condition. Since the impact of catchment loss to Pit F was included in the previous 2012 impact assessment, and the impact is now reduced because the pit footprint is now reduced, no additional impacts on the valley bottom system were identified during this assessment.
- A single revision to the 2012 impact assessment is proposed, since that impact assessment considered that the loss of stream seasonality due to water releases from water treatment plant and subsequent loss of biodiversity supported by wetlands could not be averted, resulting in a residual impact of high significance after the application of the recommended mitigation measures. However, in the context of anticipated flow losses to downstream systems as a result of cumulative impacts from other developments (e.g. Kusile) and drivers of change (i.e. climate change), it is Golder's opinion that the supplementation of flow to downstream systems during operation, as proposed in the wetland mitigation strategy for the MRA (WCS, 2020) will be of benefit to downstream wetlands and can be implemented such that seasonal patterns and diffuse flows are sustained; therefore the residual impact is one of **moderate** significance.
- The loss and fragmentation of the remaining patches of wetland ecosystems within the MRA will add to cumulative impacts on these ecosystems in the landscape; reducing their extent, degradation of their condition, and subsequently limiting their ability to deliver ecosystem services. The direct losses

of wetlands cannot be mitigated outright, and as such the Project will contribute to the cumulative rate of loss of wetlands and particularly pan habitats in the Mpumalanga Highveld ecoregion. The effective implementation of the recommended mitigation measures, and in particular, the commitment to delivery of the wetland mitigation strategy (WCS, 2020) for the Project, will be key in ensuring that the Project's contribution to cumulative effects on the delivery ecosystem services relating to the quantity and quality of freshwater supply are minimised, through protecting and conserving currently unprotected wetland habitat in off-site offsets, and rehabilitating remaining wetlands within the MRA to improve their condition and thus enhance their level of functioning and supply of ecosystem services in the landscape.

- It is recommended that a minimum buffer of 32 m between remnant patches of hillslope seep wetlands not directly impacted by mining, and project activities, be retained. No construction, habitat transformation or vehicular access should be permitted within this zone.
- It is also recommended that a detailed wetland rehabilitation and monitoring plan for the MRA be developed, that will complement the overall wetland mitigation strategy for the MRA.

■ Soil:

- For the most part, the baseline situation at Pit F remained unchanged since the previous (2006) soil assessment. Sandy, well-drained red to yellow-brown soils largely devoid of macrostructure were identified as very dominant across the proposed Pit F area and the proposed infrastructure area north of the site. The dominant land use identified was maize cultivation, which was seen across the vast majority of the site. While the soils were clearly disturbed as a result of the cultivation, so were not present in their original horizons, the existence of Hutton and Clovelly soil forms of varied depth was clear across the vast majority of the site. Wetland soil was identified by the existence of soil mottles over two small portions of the site; an area in the north of the site, in agreement with the previous study undertaken, and a small area within the pit itself.
- No key soils impacts additional to the 2012 Synergistics study were identified. The impact footprint at Pit F has however increased as a result of the addition of infrastructure, and therefore increasing the area that will be sterilized, prone to erosion, compacted, and/or contaminated by the mining related activities. This impact (during construction and operations) is considered to have moderate significance pre-mitigation, but could be mitigated to low, with the implementation of the EMPr measures related to Dust control, Soil Management and Erosion Protection, Spill prevention, Response and clean-Up, Machinery, Vehicle Movement and Roads, etc.
- The increased footprint that will be disturbed will also result in an increased loss of soil volume and utilisation potential at closure, due to the change in material status and loss of nutrient base. This impact is also considered to have moderate significance pre-mitigation, but could be mitigated to low, through the implementation of the mitigation measures mentioned above and detailed in the soils report.
- Separation of topsoil and subsoil across the Pit F site will not be possible, as the on-site soil horizons have been ploughed together. It may therefore only be possible to stockpile topsoil and subsoil separately where a distinction between the two can be made.
- It is recommended that the very small area of wetland soil to the north of the site and a buffer area of 15 m around it should be avoided in terms of infrastructure development.
- Over and above the proposed 2012 monitoring measures, it is also recommended that soil erosion be visually monitored and recorded monthly by the on-site Environmental Manager.

■ Traffic:

- The planned mining operations will result in an increase in heavy vehicle traffic on the road network from Pit F to the PCPP / nearby siding (Phola).
- Three trucking routes have been considered:
 - Route 1: Along the R545 east (7 km);
 - Route 2: Along the R545 west and N12 (21 km); and
 - Route 3: Along the R545 west and R555 (20 km).
- Capacity and operational analyses were done for nine (9) intersections in the study area based on existing and expected traffic demand. The results of the analyses indicated the following:
 - The use of Route 1 (R545) passed the Phola Settlement is not acceptable from a traffic safety point of view.
 - The expected traffic impact of Pit F on Routes 2 and 3 is acceptable in general and can be accommodated by the existing road network from a capacity and operational point of view. The only constraints are the two terminals of the interchange between the R545 and the N12, as well as the section of the R545 from the T-junction with Route R555 in the south past the access to the Zibulo Opencast Coal Mine in the north. Service levels on these roads are expected to deteriorate even further in future, with the growth in background traffic and the project's traffic.
 - For Route 2, since the traffic generated by Pit F will increase the traffic demand on the off-ramps of the interchange with the N12 (Intersection 3 and Intersection 4), and thus exacerbate the existing delays, the implementation of traffic signals by New Largo is recommended. Furthermore, the upgrading of the section of the R545 from the T-junction with Route R555 in the south past the access to the Zibulo Opencast Coal Mine in the north is required in the medium term. New Largo will collaborate with neighbouring mining operations and the Mpumalanga Provincial Department DPWRT, regarding the responsible party for the upgrade.
 - The upgrading of the access road to Pit F on Route R545 is also required from a traffic safety and operational point of view. The standard geometric detail (layout) of the Department Roads and Transport, Gauteng Province, is recommended in this regard.

■ Surface water:

- The updated baseline results indicate that the Saalklapspruit-Saalboomspruit quaternary catchment in which Pit F is located, is already highly impacted, upstream, and downstream of the Pit F area. The data indicate that there has been a deterioration of water quality in the Saalklapspruit-Saalboomspruit.
- The Pit F mining area and proposed infrastructure area are located outside of the 1:50 and 1:100 year floodlines for the Saalklapspruit-Saalboomspruit river.
- The anticipated impacts from Pit F remain largely unchanged from the 2012 impact assessment and relate predominantly to potential diffuse sources of pollution that could emanate from runoff from the Pit F mining activities.
- From a construction perspective, no new impacts on surface water as a result of the commencement of mining at Pit F, and construction of supporting infrastructure at Pit F, were identified.
- From an operational perspective, the changes relevant to the 2021 assessment include:

- The transport of coal via trucks on existing roads to the PCPP for processing and export is an impact that was not considered in 2012. The alternate routes along the R545 east and along the R545 west and N12, would both cross a watercourse, the Saalklapspruit-Saalboomspruit and an unnamed tributary respectively, and the potential impacts of coal spillage to these water resources could impact on surface water quality.
- Spillage of coal during transportation along the road to the PCPP, which may then be washed into the water resources via stormwater, could also lead to increases in turbidity, suspended solids, sulphate and TDS.
- Increased trucks along the road to the PCPP may lead to contamination from hydrocarbon spills and increased suspended solids concentrations.
- These impacts are considered to be of **moderate** significance pre-mitigation and could be reduced to **low**, with the implementation of suitable mitigation measures, such as clean-up of spillages on roads.
- Increased storage of water-make required:
 - The 2012 water balance for Pit F indicated peak abstraction rates ranging from 3.3 m³/d to 7.5 m³/d. Due to the change in mine plan, and the main mine storage areas not being available for Pit F, the 2021 water balance model results indicate an increased peak abstraction rate of 15 695 m³/d.
 - Because of the increased water make volumes, there will be a need for 20ML and 160 ML water storage facilities at Pit F. Failure to implement these dams will potentially result in contaminated water to the Saalklap-Saalboomspruit catchment. This is considered an impact of **moderate** significance but could be mitigated to **low**, should the dams be implemented as per the requirements of the water balance. Implementing water treatment with a capacity of 8 ML/d, in the form of modular treatment plants until the main mine water treatment plant is constructed, will also be required.
- The workshop, crusher, coal washing plant and stockpile areas have the potential to contaminate runoff water typically in terms of sulphates, salinity and hydrocarbons. This is considered an impact of **high** significance but could be mitigated to **moderate**, should adequately designed and maintained stormwater systems, and good housekeeping in the contaminated areas, be implemented.
- Discharge of treated effluent from the sewage treatment plant into the PCD's or Saalklapspruit-Saalboomspruit may impact the water quality of the system if not treated optimally. This is considered an impact of **moderate** significance but could be mitigated to **low**, should the operation and maintenance of the sewage works be overseen by skilled personnel, to ensure adequately treated effluent that is safe for reuse, or discharge to the water resources.
- The following recommendations have been made:
 - Due to the sensitive nature of the Wilge River catchment into which the Saalklapspruit-Saalboomspruit falls, and the classification status, surface water monitoring needs to be undertaken on a monthly frequency, at relevant established sites, and for specific parameters.
 - In collaboration with the main New Largo Mine, development and implementation of a plan (should be adapted over time as mining progresses) to ensure discharge of treated water at relevant points to maintain the various tributaries that may be impacted by the mining, and

- Collaboration with other water users in the catchment to establish an environmental management committee to reduce duplication in respect of monitoring and developing catchment improvement projects with other water users.

■ Groundwater:

- The groundwater impact assessment for Pit F relied on data from previous studies at New Largo, and recent groundwater water monitoring data. The data indicated that the groundwater quality within the MRA is good, apart from isolated areas that were impacted by previous underground mining and agricultural activities. Fluoride was identified as a constituent of concern in the vicinity of Pit F in 2012. There is however no recent groundwater monitoring data for the Pit F area.
- The following sensitive receptors are in the vicinity of Pit F:
 - Wetlands and a stream that drains the area to the south and east on Pit F, where decant from the pit is likely to flow to; and
 - The headwaters of a wetland on Mr Truter's residence, which flows towards dams that are used for irrigation in the area.
- The change in mine plan to start with mining at Pit F earlier than previous schedules does not have a material change on impacts identified in 2012.
- The potential impact of the proposed opencast mining activities at New Largo Colliery during operations include but is not limited to impact to groundwater dependent ecosystems (wetlands) in the project area, changes in local groundwater levels and groundwater quality. The opencast mining method requires efficient removal of overburden and interburden strata in order to access coal seams. The exposure of the pyrite bearing host rock and coal to rainwater results in Acid Mine Drainage (AMD). AMD results in groundwater that is highly saline and elevated sulphate concentrations. During operation, operational areas must be kept dry and all the water moving into the spoils has to be pumped out and treated. Increased recharge is expected to report to the spoils and rehabilitated areas.
- In addition to the in-pit disposal of discard, whose impact was considered in the 2012 impact assessment, three mineral residue facilities are now proposed:
 - ROM coal stockpile, which will be built during the construction phase, deposited on during the operations phase, and removed at closure;
 - Temporary stockpile for excess ROM coal, which will exist for a part of the operations phase; and
 - Temporary discard stockpile, which will be built during the construction phase, deposited on during the first two to three years of the operations phase (2022-2024), and removed before the start of the fourth year of the operations phase (2025).
- From a construction perspective, the following additional impact associated with the construction of supporting infrastructure at Pit F has been identified:
 - Excavation of soil will take place to a stripping depth above the shallow weathered zone groundwater elevations of the study area. Groundwater intersected will consist of isolated perched zones. Very little, if any groundwater bodies will be intersected. Excess perched water must be removed from the excavation areas and pumped to the PCD's. This impact is considered to have a **low** impact significance, pre and post mitigation.

- From an operational perspective, the following additional impacts have been identified:
 - Due to dewatering of the mine, and the installation of boreholes for water supply purposes, water levels may become lower in the vicinity of Pit F and result in loss of baseflow and impact on water supply sources for external groundwater and surface water users, including Mr Truter's farm residence. This impact is considered to be of **high** significance, pre and post mitigation. Groundwater levels in the pit and surrounding external user's boreholes must be monitored.
 - Seepage from the temporary discard stockpile, which could be acidic with elevated concentrations of total dissolved solids, sulphate and trace elements that could pose a risk to the environment, will impact on groundwater quality and hence will need to be managed. This impact is considered to be of **moderate** significance, pre-mitigation, but could be reduced to **low** should seepage be intercepted by the active mining window and managed as part of the pit water management system.
 - Seepage from the ROM stockpile and temporary stockpile for excess ROM, which could be acidic with elevated concentrations of total dissolved solids, sulphate and trace elements that could pose a risk to the environment, will impact on groundwater quality and will need to be managed. This impact is considered to be of **high** significance, pre-mitigation, but could be reduced to **low** should a Class C barrier system or similar be placed beneath the stockpiles.
 - Regarding discard disposal into the pit, discard should be deposited in the pit below final post mining water level, where the saturated thickness is high. This would ensure that discard material is completely covered by water, which would reduce ARD processes substantially, due to limiting the availability of oxygen. Discard should not be placed in shallow areas on the southern, southwestern, and north-eastern parts of the pit, which will be mined towards the end of LOM.
- The following additional recommendations are made:
 - A hydrocensus should be carried out to identify external groundwater users in the vicinity of Pit F within the first two years of mining activities at Pit F.
 - Boreholes for groundwater quality and levels at Pit F should be drilled within the first two years of mining activities at Pit F.
 - The groundwater model should be updated within the first two years of mining at Pit F to assess the impacts of mining activities at Pit F on groundwater level, including baseflow loss and impacts on water supply for Truter's Farm. The groundwater model should also be updated whenever there are changes to the mine plan.
 - There are currently no groundwater monitoring boreholes in the vicinity of Pit F. The boreholes that were drilled in 2006 (LGW08 and LGW09) no longer exist. It is proposed that boreholes be drilled to monitor groundwater quality quantity and levels downstream of:
 - Wastewater treatment plant.
 - Eastern PCD.
 - Western PCD.
 - Predicted decant points.

The water should be analysed for parameters specified in the approved water use license (No. 04/B20G/ACFGIJ/2538 of 2015).

- Visual:
 - A viewshed analysis of the Pit F site was conducted. The results of the analysis indicate that, given the topography of the site, visual receptors located to the south, east and north of the site will experience close- to long-range views. The expected level of visual intrusion for Pit F has therefore been determined as **moderate**.
- Social:
 - The revisions to the original mining plan and process will have positive and adverse implications. The key negative impacts associated with Pit F relate to the increased traffic load and the earlier onset of mining at Pit F, which is located close to Phola and Wilge, as well as the Truter household. The implication is that the additional intrusion and blasting impacts will realise much sooner.
 - With the proviso that the stakeholder engagement process has yet to commence, and the recommended mitigation measures and monitoring requirements are adhered to, the preliminary opinion of the specialist is that the social impact of the Pit F project is positive. All adverse impacts can be mitigated to **low**.
 - The following recommendations have been made:
 - Route 2/3 should be used to transport the coal to the PCPP, to avoid passing through or close to local communities, particularly Phola and Wilge, as well as the Truter household.
 - Care should be taken to inform communities of the grievance mechanism and access it to report and address traffic infringements.
 - Precautions must be taken to ensure the vibration amplitude of 7 mm/s, which is a maximum for human concern, is not exceeded at the locations of the social receptors.
 - New Largo should conduct a crack survey which should focus on the Truter's residence, the first row of houses in Phola closest to the 311 mm blast hole contour, and the houses in Wilge that fall within the 311 mm blast hole contour. The results of the crack survey should be shared with the households. New Largo should follow-up on any complaints received.
 - The social opinion will be updated and finalised once the stakeholder engagement process outcomes have been considered.

The original, authorised EMPr has been revised to reflect the recommendations made in the updated specialist studies.

Aspects for inclusion as conditions of Authorisation

General Conditions

New Largo must:

- Implement all aspects of the EMPr in sections Part B of this document;
- Comply with all relevant legislation at all times;
- Undertake annual internal auditing of environmental performance and annual reporting to the DMRE, in line with the EMP commitments; and
- Undertake biennial external auditing of environmental performance and provide the DMRE with a copy of the audit report, in line with the EMP commitments.

Site Specific Conditions

Over and above the conditions contained in the original EA/EMPr, the following must be complied with:

Soil:

- It is recommended that a buffer area of 15 m around the wet-based soils in the north of the Pit F site, be avoided, in terms of infrastructure placement.

Noise:

- A current noise survey must be undertaken before mining commences at Pit F at key selected sensitive receptors, in alignment with the SANS methods to confirm historic noise level data. As per the recently published GNR 320 of the NEMA, night-time monitoring must take place over a minimum of two nights, with each sample taken at two different times of the night in order to record the typical ambient sound levels at the different time of night.

Air quality:

- Given the high existing background dust and PM concentrations in the general area, it is critical that the mitigation measures outlined in the EMPr related to Air Quality Management are adhered to, to ensure concentrations are within acceptable standards at all receptors, especially at SR21 (Mr Truter's residence), the closest sensitive receptor to the Pit F site.
- Additional monitoring locations should also be included for the proposed Pit F operations once operations commence. Dust fallout buckets should be located in the residential areas North and East of the Pit F operations to monitor dust fallout.

Traffic

- The use of Route 1 (R545 east) passing the Phola Settlement by New Largo should be avoided when trucking coal to the PCPP or nearby siding.
- Should Route 2 (along the R545 west and N12) be used, New Largo must implement traffic signals on the off-ramps of the interchange with the N12 (Intersection 3 and Intersection 4).
- Should Route 2 (along the R545 west and N12) be used, New Largo must collaborate with neighbouring mining operations and the Mpumalanga Provincial Department DPWRT, regarding the responsible party for the upgrade of the section of the R545 from the T-junction with Route R555 in the south past the access to the Zibulo Opencast Coal Mine in the north, which is required in the medium term.
- New Largo must upgrade the access road to Pit F on Route R545 in terms of the standard geometric detail (layout) of the Department Roads and Transport, Gauteng Province.

Heritage:

- The grave site (Site CC) located close to the southern boundary of the proposed Pit F must be fenced-in properly and a Buffer Zone of 30 m be placed around the outer perimeter fence, in which no development and mine related activities should be allowed. The site should also be signposted indicating it as a Cemetery. Access to the site and Graves for potential descendants/family should be provided unhindered.

Palaeontology:

- The shales excavated from the box cut must be monitored as far as practicable for the presence of fossils; and

- Should fossils be encountered, the same shale levels from the box-cut that had fossils in them should be monitored (if relevant).

Wetlands:

- A detailed wetland rehabilitation and monitoring plan for the MRA should be developed, that will complement the overall wetland mitigation strategy for the MRA.
- Follow the wetland offset strategy, as proposed by Wetland Consulting Services (2020), and put in place a wetland offset plan.
 - Implement wetland offsets as per the accepted offset plan, in consultation with appropriate specialists.
 - Audit and report on the progress of implementation of the wetland offset plan.
- Review and update wetland offset plan.
- For Pit F specifically, a minimum buffer of 32 m should be retained between remnant patches of hillslope seep wetlands not directly impacted by mining, and project activities. No construction, habitat transformation or vehicular access should be permitted within this zone.

Geochem:

- Once processing of coal commences, samples of ROM coal, discard from the coal washing plant and samples of rejects from the ROM crusher should be obtained and static and kinetic geochemical tests should be carried out in order to provide a site-specific waste assessment of the waste materials, and to develop a more in-depth understanding of the long-term impacts on pit water quality of in-pit disposal at Pit F, and the risk associated with the three mineral residue facilities (the two ROM coal stockpiles and temporary discard stockpile).

Groundwater:

- A hydrocensus should be carried out to identify external groundwater users in the vicinity of Pit F within the first two years of mining activities at Pit F.
- Boreholes for groundwater quality and levels at Pit F should be drilled within the first two years of mining activities at Pit F.
- The groundwater model should be updated within the first two years of mining at Pit F to assess the impacts of mining activities at Pit F on groundwater level, including baseflow loss and impacts on water supply for Mr Truter's Farm. The groundwater model should also be updated whenever there are changes to the mine plan.

Surface water:

- Due to the sensitive nature of the Wilge River catchment into which the Saalklapspruit-Saalboomspruit falls, and the classification status, surface water monitoring needs to be undertaken on a monthly frequency, at relevant established sites, and for specific parameters.
- In collaboration with the main New Largo Mine, development and implementation of a plan (should be adapted over time as mining progresses) to ensure discharge of treated water at relevant points to maintain the various tributaries that may be impacted by the mining, and
- Collaboration with other water users in the catchment to establish an environmental management committee to reduce duplication in respect of monitoring and developing catchment improvement projects with other water users.

Social:

- Route 2/3 should be used to transport the coal to the PCPP, to avoid passing through or close to local communities, particularly Phola and Wilge, as well as the Truter household.
- Care should be taken to inform communities of the grievance mechanism and access it to report and address traffic infringements.
- Precautions must be taken to ensure the vibration amplitude of 7 mm/s, which is a maximum for human concern, is not exceeded at the locations of the social receptors.
- New Largo should conduct a crack survey, focussing on the Truter's residence, the first row of houses in Phola closest to the 311 mm blast hole contour, and the houses in Wilge that fall within the 311 mm blast hole contour. The results of the crack survey should be shared with the households. New Largo should follow-up on any complaints received.

Reasoned opinion as to whether the proposed activity should or should not be authorised

Provided that all the environmental management measures described in this amendment to the EA/EMPr are applied diligently, it is expected that the proposed changes to the approved EA/EMPr will not result in any environmental impacts that cannot be mitigated to acceptable levels.

Not granting this authorisation will result in the benefits of the project to New Largo Coal and to local residents not being realised.

Accordingly, it is the opinion of the environmental assessment practitioner that the application for EA/EMPr amendment to enable New Largo to undertake the activities described in this amendment to the EA/EMPr should be granted.

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APPENDICES

APPENDIX A

Details of Environmental Assessment Practitioner (EAP)

APPENDIX B

List of Properties and Activities

APPENDIX C

2012 New Largo EIA by Synergistics

APPENDIX D

2020 Public Participation Process

APPENDIX E

2021 Public Participation Process

APPENDIX F

2020 Specialist Studies

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APPENDIX H

Impact Assessment; Mitigation and Monitoring Tables

APPENDIX I

Existing Environmental Authorisations

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Document Limitations

1.0 INTRODUCTION AND BACKGROUND

Mining of the New Largo Coal reserve, previously owned by Anglo American Inyosi Coal (AAIC), is authorised through an Environmental Impact Assessment (EIA) process under the requirements of the National Environmental Management Act (NEMA) and the Mineral and Petroleum Resources Development Act (MPRDA). The Environmental Authorisation (EA) was issued by the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) in 2012, and the Environmental Management Programme (EMPr) was approved by the Department of Mineral Resources and Energy (DMRE) in 2013. Furthermore, the Department of Water and Sanitation (DWS) issued three Water Use Licences (WULs) between 2013 and 2015. Thereafter, AAIC put the New Largo Coal Mine project on hold due to commercial agreements with Eskom that had not been concluded and submitted requests for extension of the validity of the authorisations to the Regulators.

Since the acquisition of the New Largo Coal Mine Project, New Largo has undertaken a number of feasibility studies to re-evaluate the deposit as standalone mining operations, with the intent to generate capital to develop the rest of the mine. Mining has commenced at Pit D, and is proposed to commence at Pit H in the near future. An update to the mine's environmental management programme report (EMPr) was submitted to the DMRE in March 2021, to accommodate the changes to the mining schedule and infrastructure layout.

New Largo now proposes to amend the original mine schedule to commence mining of Pit F at an earlier date than the timeframes stipulated in the original mining schedule. This earlier schedule will require the development of some infrastructure not previously included in the EMPr. The coal mined from Pit F will initially be trucked to Phola Coal Processing Plant (PCPP) for processing. New Largo plans to develop a coal washing plant at the Pit F site to process the coal; product coal will then be transported to a nearby siding.

To give effect to these proposed changes, New Largo must apply for amendments to its approved EA/EMPr and as such have requested Golder Associates Africa (Pty) Ltd. (Golder) to assist with the EMPr amendment process. The EMPr needs to be amended through a Part 2 (substantive) amendment in terms of the EIA Regulations (GN R. 326) (as amended). As part of the amended application, the potential impacts of the proposed changes to Pit F will need to be assessed.

2.0 CONTACT PERSON AND CORRESPONDENCE ADDRESS

2.1 Details of the Proponent

For the purposes of this project, the following person can be contacted at New Largo:

Table 1: Details of the proponent

Details	Description
Company Name:	New Largo Coal (Pty) Ltd.
Company Registration Address:	5 th Floor, Worley Parsons Building, 39 Melrose Boulevard, Melrose Arch, Melrose, Johannesburg, 2076
Telephone number:	011 047 7000
Contact Person Details	
Contact person:	Nicola Torley
Telephone:	011 047 7000
Email:	Nicola.torley@seritiza.com
Alternative contact person:	Pavan Rajlal
Telephone:	011 047 7043
Email:	pavan.rajlal@seritiza.com

2.2 Details of the Environmental Assessment Practitioner (EAP)

Golder is a member of the world-wide Golder Associates group of companies, as a 100% employee-owned group since its formation in 1960, Golder has created a unique culture with pride in ownership and a commitment to providing technically sound and cost-effective consulting and contracting services primarily in environmental and geotechnical services. Experiencing steady growth for nearly 60 years, Golder now has more than 7,500 dedicated professionals operating from more than 155 offices, in more than 40 countries worldwide. We serve our Clients as a globally connected community that shares knowledge to deal with technical issues requiring innovative approaches. Golder has offices in Midrand, Maputo and Accra. Golder has more than 300 skilled employees and is able to source additional professional skills and inputs from other Golder offices around the world.

For purposes of this EMPr Amendment application, the following persons may be contacted at Golder.

Name of Consultants

Name:	Golder Associates Africa (Pty) Ltd.
Address:	PO Box 6001, Halfway House, 1685
Environmental Assessment Practitioner:	Olivia Allen (Senior Environmental Practitioner) Email: oallen@golder.co.za The full CV is provided in APPENDIX A
EAPASA Registration No:	2019/1725
Public Participation Specialist:	Brian Magongoa (Public Participation Specialist) BMagongoa@golder.co.za

2.2.1 Expertise of EAP**2.2.1.1 Qualifications of EAP****2.2.1.1.1 Education**

- B.Sc. (cum laude) Zoology and Geography – University of the Free State (Bloemfontein);
- B.Sc. (Hons) (cum laude) Geography – University of the Free State (Bloemfontein); and
- M.Sc. Water Resource Management - University of Pretoria.

2.2.1.1.2 Professional Affiliations

- EAPASA Registered EAP (Ref. No. 2019/1725).

2.2.1.2 Summary of past experience

Olivia Allen has 16+ years' experience in the discipline of Environmental Sciences. Olivia specialises in environmental assessment, regulatory compliance, waste planning and integrated project management.

As a senior consultant, Olivia has successfully led, or been part of, various projects in the mining sector of coal, gold, diamonds, copper and platinum, the petroleum sector of gas extraction, and steel, ferrochrome and electrolytic manganese dioxide industrial sectors. She has extensive experience in mine water treatment related projects and has exposure to mine closure and rehabilitation related projects.

In the past, Olivia has functioned in various roles within the Golder technical stream, including report writing; project management, such as facilitation of meetings, budget control, scheduling and invoicing; and working closely with engineering teams and regulatory authorities to ensure successful project integration and outcomes.

Her environmental technical competencies include the following:

- Conducting Environmental Impact Assessments and compiling Environmental Management Plans;
- Development of Integrated Waste Management Plans;
- Compiling Water Use and Waste Management Licence Applications;
- Stakeholder engagement, including Regulatory Authorities;
- Co-ordination of Integrated Regulatory Processes; and
- Environmental Compliance Assessment and Auditing.

2.2.2 Declaration of Independence

Golder has no vested interest in the proposed project and hereby declares its independence as required by the EIA Regulations.

3.0 PROJECT DESCRIPTION

3.1 Overview of New Largo Coal

New Largo Colliery lies between the N4 and N12 national freeway, some 30 kilometres west of eMalahleni and 100 kilometres east of Johannesburg in the Mpumalanga Province. The full extent of the New Largo Mining Rights Area (MRA) extends from the N4 (Pretoria-Witbank National Road) to the south of the N12 (Johannesburg-Witbank National Road). Pit H is located within a satellite basin, separated from the wider New Largo coal deposit by the N12 road, whilst Pit D is located north of the N12 in close proximity to the New Largo coal deposit (Figure 1). Pit F is located to the east of the main New Largo coal resource by the N12 road. The Kusile Power Station is located immediately adjacent to the west/north-west of the mine.

Mining of the New Largo Coal reserve, previously owned by AAIC, is authorised through an EIA process under the requirements of the NEMA and the MPRDA. The EIA for New Largo Colliery, which included the Main New Largo Mine, was completed, and submitted in 2012 (Synergistics, 2012; DMR: 30/5/1/2/2/511MR F/2011/04/14/002). The application for the mine was authorised in 2013.

The following authorisations are in place for the Colliery:

1. Environmental authorisation from the MDEDET in terms of the NEMA and the Environmental Impact Assessment Regulations, 2010 (Government Notice 543 to 546, 18 June 2010) on 11 December 2012 with reference number: 17/2/3N-41, for certain listed activities to be undertaken on the farms Honingkrantz 536 JR, Hartbeestfontein 5637 JR, Eenzaamheid 534 JR and Roodepoortjie 326 JR in the Nkangala District, Mpumalanga Province;
2. Approved EMPr, in terms of the MPRDA, by the DMRE;
3. Approved waste management licence, in terms of the NEMWA, by the National Department of Environmental Affairs and/or MDEDET (Licence No. 12/9/11/L952/6);
4. Approved WUL's, in terms of the National Water Act (No. 36 of 1998), by the DWS:
 - WUL: 04/B20G/ACFGIJ/2538, File: 16/2/7/B200/C528 dated 11 January 2015 (Integrated WUL);
 - WUL: 04/B20G/CI/2246, File: 16/2/7/B200/C528 dated 22 August 2014 (R545 Provincial Road Realignment); and
 - WUL: 04/B20F/ACFGI/2310, File: 16/2/7/B200/K524 dated 22 September 2013 (Phola – Kusile Conveyor).

New Largo acquired the New Largo Coal Mine project from AAIC in August 2018. The mining tenement areas comprising New Largo are 100% owned by New Largo, a consortium owned by Seriti Resource Holdings (Pty) Ltd (Seriti) (45%), IDC (Industrial Development Corporation) (22.5%), and Coalzar Pty Ltd (22.5%), with the balance owned by an employee and community trust.

Since acquiring the reserve, New Largo has re-evaluated how to initiate the mining and some changes in both infrastructure and mine scheduling have occurred. These changes largely reflect matters of timing, size of the mining fleet and orientation of mining cuts; with a key change in timing relating to the planned commencement of mining. New Largo intends to develop the New Largo mining right into a large scale, long life coal mine with potential to supply coal to the adjacent Kusile Power Station and other Eskom power stations, as well as other markets.

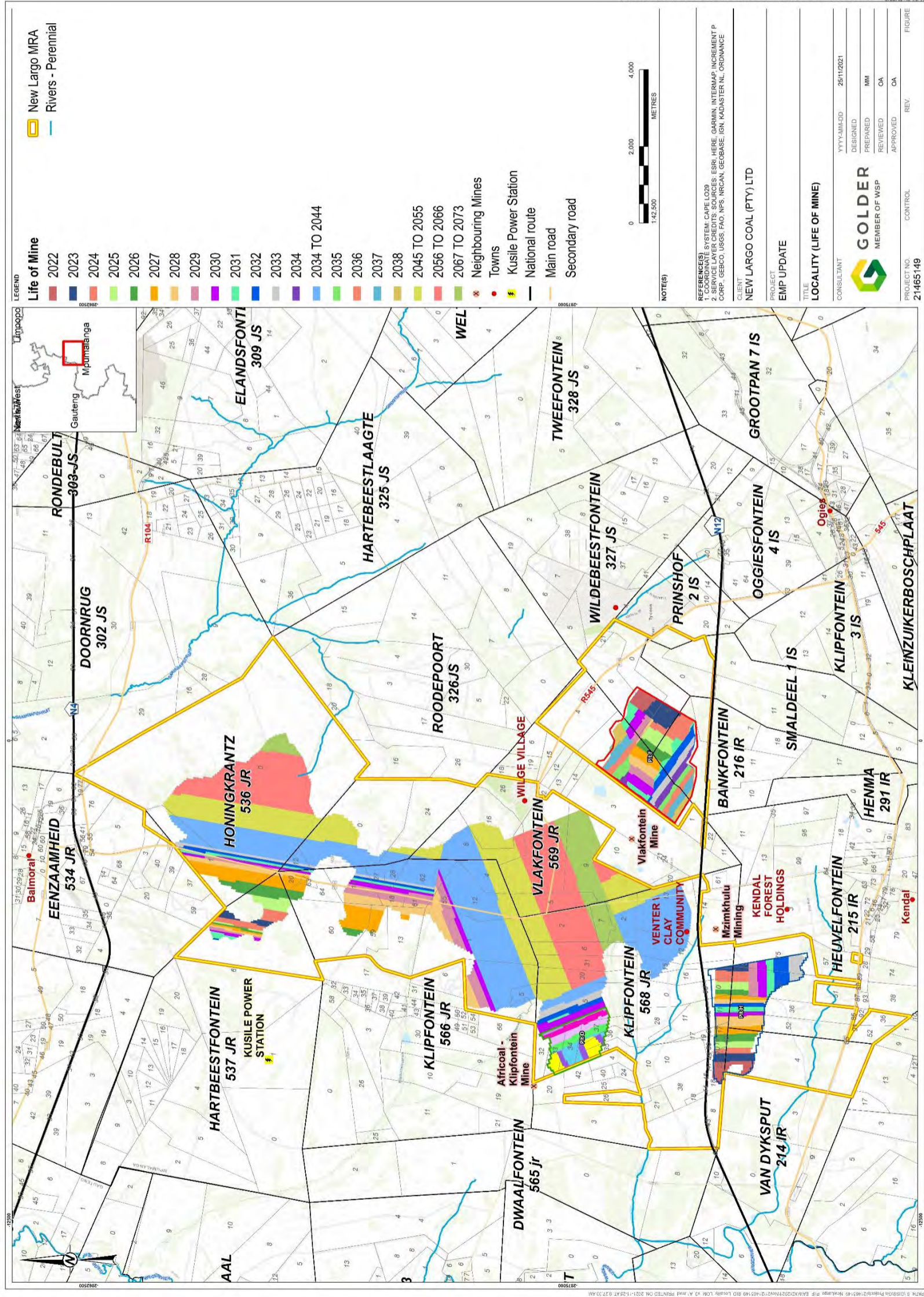


Figure 1: Project Locality, Life of Mine

3.1.1 Description of the Affected Properties

The property information related to New Largo is illustrated in Table 2. The main New Largo Coal Mine falls on Farms Honingkrantz, Hartbeestfontein, Eenzaamheid and Roodepoortjie. Pits D and H are associated with portions on Farms Klipfontein and Heuvelfontein. Pit F is associated with portions on Farms Bankfontein, Vlakfontein and Prinshof. The farm portions associated with the full MRA are listed in Table 2 and illustrated in Figure 2, with the property owners presented in Figure 3.

Table 2: Property information

Farm Name	Honingkrantz Hartbeestfontein Eenzaamheid Roodepoortjie Klipfontein Heuvelfontein Bankfontein Vlakfontien Prinshof
Application area (ha)	12 136.53 ha
Magisterial district	eMalahleni
Distance and direction from nearest town	Ogies: approximately 4.5 km away in the South East Direction
21-digit Surveyor General Code for each farm portion	See Figure 2

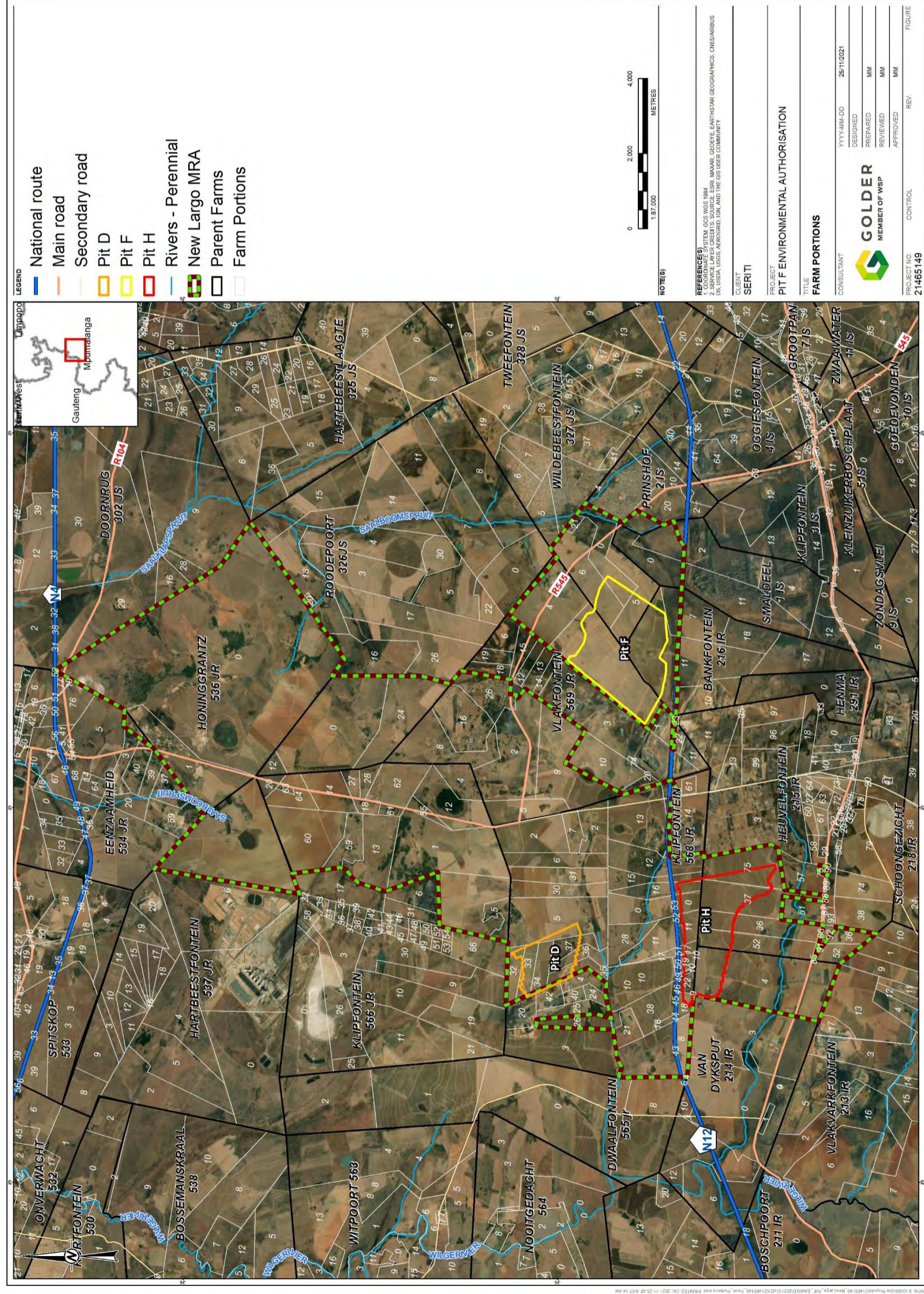


Figure 2: Farm portions associated with New Largo Coal

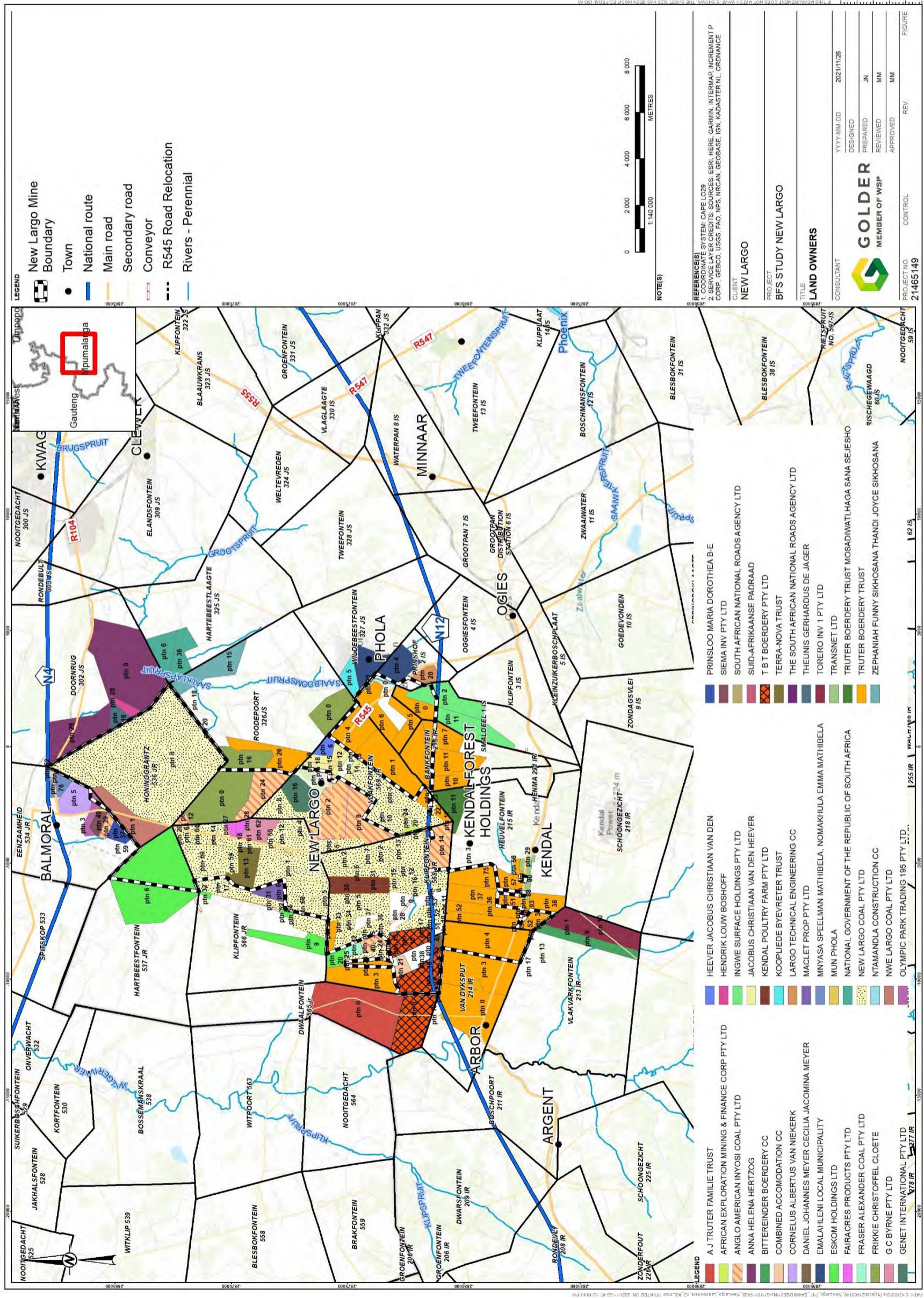


Figure 3: Property owners associated with the project area

3.2 Activity Life Description

- The amendment to the mine schedule and development of additional infrastructure will enable New Largo to access higher grade coal reserves at an earlier stage of the Life-of-Mine (LoM) than envisaged in the original mine plan. The target destinations are expected to be Eskom (Kendal and Kusile Power Station), export market and other power producers within South Africa. The mine will potentially contribute to the reduction of the domestic shortfall of coal, helping Eskom to ensure a sustainable supply of power, which the South African economy depends on.
- The development of the New Largo mine will occur in phases. The Project is currently at the start of the implementation phase, and mining activity has commenced at Pit D. The principal activities and infrastructure to be implemented during each phase are summarised as follows:
 - 2020: Commence truck-and-shovel mining at Pit D,
 - 2022: Commence truck and shovel mining at Pit F.
 - 2023: Commence with construction of the Phase 0 infrastructure (interim coal truck offloading facility);
 - 2023: Commence truck-and-shovel mining at Pit H:
 - There will be a transitional period during which the mine progresses from the initial box-cut, pre-strip, and ramp up, through to full production.
 - 2025: Commence mining at the main New Largo mine:
 - New Largo prefers to develop the main ore body in 2 phases as mentioned below:
 - Mining Phase 1 (2025-2028): Mining Phase 1 will mainly consist of the first box-cut and dragline operation and will include the start of construction of most of the infrastructure. All Phase 1 infrastructure will be implemented by the end of Year 5 (i.e., 2028); and
 - Mining Phase 2 (2032-2039): will be implemented by end of Year 8. It will entail the development of a coal processing plant, the construction of haul roads, permanent Water Treatment Plant, Run-of-Mine (ROM) stockpiles and the introduction of Dragline 2.

The operational life of the main New Largo mine is estimated to be 50 years.

3.3 Overall Project Description

An overview of the project description contained in the 2012 New Largo EIA (Synergistics, 2012) has been updated and summarised below.

3.3.1 Mining Activities

The presence of the old underground workings posed limitations on the mining methods chosen as well as on mine scheduling / sequencing to achieve safe mining conditions as well as the coal qualities required for Kusile. The use of opencast mining using draglines, supported by small truck and shovel operations were selected as the most appropriate approach to mining the resource.

Truck and Shovel will be used as the sole extraction method for Pits D, H and F and the first two years of production at the main pit. Throughout the operation, it will also be used to some extent at Pits G, C, and E. Three dragline excavators will be introduced over the LoM as the primary mining method. Each will enable an approximately 4 million tonnes per annum (Mtpa) ramp-up in saleable coal production, allowing phased development and delayed capital expenditure. Single- and double-bench excavations will be used to expose

the two target seams. During dragline operations, throw-blasting and bulldozing of spoil is planned to reduce handling of the overburden as much as possible.

Simulations were undertaken using RPM Global Xpac to provide detailed timeseries of box-cut construction and mining operations. These were used as the basis for estimating fleet equipment requirements and associated operating hours, maintenance and replacement schedules, human resource requirements (number and level), and usage of consumables (diesel, electricity, explosives, and lubricants).

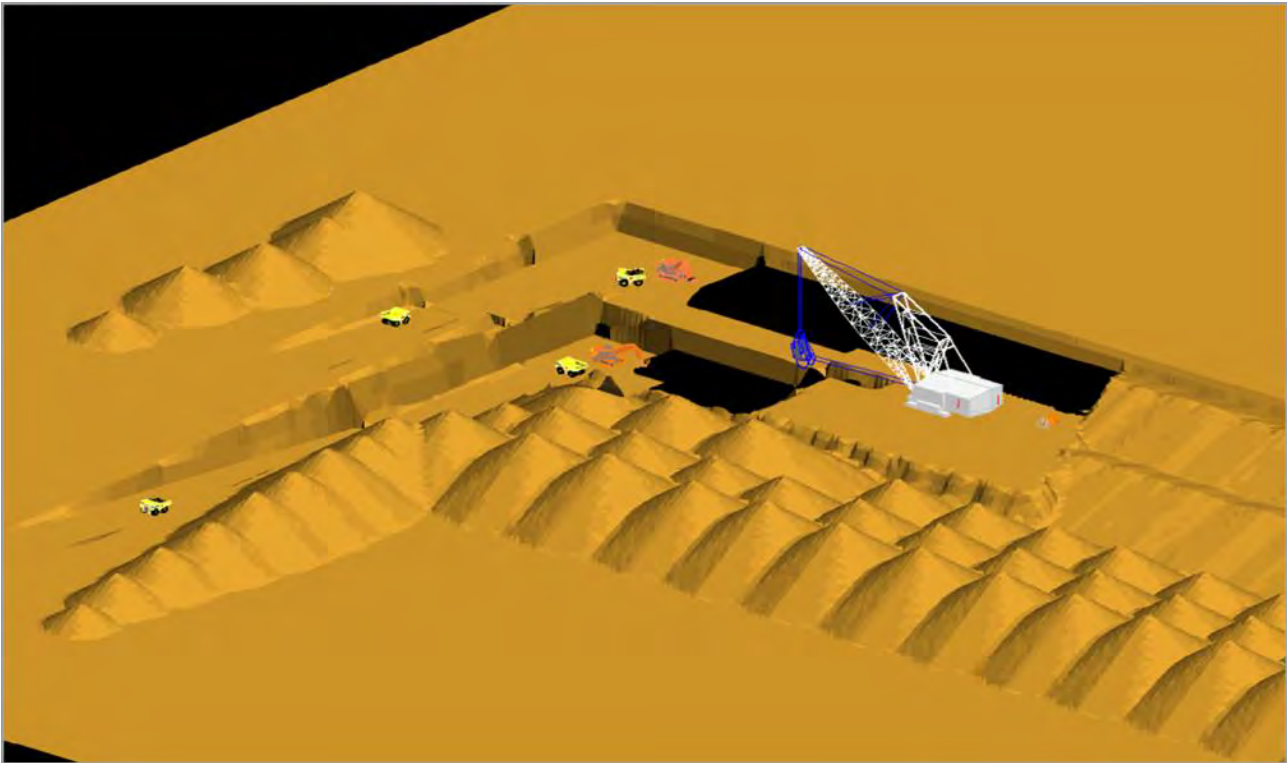


Figure 4: Isometric view of perpendicular coal access ramps - Double seam

3.3.2 Coal Processing

A coal processing plant will be required when mining proceeds to the southern areas where poorer quality coal is located. Higher quality coal (from the northern areas) will have to be blended with lower quality coal to ensure a constant supply, at the correct coal specifications, to Eskom.

The New Largo main mine will produce a total Run of Mine (RoM) of 567Mt over its 50-year LoM, resulting in 490Mt of saleable coal. The separate Pit D mini pit operation will produce approximately 3Mtpa saleable coal over a five-year period totalling 14Mt, while the separate Pit H mini pit operation will produce approximately 3Mtpa of saleable coal over a ten-year period totalling 27Mt. Pit F mini pit operation will produce approximately 3.6 Mtpa of saleable coal over a sixteen-year period totalling 57.6 Mt. Production at the main pit is scheduled to commence two years into production after the mini pit operations - ramping up as they ramp down.

The mine is scheduled to have a peak RoM of approximately 14.7Mtpa, while peak saleable coal production of approximately 12.0Mtpa.

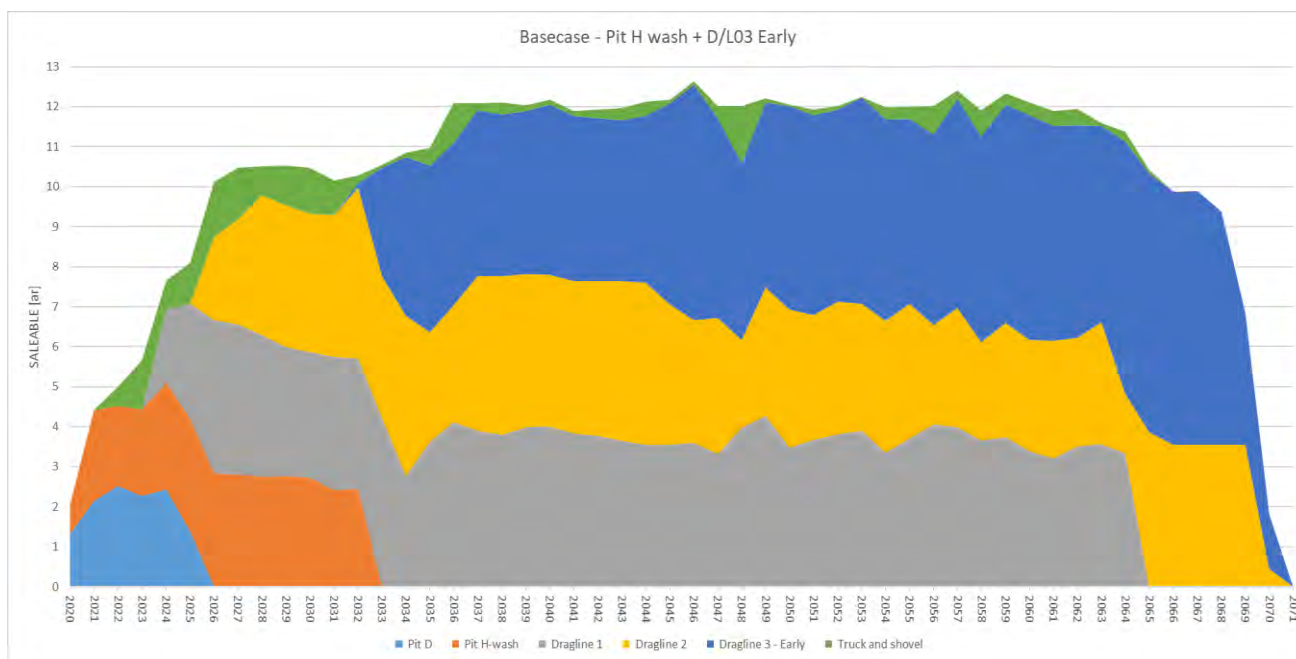


Figure 5: As Received Production from New Largo mines, with main pit split by excavation type

Pit D

All RoM coal mined at Pit D will be processed through an existing Air Plant (FX plant) located at Klipfontein. Product/Saleable Coal will be stockpiled on existing facilities at Klipfontein.

Pit H

All RoM coal mined at Pit H will be crushed with in -pit crushers initially. At a later stage this ROM will be processed through a de-stoning plant which will be constructed within the Pit H footprint.

Pit F

All RoM coal mined at Pit F will be crushed at an on-site crusher (600 t/hour); at the start-up of the operation, coal product will be trucked to PCPP to the south. New Largo later plans to develop a coal wash plant at the Pit F site to process the coal. Product coal will be transported to a nearby coal siding.

Main Mine

During Phase 1 of the main mine operation, coal will be delivered at one RoM tip, where it will undergo primary crushing and stockpiling via a windrow stacker. Raw coal fines passing a -50mm primary screen will be sent directly to product, while oversize coal will be sent to the -50mm tertiary crusher.

During Phase 2 of the main mine a second RoM tip will be introduced with a second stacker and switchover facilities allowing the stackers to be fed by either tip. Tip 2 will feed a screening and beneficiation plant, where out-of-specification coal will be washed using dense medium separators in a magnetite medium. Raw coal sent for washing will be crushed to -250mm and passed through a -15mm tertiary screen, of which the approximately 60% oversize will be washed and the approximately 40% undersize will bypass the wash plant. The heavy fraction from washing will be discarded and the light, washed coal fraction will be sent to the tertiary -50mm crusher.

Later in the New Largo LoM an expanded wash plant will allow both tips to feed the wash plant.

The coal stockyard will consist of 6 x 60 000 t capacity beds arranged in 3 parallel rows with an additional 2 x 60 000 t capacity emergency stockpile.

As Kusile does not have a product stockpile, it is important that the supplied feed meets the minimum coal quality specification, to avoid disrupting operations (Table 3). New Largo will manage this through selective mining, monitoring, blending, and beneficiation of approximately 30% of the raw coal. This requirement will increase over the LoM as the average quality of the produced coal decreases.

Table 3: Kusile Coal Quality Specification

Coal Quality (Air Dried Basis)			2012 Coal Specifications	2017 Coal Specifications	2019 Coal Specifications
	Unit	Design			
CV	MJ/kg	18.8	> 16.7	> 18.1	> 18.8
Ash	%	35.8	< 38.0	< 36.0	< 34.0
Volatiles	%	18.4	> 16.5	> 18.5	> 18.5
Total moisture as received	%	7.0	< 10.0	< 8.0	< 8.0
Sulphur	%	1.3	< 1.8	< 1.3	< 1.3

Figure 6 shows the Resource blocks requiring selective mining and beneficiation, which are mostly located in the south of the mining right area. Green, purple & blue blocks represent out-of-specification material:

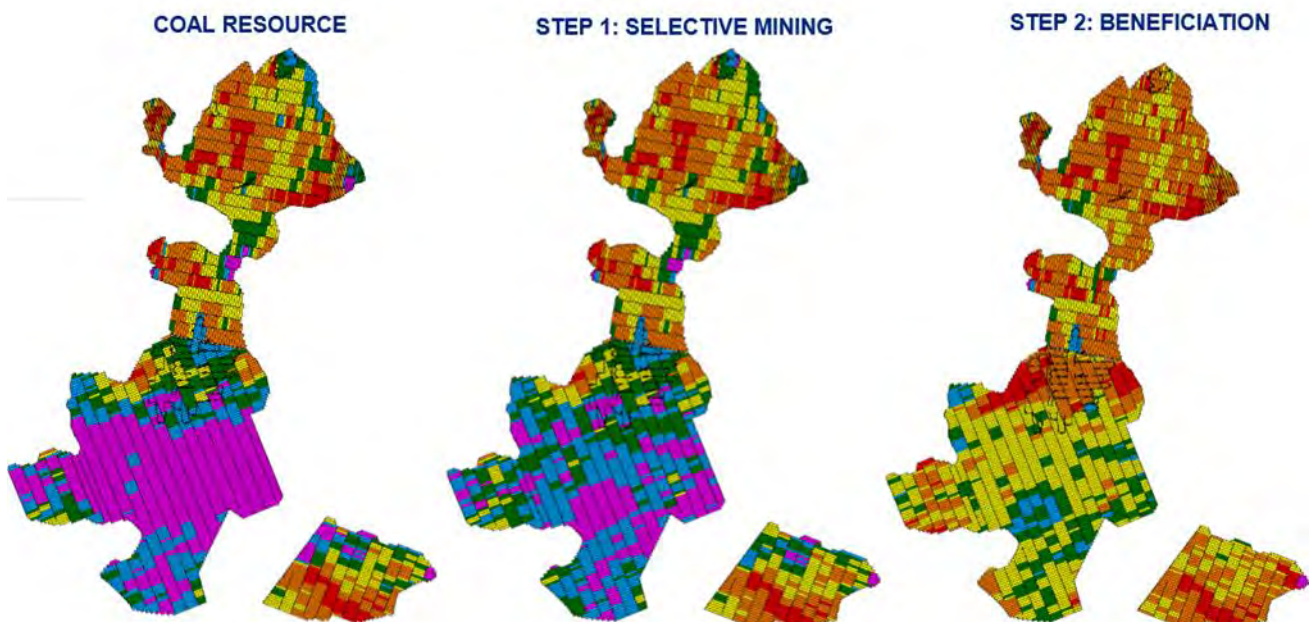


Figure 6: Coal Resource with green, purple & blue blocks representing out-of-specification material

3.3.3 Coal Discard Management

Main mine

The discard dump facility for the main mine will be implemented in Phase 1 of the New Largo project.

The fundamental coal discards disposal philosophy for the New Largo Colliery is that coal discards generated from the proposed washing plant will be disposed back into the open mining pit void wherever possible. Within the mine planning, areas of the mined open pit lower than the post-mining groundwater re-charge/decant elevation have been identified as suitable for discards disposal. The available air space volume within these zones has been determined and is sufficient to accommodate the predicted coarse discards volumes. The proposed strategy for the in-pit discards disposal operation is that coarse coal discards emanating from the washing plant will be conveyed and discharged into an associated 1000 tonne silo adjacent to the plant. Haul trucks from the mining operation, after depositing at the RoM tip, will report to the discards silo to be loaded with discards for the return trip. It is anticipated that only a portion of the trucks will be required to transport discards. Within the identified discards disposal sections of the open pit, the haul trucks will tip the coal discards and the heaps will then be spread into a 500mm thick layer (combination of dozer/grader operation) and compacted via four passes of a ten-tonne vibro roller or similar.

It is likely in practice however, that there will be instances when it will not be possible to transport and/or deposit the discards back to the pit (instances of poor visibility, weather conditions, flooding, no access, no deposition area available etc.). To cater for these a surface discards disposal facility has been provided. The facility has been designed to cater for 10Mt of coal discards, equivalent to 6.25Mm³ based on a placed density of 1.6t per m³. The geometry of the facility has been conservatively based on a maximum height of 25 metres above the surrounding ground level and with side slopes of 1v:8h or just over 7 degrees. The flat side slopes will facilitate ease of placement of soil, vegetation establishment and growth and ongoing maintenance which can be carried out safely with agricultural equipment. The flat side slopes and low overall height will also improve any visual impact whilst also providing flexibility to accommodate any increase in the quantity of discards to be disposed on the facility. Based on the foregoing parameters a footprint area of 700m x 700m is required or approximately 50 hectares.

A suitable site for the surface facility has been identified on the mini pit mining area. Once the mini pit area has been mined and backfilled, the area identified for the discard's facility will be prepared and infrastructure constructed according to a programme based on the anticipated start date of the washing plant. The detailed phasing of construction will be done during the detailed engineering design phase. It must be noted that when backfilling the mini pit, the footprint area for the surface discards facility will not be rehabilitated (i.e. soil placed and vegetated), soil designated for this area must remain stockpiled off the footprint for use later in the rehabilitation of the discard's facility.

A site selected for the disposal facility will be accessed via a haul road and light vehicle road.

Apart from base preparation (mainly for access by haul trucks and to minimize settlement) there is no provision for lining the base of the facility. Clean water diversions drain/berm and a concrete-lined dirty water collection drain/s have been included around the perimeter of the facility, the construction of these will be phased to suit the dump development.

Clean water is diverted away from the facility to join the general clean water system whilst the dirty water is drained via a silt trap to a 5Ml capacity lined storage facility, polluted water collected here is pumped over to the main pollution control dam.

The facility is relatively small (10Mt capacity) and it has been assumed that it will develop linearly over a period of 20 years. Due to the fall from east to west across the facility (approx. 1:50), the progressive development of the dump will be from the south-west (lowest) corner and growing progressively eastwards.

There may be a requirement for dust control on the facility and haul road and it is anticipated that this will be by the mines dust control system and equipment (i.e. dust a side emulsion). The access haul road and the initial section onto the dump footprint will be as per the haul road construction details.

There will be allowance for in-situ/impact compaction of the first two years footprint area of the dump development, thereafter it will be under working cost.

Pit D

The RoM coal from Pit D will be processed at the De-stoning Plant also called an (air plant) at Klipfontein and the rejects will not return to New Largo.

Pit H

Coal beneficiation is planned for Pit H by dry processing using a Destoning Plant (air plant). The air process technology in the destoning Plant upgrades the feed material over a vibrating screen in conjunction with air from a force fan. No process water is used, and no slurry is produced. Pit H will have its own destoning Plant which will beneficiate the RoM coal from Pit H, in the same way the Pit D RoM coal is to be beneficiated at Klipfontein. The destoning plant reject material generated by the destoning plant at Pit H, will be backfilled to the Pit.

Pit F

Crusher rejects and coarse discard and filter press fines from the beneficiation plant at Pit F will be backfilled into the pit. At start-up, discard will be temporarily stockpiled in the north eastern section of the pit footprint, for a period of two to three years, followed by direct deposition into the pit, once space within the pit becomes available. As operations progress, discard will continue to be deposited directly into the pit. Discard will be deposited into the pit below the final post mining water level.

3.3.4 Water Management

Main Mine

Dewatering of the underground workings is required at least four years ahead of the start of mining at the main mine. A water treatment plant (WTP) will treat the water during Phase 2 and excess treated water will be released to tributaries once approvals are in place. In-pit dewatering will take place during mining using approximately 27 X 150kW in-pit pump units, suitable for handling acidic water, and 2 X 300kW pumps for emergency events. There is to be no in-pit storage of water during mining, with water instead held within a 1,200MI holding dam on surface and later a 1,000MI dam planned within the Pit G void.

During Phase 1, a 4MI per day temporary WTP will be provided at New Largo in close proximity to the future permanent water treatment facility. The collection of mine affected water and borehole water is depicted in Figure 7 (Delta BEC, 2019).

The WTP will have a neutralisation and Reverse Osmosis (RO) process. The neutralisation process will be used to treat the dewatering water and pit water for use as process water at the Coal Handling and Processing Plant (CHPP). The RO plant will treat the mine water to supply the mine's potable water requirements and for the discharge to the environment (Delta BEC, 2019).

The temporary WTP will be operated by a contractor. The use of a temporary WTP will allow the quality and quantity of the feed water to be assessed to establish the design specifications for the permanent WTP.

Bulk water supply from the New Largo underground workings is intercepted at the dewatering point situated on the Farm Klipfontein 566JR. The decant water flows into a 10MI plus freeboard (50m x 50m x 3,5m deep); plastic-lined Decant Raw Water Dam in a 250mm diameter pipeline (refer to Figure 7), in addition to the 1,5MI of decant water, the underground workings will also be dewatered using three strategically positioned boreholes as recommended by Frank Hodgson in "Report Mine-water balance for New Largo Colliery" dated 10 November 2011. The borehole pumps will pump water from the underground workings to the Decant Raw Water Dam in 250mm diameter pipelines. These pipelines have been positioned to avoid mining where reasonably possible.

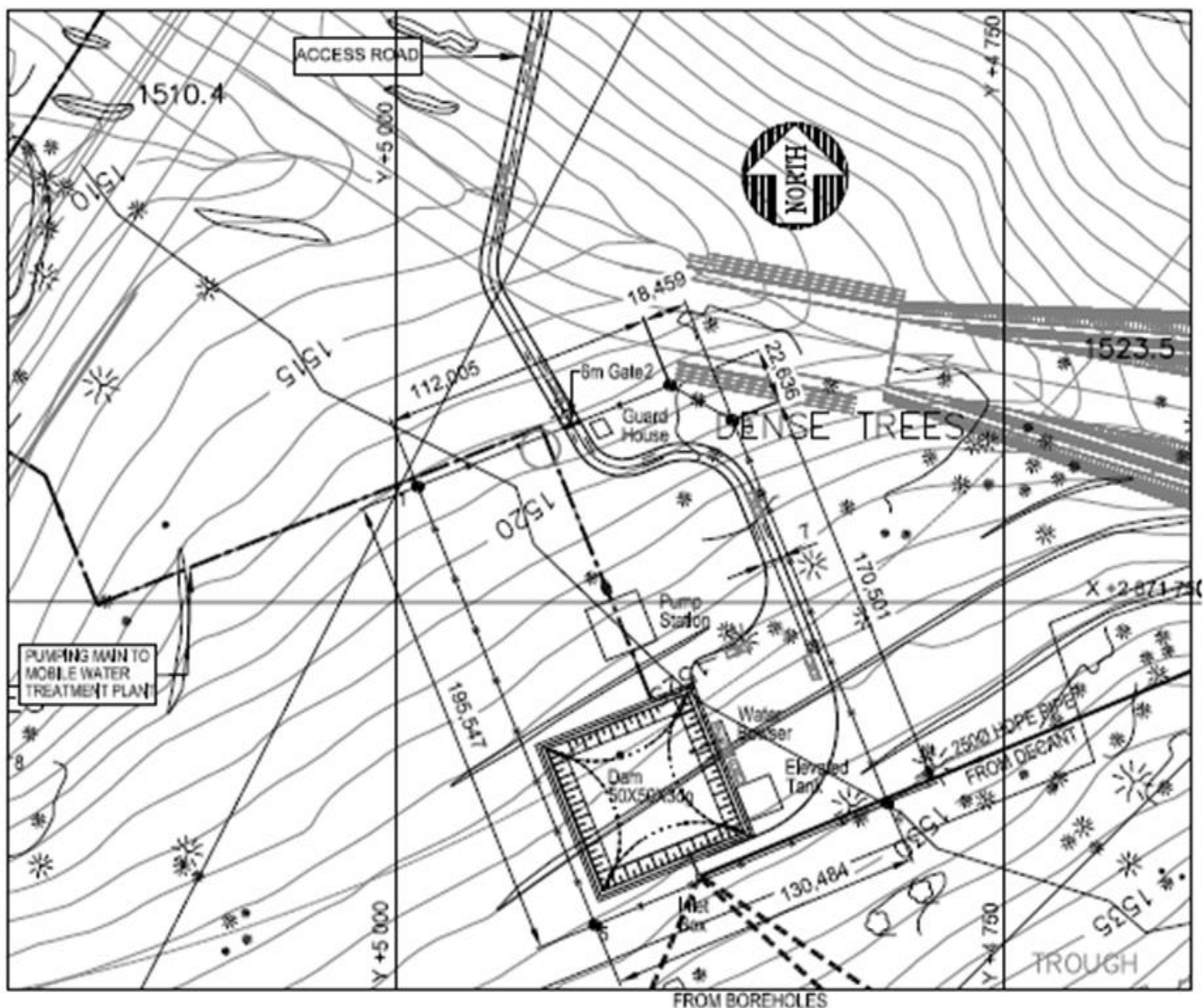


Figure 7: Decant Point General Arrangement

A pump station situated at the Decant Water Dam pumps water at a rate of 400m³ per hour to the mobile WTP located at New Largo where water is then treated at a rate of up to 4MI per day. Considering the Life of Mine, the WTP is capable of treating water at this rate between the period of Year 1 to Year 5 thereafter a permanent WTP will be implemented.

The water will be treated to potable standards and will be stored in a 1MI Potable Water Reservoir from where the water is pumped by means of a 22kW pump to a 250kl Elevated Tank positioned at New Largo. From the Elevated Tank, water is supplied to the Fire Water reservoirs and the New Largo infrastructure.

A pump station supplied from the Elevated tank delivers bulk water along the overland conveyor.

Surplus water produced (approximately 2.5MI per day) by the WTP will be discharged into the natural watercourses (Delta BEC, 2019) in terms of a water use authorisation.

Waste handling facilities have been provided in close proximity to the WTP for the gypsum and brine generated from the treatment process in the form of a 100m x 100m bounded concrete slab and a 5MI plastic-lined dam respectively as shown in Figure 7. There are two alternatives available for the disposing of gypsum; the first is to use the gypsum as part of the backfill in the pit and the second is for the appointed Water Treatment Plant

Contractor to dispose it in a licensed off-site waste handling facility or find a suitable off-take. It is important to note that the contract with the WTP contractor will be structured to include for this activity.

Water for construction purposes will be sourced from the 10MI Decant Raw Water Dam. Water tankers will be filled by means of an overhead tank which is supplied using a submersible pump located in the dam and the system is manually controlled by the tanker driver.

Pit H

The mine will require two PCDs (PCD 1 and PCD 2) for polluted water storage (GN704 requirement) and for ensuring water supply for mining support services water demands. The PCD 1 (Eastern PCD) will receive runoff from the plant area and overburden stockpile seepage pumped from the Eastern and Western Seepage Water Collection Sumps. Water will be sourced from PCD 1 for dust suppression demands on the haul roads. PCD 2 (Western PCD) will receive the in-pit runoff water as well as the groundwater inflows. Water will be sourced from PCD 2 for dust suppression demands on the haul roads.

Four overburden stockpiles will be constructed, these are further classified as hard and soft overburden stockpiles. Seepage collection systems will be implemented at the unlined overburden stockpiles, with the system discharging into seepage collection sumps, the water will then be pumped to the PCD 1. The surface water runoff will be captured in evaporation paddocks located on the downslope side of the overburden stockpiles. The evaporation paddocks will be comprised of a cascading pond setup, with an approximate depth of 0.4 m. This will allow for improved evaporation rates therefore reducing the required PCD storage capacity for the mine.

The air plant does not require use of water for the processing of the product. Therefore, no plant water will be required. Potable water will be sourced from boreholes on the site; this water will be used to supply the domestic water demand.

A package sewage plant will be established for domestic wastewater management. Treated wastewater will be discharged to the receiving environment. Wastewater will be treated to comply with key parameters of the Water Quality Planning Limits (WQPL) set for the relevant sub-catchments of the Upper Olifants catchment.

Pit D

This pit will be mined through from the neighbouring Africoal pit, whose existing infrastructure will be used to support mining. No water management infrastructure is required at this location.

Pit F

Borehole water will be used for potable water at the start-up phase and for operational purposes. A groundwater investigation, including a geophysical study, is required for siting the water supply boreholes.

The mine will require two PCDs (Eastern and Western PCD) for polluted water storage and for ensuring water supply for mining support services water demands:

- The Western PCD will receive runoff from the proposed Plant area and ROM stockpile. The Temporary Stockpile and Hard Overburden Stockpile Paddock's overflow will also report to the Western PCD (any spills from the evaporation paddocks will be captured in this PCD).
- The Eastern PCD receives the in-pit runoff water as well as the ground water inflows. Water is sourced from Eastern PCD to meet the plant demand as well as dust suppression demands on the haul roads.

The coal washing plant will require 4 ML/d process water at start-up. The required plant demand will be sourced from the Eastern PCD (generated initially from boreholes then when water is available from pit groundwater dewatering and storm water runoff). The demand will reduce to 1 ML/d with the 3 ML/d being circulated in the system.

For the temporary discard stockpile, seepage from the stockpile will be drawn eastwards the active mining window, which will be at a lower elevation than where the stockpile will be located and will be intercepted from an in-pit sump.

A package sewage plant will be established for domestic wastewater management. Treated wastewater will be discharged to the PCD for reuse or the Saalklapspruit-Saalboomspruit if acceptable chemical and microbiological quality is achieved.

Two overburden stockpiles will be constructed; these are further classified as hard and soft overburden stockpiles. The Hard Overburden Stockpile is considered a dirty water generating catchment and as such, the surface water runoff will be captured in evaporation paddocks, any spills occurring from this system will be diverted to the Western PCD. The Soft Overburden Stockpile is considered a clean water generating catchment, the surface water runoff generated will also be captured in an evaporation paddock system with spills being diverted to the receiving environment. Seepage collection systems will be implemented at the unlined Hard Overburden Stockpile, with the system discharging into seepage collection sumps, the water will then be pumped to the Western PCD. The surface water runoff will be captured in evaporation paddocks located on the downslope side of the overburden stockpiles. The evaporation paddocks will be comprised of a cascading pond setup, with an approximate depth of 0.4 m. This will allow for improved evaporation rates therefore reducing the required PCD storage capacity for the mine.

The Topsoil Stockpile is considered a clean water generating catchment. Evaporation paddocks will be implemented to capture the surface water runoff, with any spills from the system being released to the receiving environment.

Water will be sourced from the PCDs to supply the dust suppression requirements.

3.3.4.1 Sewage Reticulation and Treatment Plant for Phase 1

Main mine

During construction and for the duration of Phase 1, a small “Lilliput” sewage treatment plant, model SBC6000 FK capable of treating sewage of 50 to 75 persons at 90 litres per person per day, will be installed at the permanent sewage treatment site. The treatment plant comprises a pre-digestion tank, a balancing tank, an aeration tank and a chlorinator to chlorinate the effluent.

Treated effluent will gravitate to the pollution dam sited below the treatment plant. The dried sludge produced from the process will be transported by the operating contractor to licensed disposal sites.

Sewage from the Plant office and the Project office will gravitate in a buried 110mm diameter, uPVC sewer pipeline to the “Lilliput” sewage treatment plant. Manholes will be provided along its total length and at all changes in direction.

The contractors will construct a conservancy tank to be serviced by a tanker (‘honey sucker’) and the sewage will be disposed off-site at a suitable sewage treatment plant. Contractors’ will also, in the event of the sewage not reporting to the conservancy tank provide their own toilet disposal arrangement for their staff and workers during the construction period in the form of porta-loos or a similar approved facility along the conveyor.

Pit H

During the first phase of mining, it is assumed that the sewage demand will be quite small and thus only a hired portable sewage system will be required (by making use of a Honeysucker system). During Phase 2, the sewage demand will have increased due to the increase in mining operations and increase of workers on site, hence the proposed sewage system will be installed. The sewer network of the mine is summarised as follows:

- Sewage will enter the system from the connections that will be provided at all relevant infrastructure;

- Sewer connections from the structures will discharge into manholes situated close to the structures;
- From these manholes, the sewage will enter the main sewer network;
- All sewage will flow to the conservancy tank.

A package sewage plant will be established for domestic wastewater management. Treated wastewater will be discharged to the receiving environment. Wastewater will be treated to comply with key parameters of the Water Quality Planning Limits (WQPL) set for the relevant sub-catchments of the Upper Olifants catchment.

Pit D

This pit will be mined through from the neighbouring Africoal pit, whose existing infrastructure will be used to support mining. No additional sewage treatment infrastructure is required at this location.

Pit F

A package sewage plant will be established for domestic wastewater management. Treated wastewater will be discharged to the PCD for reuse or the Saalklapspruit-Saalboomspruit if acceptable chemical and microbiological quality is achieved (i.e. Water Quality Planning Limits (WQPL) set for the sub catchments of the Upper Olifants catchment).

3.3.5 Pollution Control Dams

Main mine

Storm and wash down water from within the workshop complex, tip area, crusher area, stockpile area, haul roads, ramps and discard dump are considered to be dirty. This water will be collected in a series of concrete-lined drains that will flow into, either, the Admin area polluted water dam, the Plant area polluted water dam or the Tip 2 transfer dam. Water from the pit will be pumped into the Ramp Transfer Dams which in turn will gravity feed or pump into the stilling chambers located close to the outfall drain just above the 5 storage dams.

Upstream of each dam is a silt trap and oil traps are provided at all the workshops and wash bays.

The polluted water dams typically provide surge capacity for a 1:50 year storm plus 800mm freeboard. The water levels in these pollution dams are to be maintained empty, so as to ensure the surge capacity is available should a large rainfall event occur.

The project technical risk assessment has shown that the Administration Dam should be sized to accommodate the 1:250-year storm event due to its closeness to the pit.

The dams are lined with a 2mm thick HDPE liner and all inlet, overflow and outlet structures will be reinforced concrete. The 5 Storage dams together with the Balancing Dam are designed to retain all the water from the pollution dams, runoff from the polluted areas, pit dewatering and all surplus dirty water.

As the capacity of the dam exceeds 50Ml and/or wall heights exceed 5m, the design of the dam requires the appointment of an Approved Professional registered dam engineer. This dam will also have to be registered with the Dam Safety Officer of the Department of Water and Sanitation.

Dirty/Polluted water dams should be maintained empty at all times to ensure that storage capacity is always available to accommodate excessive storm events.

Pit H

PCD 1 receives inflow from direct rainfall and runoff from the plant area. Outflows from this PCD are evaporation, dust suppression and spillage. The capacity of the PCD1 is 45 000 m³. The operational rule for dust suppression at the dam is that the water can be extracted at any time. This was done to ensure that the PCD remains as empty as possible.

PCD 2 water is pumped from the in-pit sump (30 000 m³), there is no catchment directly contributing to this PCD. The Outflows from this PCD are evaporation, dust suppression and spillage. The capacity of the PCD is 59 533 m³. The operational rule for pumping from the in-pit sump is when the PCD 2 has capacity greater than 10% and stops when the PCD capacity is greater than 95% i.e. maximising the PCD storage capacity. The pumping will stop when the PCD is full, this is likely to occur most wet seasons. It is therefore important to ensure that the PCD water level is kept as low as possible to ensure that there is capacity available during the wet season, this will ensure the pit working are not impeded by flooding. The operational rule for dust suppression at the dam is that the water can be extracted if the PCD capacity is greater than 20%. This was done to ensure that the PCD remains as empty as possible

Pit D

This pit will be mined through from the neighbouring Africoal pit, whose existing infrastructure will be used to support mining. No additional PCD infrastructure is proposed at this location.

Pit F

The western and eastern PCDs were sized so that they are not likely to spill more than once in 50 years. The water balance conducted for Pit F indicates that the Western PCD will require a capacity of 20 000 m³.

The Eastern PCD requires a capacity of 280 000 m³. Should water treatment (in the form of modular treatment plants until the main mine water treatment plant is constructed), with a capacity of 8 ML/d, be implemented, the Eastern PCD required capacity could be reduced to 160 000 m³.

Surface water runoff from the overburden and topsoil stockpiles will be captured in cascading paddock systems which would allow for sufficient evaporation to occur so that no spills to the environment would occur (release to the receiving environment is however acceptable for the clean water systems i.e., Soft Overburden Stockpile and Topsoil Stockpile). Seepage and spills from the Hard Overburden Stockpile Evaporation Paddocks will report to the Western PCD. The evaporation paddocks will comprise a series of paddocks 30 m by 10 m with a depth of 0.4 m.

The Hard Overburden Stockpile Evaporation Paddocks will have a capacity of 15 000 m³, the Soft Overburden Stockpile Evaporation Paddocks a capacity of 20 000 m³ and the Topsoil Stockpile Evaporation Paddocks a capacity of 10 000 m³.

3.3.6 Silt Management

Main Mine and Pit H

The silt management philosophy is primarily that de-silting takes place at source, thus silt traps have been provided at bunded areas at conveyor transfers. Similarly, stockpile areas will be provided with large bed silt traps at the end of each stockpile to ensure adequate silt storage volume and reasonable settling time is provided. A final large bed silt trap will be provided at the end of a pollution drain system, before the pollution control dam, to minimise silting of the dam.

These final silt traps are sized to suit the flow expected from drain system and the available cleaning equipment. All stockpile and final silt traps are provided with two separate and isolatable beds that enable drying and de-silting by mechanised means. Silt drying beds will be designed to suit the available machinery for the plant area, typically a bobcat or a front-end loader with 3m to 4m wide bucket.

Silt traps that are not conveniently situated near to coal stockpiles, such as those along overland belts, will be provided with drying beds, for placement of removed saturated silt to enable drying to desired moisture content. All silt traps will also be provided with an overflow/bypass channel to operate under severe rain events.

Pit D

This pit will be mined through from the neighbouring Africoal pit, whose existing infrastructure will be used to support mining. No additional silt management infrastructure is proposed at this location.

Pit F

PCD's, with silt traps for dirty water management will be developed for the Pit F operations.

3.3.7 Waste Streams

Based upon the current understanding of the New Largo operation, a number of waste streams will be generated, which will be managed in the following groups:

3.3.7.1 Domestic Waste

- General household waste (incl. plastic);
- Cans (aluminium);
- Paper;
- Glass;
- Organic waste;
 - Leaves, grass cuttings, branches/tree cuttings;
 - Wood products; and
 - Perishable produce.
- Salvageable items;
 - Salvageable steel;
 - Tyres; and
 - Other, including wood, plastic, pipes, cables, bricks, paint tins and rubber.

3.3.7.2 Hazardous Waste

- Hydrocarbons (e.g. used oil, diesel spillage);
- Batteries;
- Rubber;
- Contaminated PPE;
- Empty grease drums;
- Empty chemical containers (plastic and glass);
- Fluorescent tubes;
- Oil-contaminated soil, paper, plastic, rags;
- Empty oil drums;
- E-Waste;
 - Appliances;
 - Printers, copiers and scanners;

- Cables;
- Computers, monitors, keyboards, mouse; and
- Miscellaneous (CDs, punch cards, etc.).

3.3.7.3 Mine Waste

- Waste rock;
- Oil/steel contaminated ore;
- Contaminated (chemical/ hydrocarbon) spillage; and
- Coal discard material.

3.3.7.4 Other Waste

- Building rubble; and
- Sewage sludge and screenings from the sewage works.

3.3.8 Electrical Infrastructure

3.3.8.1 Bulk Power Supply

The bulk electrical supply will be derived from two sources. The initial stages will be supplied from an 8 MVA temporary supply. The mining operations will be enabled by a 40 MVA, standard power supply that will be upgraded to premium power in future.

3.3.8.2 Eskom 8 MVA Temporary Power Supply

An 8 MVA temporary power supply was made available to New Largo in 2012. The point of supply was installed but never used, resulting in vandalism and theft. Eskom has agreed to provide a budget quotation for the remedial work and to review the initial power allocation.

The 8 MVA, 22 kV temporary power supply will be sufficient to provide power to the mine until the first dragline starts production in 2022. The temporary power will be used to supply the Eskom feed conveyor, FX plant and dragline erection site via suitably rated minisubs.

3.3.8.3 Eskom 132 kV Premium Power Supply

Eskom have been requested to provide a bulk power supply at 132kV to the mine. It is proposed that the standard portion of the power supply be derived from Bravo substation at Kusile while the premium power portion will be derived from Khutala substation. The supply substations will be confirmed by Eskom. The power supply to the mine should be commissioned by December 2021 with the premium portion being commissioned by December 2027.

The power supply to the mine will be metered at 132kV, with the Eskom substation and the Mine's consumer substation being constructed on a common terrace. The substation will consist of a 132kV busbar to power two 40 MVA 132/22 kV transformers with a further two 132kV feeder bays to supply power to the North and South open pits.

The Eskom scope of work for the standard portion of the power supply is to:

- Construct a 132kV busbar at Bravo substation Kusile.
- Construct a 6km 132kV line from Bravo to New Largo substation. (Existing 400kV structures will be restrung).
- Construct a 132kV bulk power supply point at New Largo.

The Eskom scope of work for the premium portion of the power supply is to:

- Extend the 132kV busbar at Khutala and construct a 132kV feeder bay.
- Construct a 132kV overhead line from Khutala to New Largo substation.
- Equip a 132kV feeder bay at New Largo substation.

All above mentioned infrastructure can only be confirmed after Eskom has processed the application and provided a budget estimate for the supply.

3.3.9 Activity Infrastructure

The infrastructure associated with New Largo will be phased to accommodate the mining operations. The following infrastructure may be implemented during Phase 1.

- | | |
|--|--|
| ■ Conveyors (CVY 604, -606, -610, -613, -614) | ■ Temporary WTP |
| ■ Tip 1 (North Tip) | ■ Access Roads and Parking Areas |
| ■ Haul Road (Pit A to Tip 1) | ■ Security Building |
| ■ Conveyor (Tip to ROM Stockpile) | ■ Explosive Magazine Facility |
| ■ ROM Stockpile 1 | ■ PCDs |
| ■ FTP Silo 1 | ■ Mine Offices |
| ■ Tertiary Crusher Bin | ■ Change House |
| ■ Sub-station 14 | ■ Mine Stores |
| ■ Assizing Bin | ■ Store Yard |
| ■ Distribution Bin | ■ Earth Moving Vehicle (EMV) Workshops |
| ■ 10kt Silo | ■ Pit Offices |
| ■ Ramps (G1, G2, A2 – A4) | ■ Tyre Store / Repair Area |
| ■ Dragline 1 | ■ Sewage Treatment Plant |
| ■ Dragline 2 | ■ EMV Wash Bay |
| ■ Haul Road (From Ramp A4 to the Pit C) | ■ Cable Repair Shop |
| ■ Dragline Assembly Yard and Dragline Road to Pit A | ■ Clinic |
| ■ Overburden Road | ■ Hard Stand Area EMV's |
| ■ R545 Road Diversion | ■ Bulk Oil Storage |
| ■ Light Duty Vehicle (LDV) / Field Services Workshop | ■ Shift Meeting Room |
| ■ Flammable Store | ■ Production Foreman's Meeting Room |
| ■ Gas Store | ■ Service Bay Workshop |
| ■ LDV Fuel Bay | ■ EMV Office Parking |
| ■ Contractors Laydown Area | ■ Emergency Services / Fire Station |
| ■ Survey & Geology Parking | ■ Canteen |
| ■ Laboratory | ■ Community Hall |
| ■ Plant Offices | ■ EMV Brake Test Ramp |
| ■ 5 x Single Haul Road Underpasses | ■ Stores Loading Area |
| ■ Pit Access Road | ■ Delivery Truck Overspill Parking |
| | ■ Water Bowser Filling Point |

- Training Centre
- Security Fence
- Topsoil Stockpile Area (45 Ha)
- Field Service Workshop & Parking
- Core Shed
- Dust Control Silo
- Silt Trap 3
- LDV Wash Bay
- Salvage Yard and Waste Handling
- LDV Brake Test Ramp
- EMV Workshop Parking Area
- Weigh Bridge
- Product coal off-loading facility
- Access road to Product off-loading facility

It is anticipated that Phase 2 infrastructure will include the following:

- Permanent WTP;
- Haul Road Pit E to South Tip;
- Conveyor (Tip to ROM Stockpile);
- Coal Processing Plant 2 x DMS (Required in Quarter 2, Year 7);
- Tip 2 (South Tip) (Commissioned by Quarter 2, Year 8);
- ROM Stockpile 2 (Will be required when Tip 2 is commissioned);
- FTP Silo 2;
- 2 x Primary Screening;
- 2 x Secondary Screening; and
- Discard Dump (Required when Plant is commissioned).

Phase 3 entails the design of the following key infrastructure;

- Expansion of permanent WTP as required;
- Dragline (Haul Road to Pit E);
- Dragline 3 (Operational by Quarter 4, Year 12);
- Coal Process Plant 1 x DMS; and
- 1 x Secondary Screening Plant.

New Largo is now considering the mining of Pits H, D and F and Phase 0 in the initial stages. The proposed infrastructure associated with Pits H, D and F and Phase 0 are indicated below but not limited to the following (Figure 9 to Figure 13):

Pit H:

- Opencast box-cut of Pit H;
- Haul roads;
- ROM stockpile;
- Overburden stockpiles;

- Mobile crusher;
- 2 x Pollution Control Dams;
- Evaporation paddocks; and
- FX Plant (Air-dry processing system, referred to as “de-stoning plant”).

Pit D:

- Opencast box-cut of Pit D;
- Haul roads;
- ROM stockpile; and
- Overburden stockpiles;

Phase 0:

- Workshops, offices, weighbridge areas and stockpile areas.

Pit F:

- Haul roads;
- Access roads;
- ROM stockpiles;
- Overburden stockpiles;
- Discard stockpile (temporary);
- Crusher,
- Coal washing plant;
- Workshop;
- Change houses;
- PCD's, with silt traps for dirty water management;
- Office block;
- Parking area; and
- Sewerage management facility

The mine boundary area (including Pits H, D and F) in relation to the environmentally sensitive areas is indicated in Figure 14.

3.4 Key Changes from Existing Authorised Project

The following key changes are noted:

- The overland conveyor system will not be constructed until later in the project lifetime. Instead, coal will be trucked:

- Pit D = 220 000 Tonne (T) per month at 25 working days per month = 275 truck loads per day on 32T coal road trucks (Figure 8); and
- Pit H = 200 000 T per month at 25 workings days per month = 250 truck loads per day on 32T coal road trucks (Figure 8).
- For Pit F, coal will initially be trucked to the PCPP for processing and export (see Figure 12 for proposed trucking routes). New Largo plans to develop a beneficiation plant at the Pit F site to process the coal; product coal will then be transported to a nearby coal siding (e.g., Phola).
- Phase 0 has been added to the Project which entails the construction of an offloading facility and link to the Kusile Main Feed conveyor adjacent to the MRA boundary with Kusile Power station, as well as the (authorised) northern access road (Figure 9).
- The planned commencement of mining is now through pits Pit D, H and F.
- Because mining is now starting at Pit H, the following infrastructure is necessary to support mining at this location (Figure 10):
 - haul roads, access roads, product stockpiles, destoning plant, PCD with a silt trap for dirty water management.
 - reject material from the destoning plant will be backfilled into Pit H, along with the waste rock and overburden as part of the approved rehabilitation plan.
- The extent of Pit D has been defined. No new infrastructure is required; this pit will be mined through from the neighbouring Africoal pit, whose existing infrastructure will be used to support mining at Pit D (Figure 11).
- For Pit F:
 - The mining method will change from a dragline operation to truck and shovel.
 - A smaller footprint will be mined, due to the changes in mining method and mine plan.
 - Because mining is now starting at Pit F, the following infrastructure is necessary to support mining at this location (Figure 13):
 - Haul roads, access roads, product stockpiles, crusher, coal washing plant, workshop, change houses, Pollution Control Dams (PCD's), with silt traps for dirty water management, office block, parking area, and sewerage management facility.

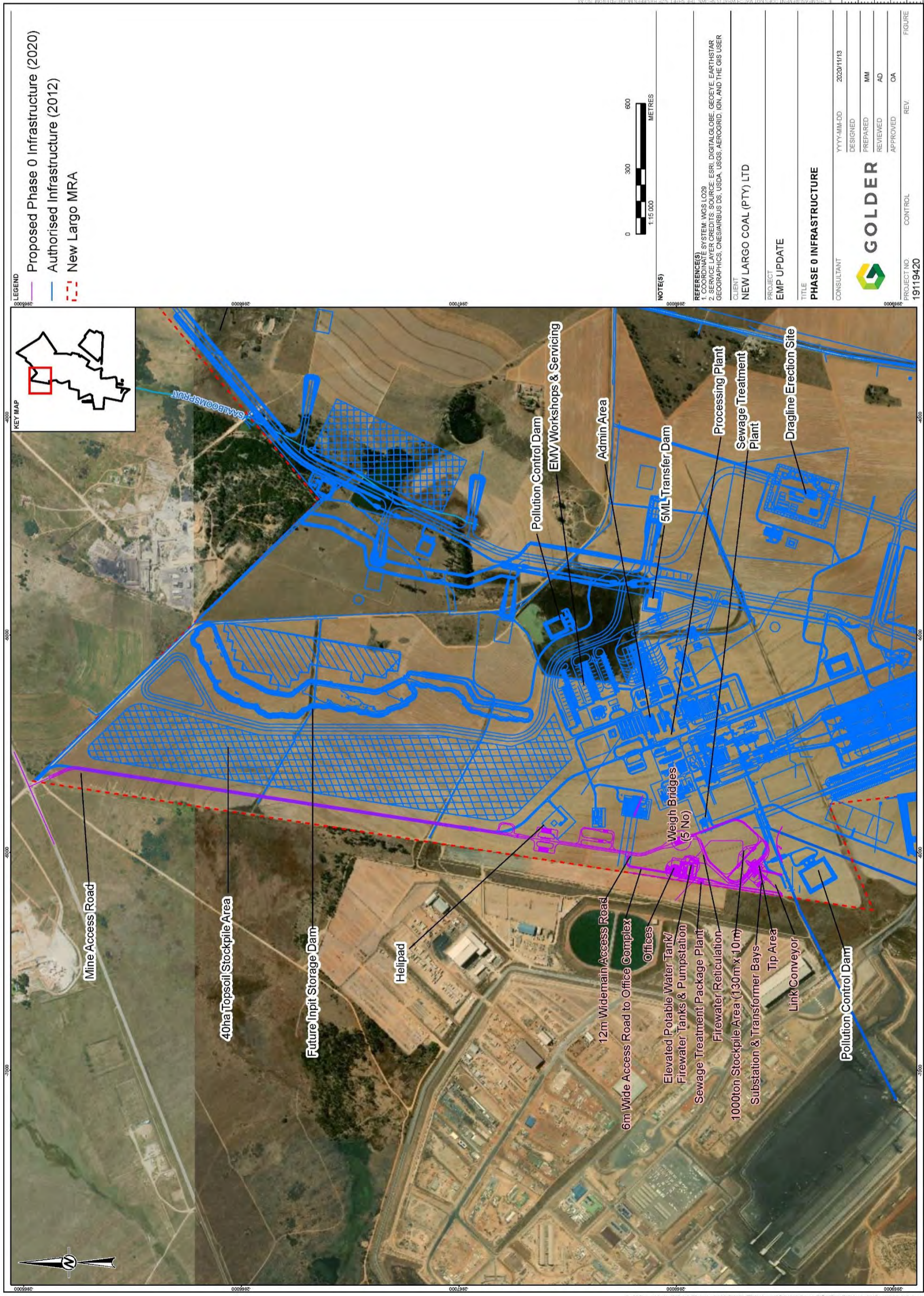


Figure 9: New Phase 0 infrastructure (2020) and authorised infrastructure (2012)

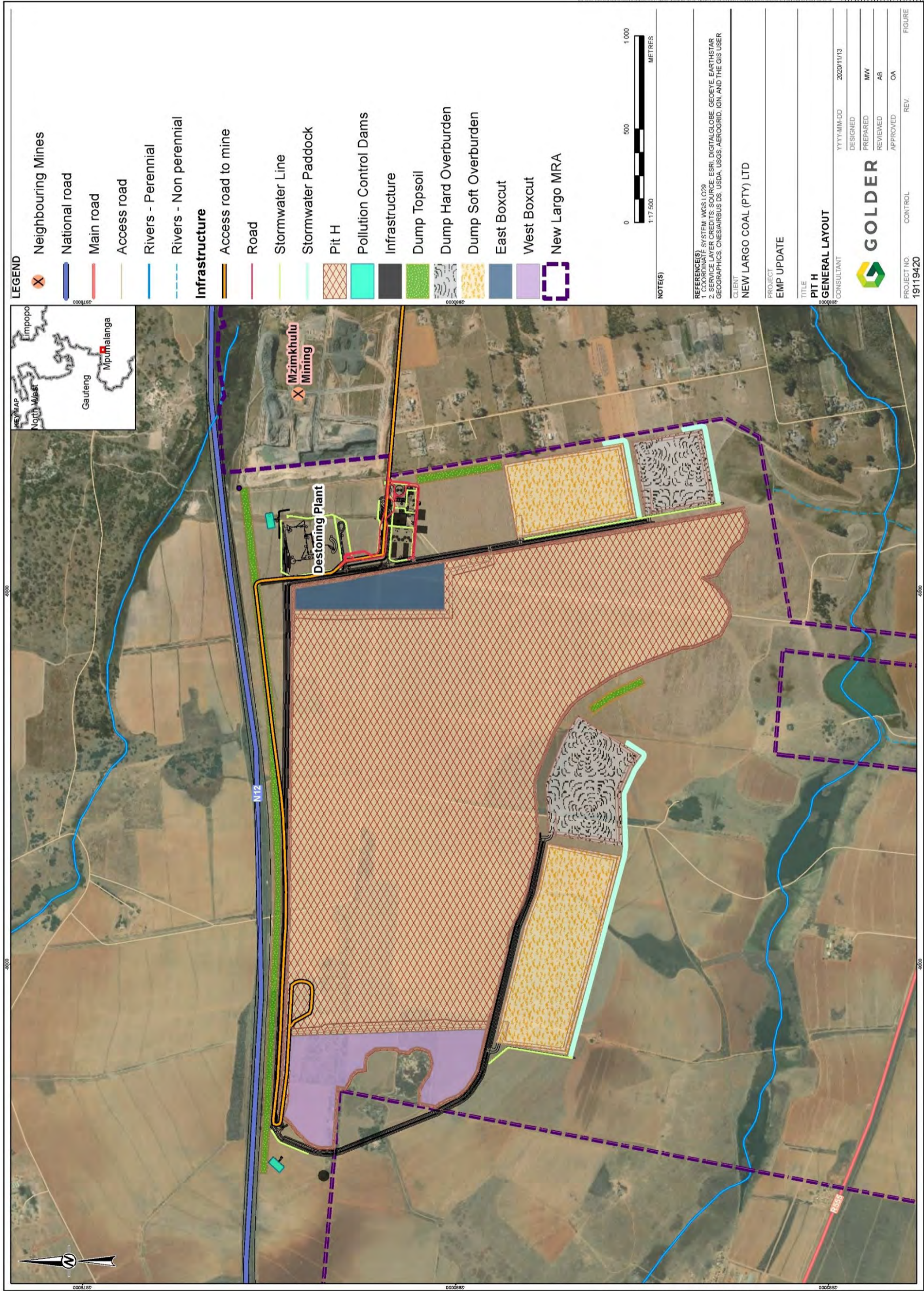


Figure 10: Pit H Layout and Infrastructure

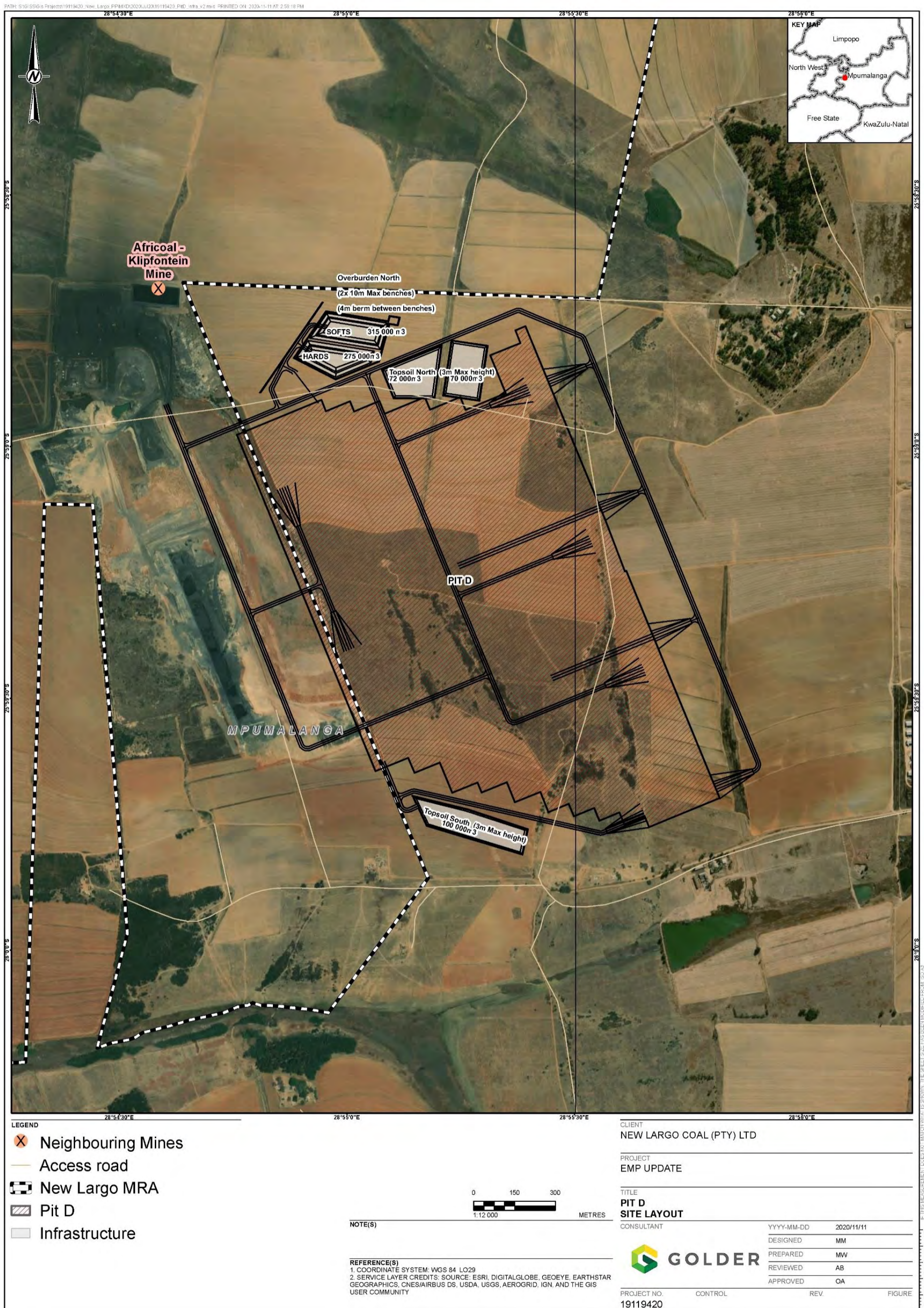


Figure 11: Pit D layout and infrastructure

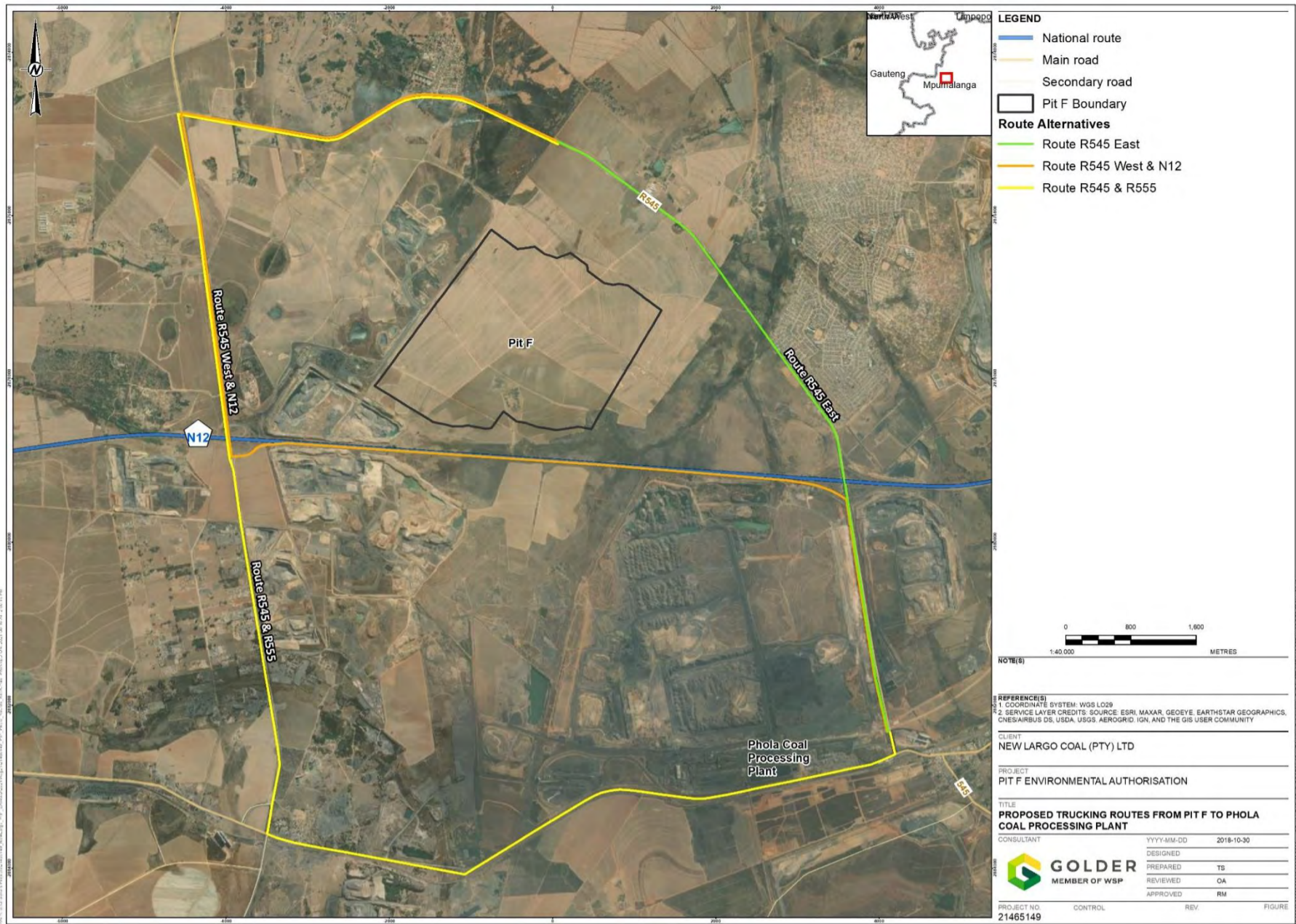


Figure 12: Pit F trucking routes

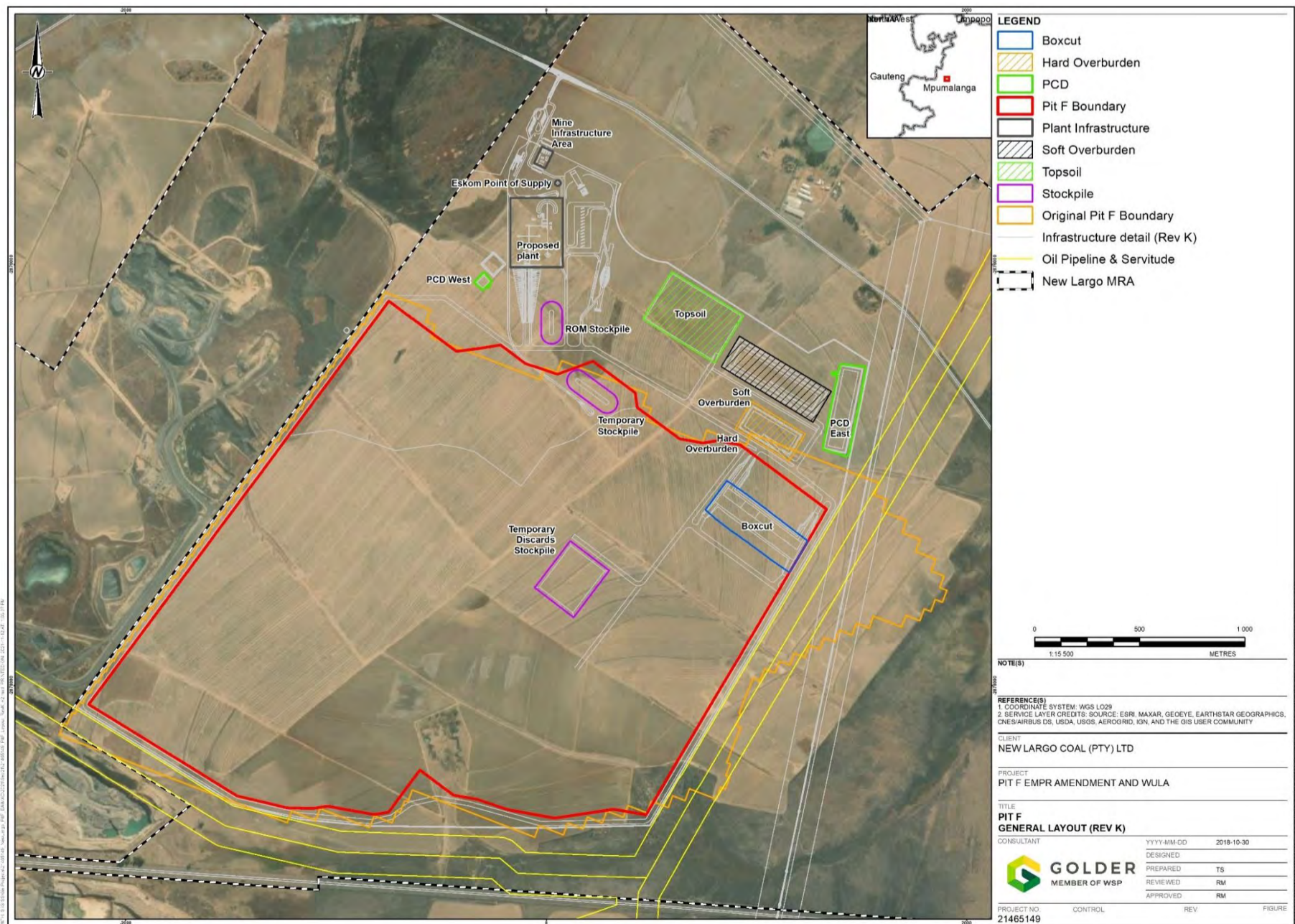


Figure 13: Pit F layout and infrastructure

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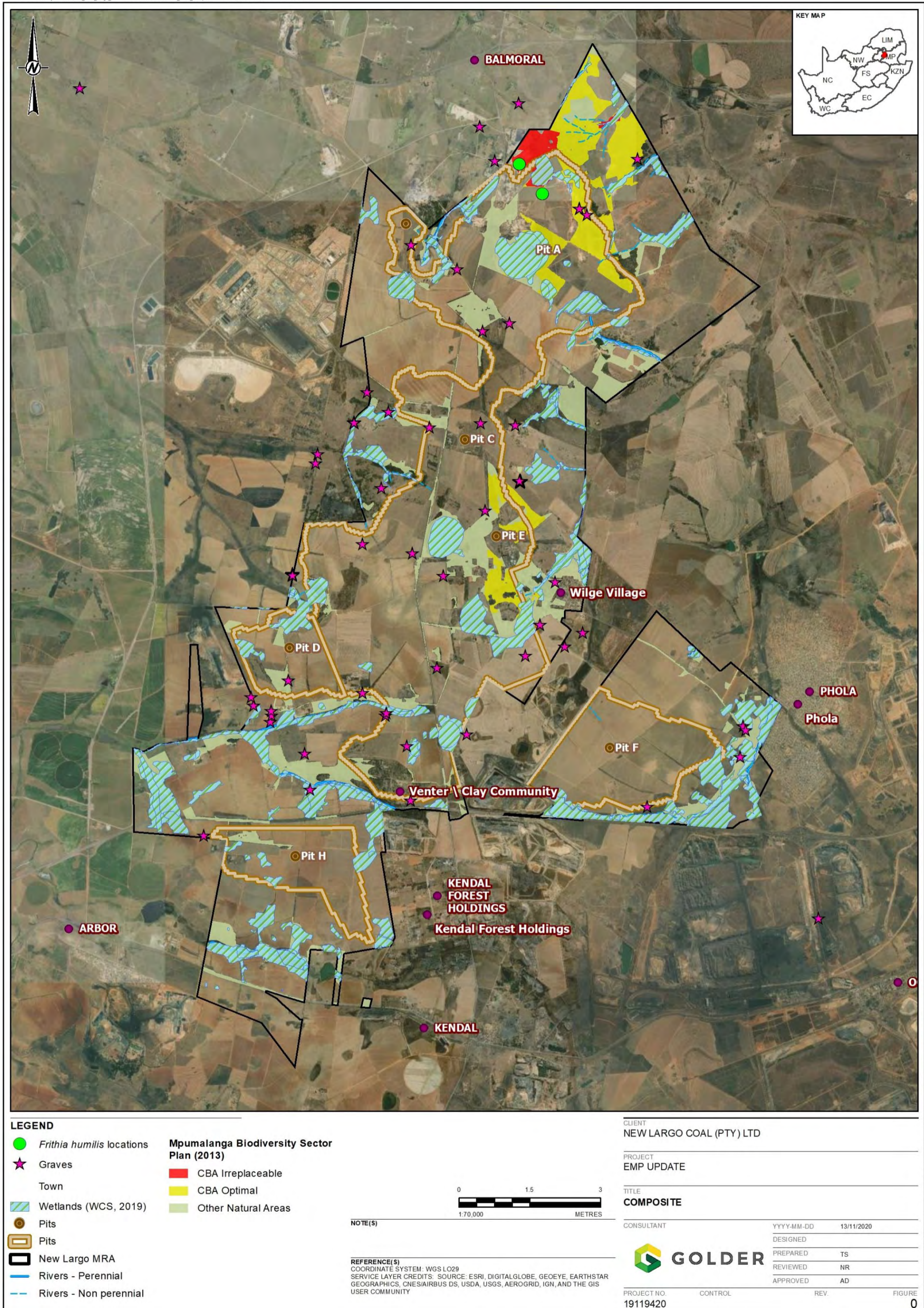


Figure 14: Composite map showing the sensitive areas

3.5 Consideration of Alternatives

The original EIA conducted for New Largo Colliery (Synergistics, 2012) investigated various alternatives to the project, including the “no-go” development option. The results of that investigation indicated that Kusile Power Station is key in achieving National Government’s electricity generation strategy for South Africa. The New Largo coal reserve is located directly to the east of Kusile, ideally situated to meet the Power Station’s demand. Although Eskom has since found coal suppliers other than New Largo, it is still the intention for New Largo to supply coal to Eskom to some degree. South Africa will have to continue to rely on coal fired power stations until the country can transition to alternative sustainable energy resources.

Should the New Largo resource not be developed (no-go development option), the positive impacts on the socio-economy as a result of employment and economic opportunities, will not be realised.

3.5.1 Mining Methods

During the previously-conducted consideration of alternatives exercise, part of which included the identification of appropriate mining methods for the resource, several portions of the New Largo coal reserve where mining by underground methods had taken place in the past were identified. Collapse of old underground workings and spontaneous combustion poses a hazard to both the workforce and equipment if not adequately managed. The presence of the old underground workings posed limitations on the mining methods chosen as well as on mine scheduling / sequencing to achieve safe mining conditions as well as the coal qualities required for Kusile. The use of opencast mining using draglines, supported by small truck and shovel operations was selected as the most appropriate approach to mining the resource. The use of this combination of methods facilitates:

- Extraction of shallow coal seams with a low stripping ratio (tons of overburden/tons of coal), generally too shallow for underground mining;
- Recovery of coal reserves remaining in areas previously mined by underground methods;
- Maximisation of the utilisation of the New Largo coal reserve and thus coal supply to Kusile in order to sustain Kusile for the longest period possible from the New Largo coal reserve; and
- Production of the vast quantities of coal required by Kusile.

Underground mining was not considered as an alternative mining method.

3.5.2 Location of Infrastructure

During the consideration of alternatives process (Synergistics, 2012), the identification and selection of locations for the placement of infrastructure was done based on a process that considered access to the reserves, location of sensitive environments, servitudes, areas previously underground mined and visual impact.

The original positioning of surface infrastructure such as tips, the coal processing plant, haul roads and conveyors to Kusile, took cognisance of the location of Kusile, location of the mineable coal reserve in relation to Kusile, and the fact that coal needs to be hauled from the mine and conveyed to Kusile. Distances and efficiency were prioritised from an economic and air quality point of view - since the haulage of coal is the single most significant source of dust at an opencast coal mine.

The positioning of infrastructure also took cognisance of existing power lines, pipelines, roads and adjacent mining activities. The majority of the surface infrastructure is located between the New Largo mining area and Kusile.

3.5.3 Surface Infrastructure

3.5.3.1 Access Roads

The existing gravel Provincial “School Road” off the R545 from the north-east of the mine will be used for access to the construction site and is currently in reasonable condition; however, provision has been made for an additional wearing course and upgrade for drainage. Access to the dragline site will also be from the “School Road” and will be constructed by the dragline contractor as part of their scope of work.

Improved access has also been provided to New Largo’s farm (previously known as Mr A. Van Rooyen’s farm). This farm is to be used as an induction, training facility and a medical centre. A turning circle has been provided at the intersection between the existing farm road and the “School Road”.

At a point on the “School Road” approximately 250m from the intersection of the R545, a construction entrance security complex has been provided.

3.5.3.2 Internal Mine Roads

The main arterial inside the mine area starts from the main entrance gate situated north of the mine infrastructure footprint to the end of the store’s area on the south. This road is a 7,4m wide surfaced road with kerbs and shoulders. This road widens at the entrance and at the store’s area to provide for a vehicle & truck waiting area and a weighing facility, respectively.

The secondary roads within the mine office and workshop complex vary between 6m and 7,4m wide and are surfaced with 30mm pre-mix and constructed to the same specification as the main access road. Mountable kerbs have been provided along all surfaced roads.

Secondary roads have been provided to the Mine Offices, Main Store, Clinic, Emergency Services, Shift Meeting Room, Production Foreman’s Room, Pump Rehab Workshop, Bulk Fuel/Oil Storage, Pit Offices, EMV Office, Tyre Store, LDV Workshop and the LDV Wash-bay on the eastern side off the main arterial. To the western side of the main arterial, secondary roads have been provided to Survey & Geology, Training Centre, future Plant Offices, future Plant Workshop and the future Plant area. Access to the Distribution Bin, the silos and the Stockyard can be achieved off the western secondary roads. Surfaced roads have been provided to and around the Primary and Secondary Screening buildings.

The main arterial leads onto gravel surfaced road that provides access to the Laydown area, the haul road and the haul road maintenance road. Tertiary roads are also provided to Tip 1, Stockpile areas, Explosive magazine and to the Distribution Bin and the overland conveyor. These roads are 6m wide gravel roads.

Side drains have been provided along the roads and, where necessary, concrete-lined drains are provided. All gravel drains will be hydro seeded or grassed for erosion protection.

Stormwater culverts have been provided along the roads where appropriate to ensure stormwater flows from the high side to the low side of the roads.

Light duty 4m wide gravel access/maintenance roads have typically been provided to the sewage treatment plant, the pollution control dams, and the pump stations and along the conveyor routes.

3.5.3.3 Maintenance Roads

A 6-metre-wide gravel-surfaced maintenance road runs parallel to the haul road, but does not have direct access to it except at a limited number of locations where controlled access is provided to areas such as the Tip, Pit Ramps and the Dust Suppression Tank.

Five two-way underpass structures (dual 4m wide x 4.2m high) have been provided where the maintenance road crosses under the haul road. Due to the restricted vertical clearance, these underpasses can only be

traversed by light vehicles and certain heavy vehicles. The maintenance road permits maintenance staff to access earthmoving vehicles that have broken down on the haul road and to access the ramp de-watering dams and Discard and Temporary Stockpile areas.

Light duty maintenance roads have been provided for access to facilities which are accessed infrequently, such as storage dams. These roads are four-metre-wide and have reduced pavement layer-works.

3.5.3.4 Temporary Access for Construction

During the construction phase, temporary access to the site will be obtained from the existing R545 Provincial Road via the existing gravel Provincial School Road (S234). The temporary mine access will be from the School Road some 250 metres from the existing R545 intersection. In the interest of safety during construction, the temporary construction access to the mine (from the east) is completely separate from the permanent mine access, which will be from the north-west.

A parking area for 200 vehicles is to be provided adjacent to the temporary mine entrance at the Security Complex, but outside the security area. Private vehicles will not be permitted to enter the construction area. Buses will be provided by the contractors to transport personnel within the construction area. Personnel will be accessing the site via pedestrian gates at the security complex and will then walk along covered walkways to the bus shelter, where they will board buses for transport to their on-site workplaces. The reverse procedure will apply when leaving the construction site.

Vehicles delivering new plant and equipment enter a waiting area at the security complex for inspection and clearance, before proceeding onto mine property. A similar waiting area is provided for the inspection of vehicles departing the mine property.

3.5.3.5 R545 Re-alignment

The R545 re-alignment is authorised, and no changes or amendments to the proposed re-alignment are being considered as part of this EMP amendment application. The information on alternatives considered for the authorised R545 alignment is presented below for completeness.

The existing provincial road R545 (also referred to as D686) crosses the proposed mining area. The mining operation will undermine a section of the existing road, which will be closed to traffic.

The R545 provides a north-south link between the N4 in the north and the N12 in the south and provides direct access to these two freeways via access interchanges. Due to the significance of the R545 in the local road network, it will be necessary to retain the R545 by constructing a new section of road to bypass the proposed mining area.

The re-alignment of the R545 forms part of the Stage 2 development of the New Largo Mine. It is anticipated that the construction of this re-alignment will be completed by the start of year 1, which correlates to the time when mining activities will occur near the R545.

An application for Environmental Authorisation of the road re-alignment has been submitted to the DMRE (MP 30/5/1/2/3/2/1 (10026) EM) and a Water Use Licence Application submitted to the DWS.

Various alternative routes for the re-alignment of the R545 were investigated by Jeffares and Green Consulting Engineers in consultation with relevant stakeholders. A report on the alternative routes was prepared in May 2009.

An investigation was undertaken by Synergistics Environmental Services (Synergistics, 2012) to identify the environmentally sensitive areas in the vicinity of the proposed route and to determine the environmental constraints that should be imposed on the proposed alignment of the R545. As part of this study an investigation into the impact of the proposed developments in the New Largo area on the traffic predicted to use the R545,

was undertaken by (WSP SA Civil and Structural Engineers (Pty) Ltd., 2011). The study was documented in the report entitled “S0403/TRA/00: New Largo Colliery Traffic Impact Assessment Report (Version 0)” prepared in August 2011. This report proposed the upgrading of several existing intersections to accommodate the predicted future traffic.

Discussions were held with officials of the Mpumalanga Department of Public Works, Roads and Transport in order to obtain their input on the proposed new alignment of the R545.

A Geotechnical investigation of the existing soil conditions along the route for the re-aligned section of the R545 was undertaken. Soil samples were collected and were tested at a materials laboratory. The findings of the investigation were documented in a report entitled “Geotechnical Report for New Largo Colliery R545 Road Deviation” numbered 000-0130-RPT0013.

Based on the findings of these studies and discussions and taking into consideration the merits and constraints of the various alternative alignments, a route passing to the east of the mining area was finally accepted and approved in principle.

3.5.3.5.1 Horizontal Alignment

Several alternative horizontal alignments were considered before finalizing the route of the re-aligned section of Road R545. This final alignment was determined subject to the following constraints:

- The road should be re-aligned on property controlled by New Largo Coal (wherever possible);
- The road should clear the 500m blasting zone for the new mine;
- The road should, as far as possible, avoid environmentally sensitive areas;
- The new road alignment should minimize the impact on existing services (e.g. overhead power lines).
- At its northern end, the R545 should intersect the existing road at a point opposite the new access road for the Kusile Power Station, which is currently under construction.

For a 100 km/hr design speed, the minimum permissible radius for a horizontal curve is specified as 350 metre (with a desirable minimum horizontal curve radius of 600 metre). Horizontal curves shall not be less than 300 metre in length.

The selected alignment of the R545, was Approved in Principle by the Mpumalanga Department of Public Works, Roads and Transport.

3.5.3.5.2 Vertical Alignment

For a 100 km/hr design speed, the minimum K value for a crest vertical curve is specified as 62; the minimum for a sag vertical curve is 37. The desirable minimum length of a vertical curve specified as 180 metre.

■ Environmental Considerations

The route for road R545 crosses several environmentally sensitive areas and these areas were avoided wherever possible. At the northern end of the re-alignment, the R545 is aligned to bypass to the north of the occurrence of the environmentally-sensitive *Frithia* plant. The section of R545 between 12 500km and 12 900km has been shifted northwards out of the mining property onto Portion 26 of Roodepoortjie 326 JR, to avoid the environmentally sensitive stream on the adjacent property.

■ Traffic Considerations

A Traffic Impact Study, which assesses the impact of mining and other industrial development in the area, was prepared by WSP SA Civil and Structural Engineers (Pty) Ltd. This study predicts the future traffic on the R545 and proposes the upgrading of intersections on the R545 to accommodate this traffic. In terms of this report, the following existing intersections should be upgraded and traffic signals installed to accommodate the predicted traffic flows:

- The southern ramp terminal at the N12/R545 interchange; and
- The northern ramp terminal at the N12/R545 interchange.

The study proposes that a traffic circle should be constructed at the northern end of the proposed re-alignment of the R545 at its intersection with the new Kusile Road.

■ Intersections

■ Major Intersections

At the northern end the re-aligned R545 will tie to the existing road at a T-junction, where it intersects with the new Kusile Road. A large number of turning movements are anticipated at this intersection and a large number of these will be right turns across opposing traffic. From a traffic safety perspective, it is proposed that a “Modern Roundabout” type traffic circle should be constructed at this new intersection. This type of intersection is particularly effective in handling opposed right-turning traffic safely. Traffic analysis undertaken in the Traffic Study prepared by WSP Engineers shows that a traffic circle will accommodate the predicted traffic volumes with minimal delay.

International experience indicates that Modern Roundabouts can be expected to operate with a higher degree of traffic safety than a normal intersection.

The roundabout should have an internal diameter of 80 metres and the width of the circulating roadway should be 10 metres wide. Depending on the proposed phasing of the mining operation, it may be necessary to initially construct all four approaches, although in the longer term the southern approach will become redundant and will be closed to traffic.

3.5.3.6 Pit D and Pit H Alternatives

The overland conveyor system will not be constructed until later in the project lifetime. Instead, coal will be trucked from Pits D and H (See Figure 8 for the trucking route overview).

- Pit D = 220 000 Tonne (T) per month at 25 working days per month = 275 truckloads per day on 32T coal road trucks; and
- Pit H = 200 000 T per month at 25 workings days per month = 250 truckloads per day on 32T coal road trucks.

The following trucking route alternatives were considered as valid options:

- Trucking route one from Pit D to Kusile Power Station;
- Trucking route two from Pit D to Kendal power station in the south;
- Trucking route three from Pit H to Kendal power station; and
- Trucking route four from Pit H to the Kusile Power Station in the north.

All four trucking routes are viable and are considered acceptable based on final agreements with Eskom regarding the coal resource qualities and Eskom's power generation demand requirements.

The following additional alternatives were deemed nonviable:

- Pit H infrastructure layout with the destoning plant located inside the pit – an option not operationally feasible as it leads to project facing challenges and sterilises portions of the coal reserve; and
- “No Go” alternative – not viable on economic grounds.

3.5.3.7 *Pit F Alternatives*

The following trucking route alternatives have been considered from Pit F to the PCPP (Figure 12):

- Along the R545 east (7 km); Along the R545 west and R555 (20 km); and
- Along the R545 west and N12 (21 km).

The route along the R545 west and R555 (20 km) is the preferred route from a capacity and operational point of view as it utilises the higher order network (Class 1 and Class 2) that is preferable for heavy vehicles, and it does not bypass any residential settlements.

4.0 DESCRIPTION OF THE SCOPE OF THE OVERALL ACTIVITY

The Main New Largo resource is of a suitable quality to supply a power station employing pulverised coal combustion technology.

Based on the coal quality specifications provided by Eskom, both the Kendal and Kusile Power Stations can be possible target markets for the New Largo resource. These power stations are also in close proximity to New Largo.

4.1 Listed and Specified Activities

The listed activities associated with New Largo are authorised through an Environmental Authorisation (Mpumalanga Department of Economic Development, Environment and Tourism, 2013) and an Environmental Management Programme (Synergistics, 2012) approved by the DMR.

New Largo is authorised in terms of the 2010 NEMA EIA Regulations (GN R. 543) and since the regulations have changed subsequently, a comparison is made between these activities and the 2014 EIA Regulations (GN R. 326) (APPENDIX C).

APPENDIX C (Synergistics Environmental Services, 2012) indicates that the current NEMA EIA listed activities do not significantly influence the activities that are already authorised. This analysis, considered together with the infrastructure associated with Pit H and Pit F, concludes that this amendment does not trigger any new listed activities; no environmental authorisation is therefore required.

5.0 POLICY AND LEGISLATIVE CONTEXT

New Largo operates under legislative requirements of the MPRDA, NEMA, National Environmental Management: Waste Act (Act No. 59 of 1998) (NEM: WA) and the National Water Act (Act No. 36 of 1998) (NWA) (Synergistics Environmental Services, 2012) . The legislation and all policies relevant to New Largo are briefly described in the following sections and are applicable throughout this entire document.

5.1 National Environmental Management Act

New Largo is associated with various infrastructure that is authorised in terms of the NEMA and the EIA regulations (Government Notice Regulation (GNR) 543 to 546, published 18 June 2010). The authorisations include:

- Environmental authorisation from the MDEDET in terms of NEMA and the Environmental Impact Assessment Regulations, 2010 (Government Notice 543 to 546, 18 June 2010) (Mpumalanga Department of Economic Development, Environment and Tourism, 2013); and
- Approved EMP, in terms of the MPRDA, by the DMRE (Synergistics, 2012).

5.2 Mineral and Petroleum Resources Development Act

New Largo operates under the Mining Right (MP 30/5/1/2/2/511MR) granted by the DMRE in 2018.

5.3 National Water Act

New Largo operates under the following WULs:

- WUL: 04/B20G/ACFGIJ/2538, File: 16/2/7/B200/C528 dated 11 January 2015 (Integrated WUL);
- WUL: 04/B20G/CI/2246, File: 16/2/7/B200/C528 dated 22 August 2014 (R545 Provincial Road Re-alignment); and
- WUL: 04/B20F/ACFGI/2310, File: 16/2/7/B200/K524 dated 22 September 2013 (Phola – Kusile Conveyor).

New Largo has recently submitted to the DWS an amendment for the WUL to include Section 21(c) and (i) water uses for mining through the Honingkrantz Pan.

A WUL application for Pit H is also going to be submitted, for the following water uses, which were not covered in the existing licences:

- Section 21 (a) taking water from boreholes (NSW10 and NSW2) and from the existing in-stream dam 1 and dam 2;
- Section 21 (f) discharging from the sewage treatment works;
- Section 21 (g) for the conservancy tank (during initial phase), x2 PCD's, dust suppression and the in-pit mineral residue disposal; and
- Section 21 (j) dewatering of Pit H.

Furthermore, a WUL application for Pit F is also going to be submitted, for the following water uses, which were not covered in the existing licences:

- Section 21 (a) taking water from boreholes;
- Section 21 (c) proximity of mining and related infrastructure to the regulated area of a watercourse;
- Section 21 (f) discharge from the sewage treatment works;

- Section 21 (g) for dust suppression, x2 PCD's (east and west); and
- Section 21(j) for dewatering of Pit F as the pit progresses.

5.4 National Environmental Management: Waste Act

The NEM: WA commenced on 1 July 2009. In terms of this Act, all listed waste management activities must be licensed and undergo an integrated with the environmental impact assessment process as stipulated in Section 44 of the Act.

Government Notice 921 lists the waste management activities that require licensing in terms of the NEM: WA. Amendments to these regulations, GN R. 632 (24 July 2015) are applicable to mining residue deposits and residue stockpiles.

Since the New Largo activities were authorised prior to 2015, all mine waste associated with New Largo is authorised under the existing EMPr, (Synergistics, 2012), while the non-mineralogical infrastructure associated is authorised under the following:

- Approved waste management licence, in terms of the NEMWA, by the National Department of Environmental Affairs and/or MDEDET (Licence No. 12/9/11/L952/6) (Department of Environmental Affairs and Tourism, 2015).

5.5 Other Legislation

5.5.1 Air Quality

5.5.1.1 National Environmental Management: Air Quality Act (NEM: AQA)

The National Environmental Management: Air Quality Act (NEM: AQA) approach to air quality management is based on the control of the receiving environment. The main objectives of the act are to protect the environment by providing reasonable legislative and other measures that (i) prevent air pollution and ecological degradation, (ii) promote conservation and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development alignment with Sections 24a and 24b of the Constitution of the Republic of South Africa.

5.5.1.2 Ambient Air Quality Standards

The South African ambient air quality standards (i.e., national ambient air quality standards (NAAQS)) for common pollutants prescribe the allowable ambient air quality standards (Table 4). Applicable standards relevant to this study include particulate matter with an aerodynamic diameter of less than 10 and 2.5 microns (PM₁₀ and PM_{2.5}, respectively).

Table 4: South African National Ambient Air Quality Standards

Pollutant	Averaging Period	Limit Value (µg/m ³)	Limit Value (ppb)	Frequency of Exceedance	Compliance Date
Nitrogen dioxide (NO ₂) ^(a)	1 hour	200	106	88	Immediate
	1 year	40	21	0	
Particulate matter (PM ₁₀) ^(b)	24 hours	75	-	4	Immediate
	1 year	40	-	0	
Ozone (O ₃) ^(c)	8 hours (running)	120	61	11	Immediate
Lead (Pb) ^(d)	1 year	0.5	-	0	Immediate

Pollutant	Averaging Period	Limit Value ($\mu\text{g}/\text{m}^3$)	Limit Value (ppb)	Frequency of Exceedance	Compliance Date
Carbon monoxide (CO) ^(e)	1 hour	30 000	26 000	88	Immediate
	8 hours (calculated on 1 hourly averages)	10 000	8 700	11	
Benzene (C ₆ H ₆) ^(f)	1 year	5	1.6	0	Immediate
Sulphur dioxide (SO ₂) ^(g)	10 minutes	500	191	526	Immediate
	1 hour	350	134	88	
	24 hours	125	48	4	
	1 year	50	19	0	
Particulate matter (PM _{2.5}) ^(h)	24 hours	40		4	Immediate
	24 hours	25		4	1 January 2030
	1 year	20		0	Immediate
	1 year	15		0	1 January 2030

Notes:

- The reference method for the analysis of NO₂ shall be ISO 7996;
- The reference method for the determination of the particulate matter fraction of suspended particulate matter shall be EN 12341;
- The reference method for the analysis of ozone shall be the UV photometric method as described in ISO 13964;
- The reference method for the analysis of lead shall be ISO 9855;
- The reference method for analysis of CO shall be ISO 4224;
- The reference methods for benzene sampling and analysis shall be either EPA compendium method TO-14 A or method TO-17;
- The reference method for the analysis of SO₂ shall be ISO 6767; and
- The reference method for the analysis of PM_{2.5} shall be EN14907.

5.5.1.3 National Dust Control Regulations

The National Dust Control Regulations were published on 25th May 2018, Government Gazette no. 41650. The dust fall standard, applicable to this study, defines acceptable dust fallout rates in terms of the presence of residential and non-residential areas (Table 5).

Table 5: Acceptable dust fall rates

Restriction areas	Dust fall rate (mg/m ² /day over a 30-day average)	Permitted frequency of exceedance
Residential areas	Dust fall < 600	Two per annum (not in sequential months)
Non-residential areas	600 < Dust fall < 1 200	Two per annum (not in sequential months)

5.5.1.4 Highveld Priority Area Air Quality Management Plan

The New Largo operation is located within the Highveld. The Highveld area is associated with poor air quality and elevated concentrations of trace gas pollutants due to the region having a high concentration of industry, mining, power generation and other non-industrial sources (Held *et al*, 1996 and DEAT, 2006). For this reason, the Minister of Environmental Affairs declared the region a priority area, namely the Highveld Priority Area (HPA) in November 2007.

The primary motive of the Highveld Priority Area (HPA) declaration and the HPA Air Quality Management Plan (HPA AQMP) is to achieve and maintain compliance with the national ambient air quality standards across the HPA, using the constitutional principal of progressive realisation of air quality improvements (DEAT, 2007). The HPA AQMP thus allows for the alignment of air quality practices with legal and regulatory requirements to ensure air quality management planning is implemented effectively (DEAT, 2007). As the New Largo operations are located within the HPA and is thus required to operate within the air quality requirements of the HPA AQMP.

5.5.2 Noise

5.5.2.1 South African National Standard (SANS) for Noise

The South African National Standard (SANS) Method for environmental noise impact assessment (SANS 10328:2008) provides a method for evaluating the noise impact of a proposed development. It is an umbrella document and makes many references to SANS 10103:2008 The measurement and rating of environmental noise with respect to annoyance and to speech communication (SANS 10103:2008).

The SANS 10103 Code of Practice provides typical ambient noise rating levels ($L_{Req,T}$) in various districts. The outdoor ambient noise levels recommended for the districts are shown in Table 6 below.

It is probable that the noise is annoying or otherwise intrusive to the community or to a group of persons if the rating level of the ambient noise under investigation exceeds the applicable rating level of the residual noise (determined in the absence of the specific noise under investigation), or the typical rating level for the ambient noise for the applicable environment given in Table 6.

Table 6: Typical Rating Levels for Ambient Noise

Type of district	Equivalent continuous rating level ($L_{Req,T}$) for noise (dB(A))					
	Outdoors			Indoors, with open windows		
	Day night $L_{R,dn}$	Day time $L_{Req,d}$	Nigh time $L_{Req,n}$	Day night $L_{R,dn}$	Day time $L_{Req,d}$	Night time $L_{Req,n}$
a) Rural districts	45	45	35	35	35	25
b) Suburban districts with little road traffic	50	50	40	40	40	30
c) Urban districts	55	55	45	45	45	35
d) Urban districts with one or more of the following: workshops; business premises; and main roads	60	60	50	50	50	40
e) Central business districts	65	65	55	55	55	45

Type of district	Equivalent continuous rating level ($L_{Req,T}$) for noise (dB(A))					
	Outdoors			Indoors, with open windows		
	Day night $L_{R,dn}$	Day time $L_{Req,d}$	Nigh time $L_{Req,n}$	Day night $L_{R,dn}$	Day time $L_{Req,d}$	Night time $L_{Req,n}$
f) Industrial districts	70	70	60	60	60	50

Notes:

- 1) If the measurement or calculation time interval is considerably shorter than the reference time intervals, significant deviations from the values given in the table might result;
- 2) If the spectrum of the sound contains significant low frequency components, or when an unbalanced spectrum towards the low frequencies is suspected, special precautions should be taken, and specialist advice should be obtained. In this case the indoor sound levels might significantly differ from the values given in Column 5 to 7;
- 3) In districts where outdoor $L_{R,dn}$ exceeds 55 dB, residential buildings (e.g. dormitories, hotel accommodation and residences) should preferably be treated acoustically to obtain indoor $L_{Req,T}$ values;
- 4) For industrial districts, the $L_{R,dn}$ concept does not necessarily hold. For industries legitimately operating in an industrial district during the entire 24 h day/night cycle, $L_{Req,d} = L_{Req,n} = 70$ dB can be considered as typical and normal;
- 5) The values given in columns 2 and 5 in this table are equivalent continuous rating levels and include corrections for tonal character, impulsiveness of the noise and the time of day;
- 6) The values given in columns 3, 4, 6 and 7 in this table are equivalent continuous rating levels and include corrections for tonal character and impulsiveness of the noise; and
- 7) The noise from individual noise sources produced, or caused to be produced, by humans within natural quiet spaces such as national parks, wilderness areas and bird sanctuaries should not exceed a maximum A-weighted sound pressure level of 50 dBA at a distance of 15 m from each individual source.

SANS 10103 provides criteria for evaluating the community or group response to a noise source, these are presented in Table 7.

Table 7: SANS 10103 Categories of community or group response

Excess, $\Delta L_{Req,T}$ dB(A)	Category	Description
0 to 10	Little	Sporadic complaints
5 to 15	Medium	Widespread complaints
10 to 20	Strong	Threats of community or group action
>15	Very Strong	Vigorous community or group action

SANS 10103 provides three methods for determining the excess level ($\Delta L_{Req,T}$) of a proposed development:

- $\Delta L_{Req,T} = L_{Req,T}$ of ambient noise under investigation MINUS $L_{Req,T}$ of the Residual noise (determined in the absence of the Rated noise, i.e. the specific noise under investigation);
- $\Delta L_{Req,T} = L_{Req,T}$ of ambient noise under investigation MINUS the typical Rating level for the applicable district as determined from Table 7 (above) from SANS 10103:2008; or
- $\Delta L_{Req,T} =$ Expected increase in $L_{Req,T}$ of ambient noise in an area because of a proposed development under investigation.

5.5.2.2 *Blasting and Vibration*

Although no specific South African standard limits have been set for blasting and vibration impacts, the following limits have been imposed on New Largo Coal via the approved EMP:

- A 500-meter safety zone around the perimeter of blasting to be maintained and evacuated during blasting, unless approval for relaxation of the 500 m safety zone has been obtained from the relevant authorities;

- Limit vibration to below 7.0 mm/s at points of concern such as occupied residences / areas where people live;
- Air blast levels should not exceed 128 dB at points of concern such as occupied residences / areas where people live;
- Strict control needs to be applied to prevent fly rock from posing a risk where blasting occurs within 1 200 m from any occupied residence and areas where people live;
- Design blasts for vibration amplitudes below 25 mm/s at any part of a Transnet pipeline;
- Design blasts for vibration amplitudes below 50 mm/s at any part of other pipelines; and
- Design blasts for vibration amplitudes below 150 mm/s at any part of a road (R545, N4, N12).

5.5.2.3 eMalahleni Local Municipality Draft Noise Control Bylaws

The eMalahleni Local Municipality published draft noise control bylaws in 2016 however it is unclear whether these bylaws were finalised and enacted by the municipal manager. Their applicability thus cannot be confirmed.

Under these bylaws, all persons are prohibited from generating disturbing noise and thus “A person may not-

(a) cause a disturbing noise; or

(b) allow a disturbing noise to be caused by any person, animal, machine, device, apparatus, vehicle, vessel or model aircraft, or any combination thereof.”

New Largo may thus be subject to the eMalahleni Local Municipality noise control bylaws if these bylaws have been enacted by the municipal manager.

5.5.2.4 International Standards and Guidelines – Environmental noise

The WHO together with the Organization for Economic Co-ordination and Development (OECD) have developed guidelines based on the effects of the exposure to environmental noise. WHO recommends a standard guideline value for average outdoor noise levels of 55 dB(A) is applied during the daytime in order to prevent significant interference with the normal activities of local communities. The relevant night-time noise level is 45 dB(A). WHO further recommends that, during the night-time, the maximum level of any single event should not exceed 60 dB(A) in order to avoid sleep disruption. Specific ambient guidelines are also set for dwellings, bedrooms and schools. These levels are presented in Table 8.

Table 8: WHO Guidelines for ambient sound levels

Environment	Ambient sound level L_{Aeq} (dB(A))			
	Day-time		Night-time	
	Indoor	Outdoor	Indoor	Outdoor
Dwellings	50	50	-	-
Bedrooms	-	-	30	45
Schools	35	55	-	-

The WHO specifies that an environmental noise impact analysis is required before implementing any project that would significantly increase the level of environmental noise in a community (WHO, 1999). Significant increase is considered a noise level increase of greater than 5 dB(A).

The World Bank Group developed a program in pollution management so as to ensure that the projects they finance in developing countries are environmentally sound. Noise is one of the pollutants covered by their policy. It specifies that noise levels measured at noise receptors, located outside the project's property boundary, should not be 3 dB(A) greater than the background noise levels, or exceed the noise levels depicted in Table 9.

The International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines for noise management (IFC, 2007) adopt the WHO Guidelines for Community Noise (WHO, 1999) presented in Table 9. Noise impacts should not exceed these levels, or result in a maximum increase in background levels of 3 dB(A) at the nearest receptor location off-site.

Table 9: IFC Ambient Noise Guidelines

Receptor	Maximum allowable ambient noise levels	
	1-hour L_{Aeq} (dB(A))	
	Day-time	Night-time
	07:00 – 22:00	22:00 – 07:00
Residential/ institutional/ educational	55	45
Industrial/ commercial	70	70

Note: L_{Aeq} values are not specified for rural areas.

5.5.3 Heritage

The National Heritage Resources Act (NHRA 25 of 1999) is applicable to visual resources such as cultural landscapes, proclaimed buildings and sites, nature reserves, and proclaimed scenic routes. Section 38 of the NHRA provides that the heritage resources authority be notified and the necessary assessment undertaken, where a development < 5000 m² is proposed.

5.5.4 Biodiversity

The National Environmental Management: Biodiversity Act (10 of 2004) (NEMBA) provides for the management and conservation of South Africa's biodiversity within the framework of the NEMA; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and associated matters. It includes provision for:

- The management of invasive species (Alien and Invasive Species Lists, 2016; draft Amendments to the Alien and Invasive Species Lists, 2018);
- Conservation of threatened or protected species and ecosystems; and
- Norms and standards for biodiversity management plans.

The draft National Biodiversity Offset Policy (2017) sets out a framework for the design and implementation of offsets for species and habitats of concern. Should future updated ESIA's for New Largo Coal as part of the environmental authorisation amendment process indicate that significant residual impacts remain on biodiversity features of concern following the application of the mitigation hierarchy, offsets may need to be designed and implemented via a Biodiversity Action Plan.

The South African National Biodiversity Institute (SANBI) have developed National Wetland Offset Guidelines ((Macfarlane et al.), 2014) which is the official DWS endorsed standard for developing wetland offsets. The document sets out recommendations for the assessment of impacts on wetlands in order to identify wetland

offset requirements, identification and assessment of offset receiving sites for water resources and ecosystem services, and the implementation of wetland offset/mitigation strategies.

5.5.4.1 International Guidelines

World Bank Group Environmental, Health, and Safety Guidelines

The World Bank Group Environmental, Health, and Safety Guidelines (known as the 'EHS Guidelines') were developed in 2007. They are intended to be living documents and are occasionally updated.

The EHS Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP), as defined in the International Finance Corporation (IFC's) Performance Standard 3: Resource Efficiency and Pollution Prevention. IFC uses the EHS Guidelines as a technical source of information during project appraisal activities, as described in IFC's Environmental and Social Review Procedures Manual.

The EHS Guidelines contain the performance levels and measures that are normally acceptable to the IFC and that are generally considered to be achievable in new facilities at reasonable costs by existing technology. For IFC-financed projects, application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets with an appropriate timetable for achieving them. The environmental assessment process may recommend alternative (higher or lower) levels or measures, which, if acceptable to IFC, become project or site-specific requirements.

In cases where South Africa's national regulations differ from the levels and measures presented in the EHS Guidelines, the Project will be required to achieve whichever is more stringent, should international financing be sought. Since the requirements of the South African national standards set out in the preceding sections are generally in accordance with the requirements of the EHS guidelines, achieving the national standards as required in the existing authorisations should be sufficient in also satisfying international financing requirements from an EHS perspective.

A potential exception to this statement is likely to apply to biodiversity (including wetlands) which is governed by IFC's Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources (2012) and the accompanying Guidance Note (GN6) which was recently updated in June 2019. The requirements of PS6 in terms of no net loss of natural habitats and net gain of critical habitats are more stringent than the requirements set out in the existing environmental authorisation as well as those detailed in the water use license.

International Finance Corporation and World Health Organisation Air Quality Guidelines

As the proposed New Largo project requires international funding, the project must be benchmarked against South African air quality standards, the IFC Performance Standards and the standards set out in the IFC EHS Guidelines and the current World Health Organisation (WHO) Air Quality Guidelines. The IFC EHS Guidelines advise that "relevant standards" with respect to ambient air quality are national legislated standards or, in their absence, the current WHO Air Quality Guidelines or other internationally recognised sources. As South Africa has its own nationally legislated standards, these have been used to determine significance of the potential air quality impacts.

The WHO guidelines are intended to support actions for air quality at the optimal achievable level for public health protection in different contexts. WHO does not formally prescribe how these guidelines should be used but does provide "Interim Targets" to aid in policy development to bring air quality in line with the proposed guideline values. Furthermore, the IFC EHS Guidelines suggest that emissions should not contribute more than 25 percent of the relevant air quality standards to allow additional, future sustainable development in the same airshed. It also states that projects located within poor quality airsheds (if the nationally legislated standards are

exceeded significantly), should ensure that any increase in pollution is as small as feasible, and amounts to a fraction of the applicable short term and annual average air quality guidelines.

5.5.5 Municipal By-Laws

eMalahleni municipal by-laws that are relevant to the assessment include:

- eMalahleni Local Municipality Solid Waste Management by Laws, No 2632.13 January 2016;
- eMalahleni Local Municipality Noise Control by Laws, No 2632.13 January 2016;
- eMalahleni Local Municipality Air Quality Management by Laws, No 2632.13 January 2016;
- eMalahleni Local Municipality Spatial Development Framework; and
- eMalahleni Land Use Scheme, 2020.

5.6 Previous Environmental Impact Assessment Process

An EIA process for opencast mining of the New Largo coal reserve was initiated in 2006. The process included participation by stakeholders and the development of a stakeholder issues and response report. The project was delayed in 2007 and then postponed due to AAIC internal planning requirements.

After the EIA regulations changed in 2010, a new application for environmental authorisation was lodged when AAIC re-initiated the project planning process. Stakeholders again had the opportunity to participate during a full EIA process. The information gathered during 2006/07 was used in the draft EIA Report to supplement new data collected after the environmental baseline studies were re-initiated in 2010.

The EIA for New Largo Colliery, which included the Main New Largo Mine, was completed and submitted in 2012 (Synergistics, 2012); DMR: 30/5/1/2/2/511MR F/2011/04/14/002). The application for the Project was authorised on 06-02-2013.

The various stages of the previous EIA process are summarised in the sections that follow. The key information produced in the 2012 EIA process (specialist impact assessments, as relevant) are appended to this report (APPENDIX C).

5.6.1 EIA Scoping Process and Study Outcomes

A scoping study was conducted as the first phase in the EIA process by Synergistics (2012). During the scoping phase, the following tasks were completed:

- a) Project and baseline environmental information were collated. Baseline information for this scoping report was gathered through visual inspections of the project area and surroundings, desktop studies and review of existing reports.
- b) Landowners, adjacent landowners, local authorities, environmental authorities, as well as other stakeholders which may be affected by the project, or that may have an interest in the environmental impacts of the project were identified.
- c) Interested and affected parties (I&APs) were informed about the proposed project.
- d) Public meetings were arranged, and I&AP issues and concerns were identified.
- e) Environmental authorities were consulted to confirm legal and administrative requirements.
- f) Environmental issues and impacts were identified and described.

- g) Development alternatives were identified and evaluated, and non-feasible development alternatives were eliminated.
- h) The nature and extent for further investigations and specialist input required in the EIA phase was identified.
- i) The draft and final scoping reports were submitted for review by authorities, relevant organs of state and I&APs.
- j) Key I&AP issues and concerns were collated into an issues and response report for consideration in the EIA phase.

6.0 NEED AND DESIRABILITY

The presence of the New Largo coal reserve played a significant role in determining the locality of the Kusile Power Station and is strategically situated for further distribution of coal to different power stations. This section describes the importance of New Largo by giving a brief overview of the coal market.

6.1 South African Domestic Coal Market

The South African domestic market principally comprises the acquisition by Eskom of around 130 Mtpa of thermal coal to fire its fleet of power stations. In addition, around 20 Mtpa of thermal coal is burned by various internal industries including sugar, paper and healthcare. The principal focus of this domestic market analysis is on Eskom and its coal requirements.

In South Africa, thermal coal is currently responsible for 90% of the countries' power generation with South Africa the 7th largest producer of coal globally, accounting for 94% of Africa's total coal production. As with the developing nations of India and southeast Asia, the story in Africa is expected to be similar, with continued support for coal fired power generation needed to keep up with population and development growth. Coal production in Africa is limited to the sub-Saharan with major projects in South Africa, Botswana, Zimbabwe and Mozambique. Following the long-awaited update to the original 2011 Integrated Resource Plan, coal is still expected to contribute over 60% of power generation in South Africa in 2030 (Forbes, 2019).

In the last few years, the lack of incremental coal fired capacity, growth in power demand and cessation of ability to defer essential power station maintenance has created a situation where Eskom's reserve margins have run at bare break-even levels, with resultant sporadic load-shedding between 2008 and 2014. These cuts since returned in 2018, contributed to by coal supply shortages at as many as seven power stations in Mpumalanga Province (Reuters, 2018) and delayed maintenance plans that put a strain on plant availability.

The figure below illustrates the existing base load power stations principally located in western Mpumalanga Province in the region of the New Largo Coal Mine Project. It also identifies Eskom's two new build facilities; Medupi and Kusile. Considering construction delays, and the increasing need to transport coal from stockpiles in Limpopo Province to supply its plants in Mpumalanga, there is increasing pressure for Eskom to secure a new reliable coal supply close to Kusile.

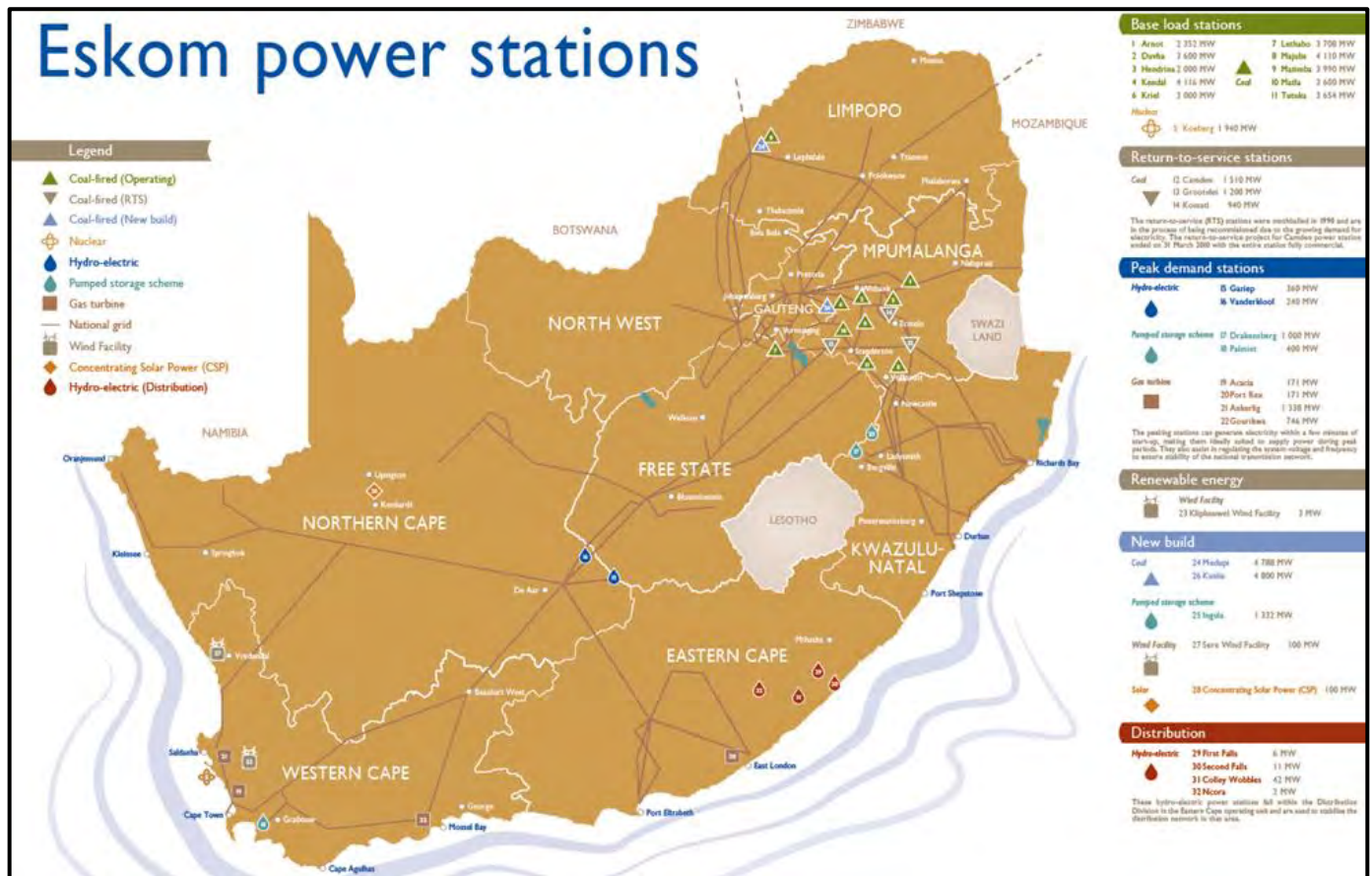


Figure 15: Eskom power stations and distribution map

6.2 Eskom Power

Eskom's power station fleet essentially falls into three coal quality bands. The older stations typically burn higher Calorific Value (CV), lower ash coal whilst the new stations can burn lower CV, higher ash coal.

Table 10: South African power station qualities

Station	Coal source	Max burn (Mtpa)	Expected coal CV* (MJ/kg)
Camden	None	7	24.2
Arnot	Arnot Colliery	8	23.8
Kriel units 1-3	Kriel Colliery	6	23.1
Tutuka	New Denmark Colliery	13	22.5
Hendrina	Optimum Colliery	8	22.2
Duvha	Middelburg Mine Services	14	21.9
Grootvlei	None	6	21.4
Majuba	Being contracted	14	21.4
Komati	None	4.5	21.0
Kriel units 4-6	Kriel Colliery	6	20.6
Matla	Matla Colliery	15	20.5
Kendal	Khutala Colliery	16	19.2
Kusile**	New Largo	17	18.8
Matimba***	Grootegeeluk	15	20.4
Medupi***	Grootegeeluk	17	20.4
Lethabo	New Vaal Colliery	18	16.0

*CV measured on an air-dried basis; note that other quality parameters (ash, sulphur, volatiles, abrasiveness) are as important as CV. Each station has a delay reject limit that is lower than the expected quality. Source: Eskom. **Resource committed, but project still under development
***Coal is of a different quality to the Mpumalanga coal, with very high volatiles

High quality

- Older stations requiring high quality coal
- Compete directly with in-situ grades for export coal

Intermediate quality

- Can generally use middling grade coal from RB1 exports
- Compete directly with lower grade exports

Lower quality

- Newer stations designed to operate on low in situ grade coal
- No direct competition with exports

6.3 Kusile Power Station

In 2005, AAIC were originally approached by Eskom to evaluate the potential to supply coal to the proposed Kusile Power Station, located immediately adjacent to the North of their New Largo Coal Mine Project.

The Kusile Power Station has been designed to comprise six 800MW units for a total installed capacity of 4 800MW once completed, and in doing so will be the fourth-largest coal-fired power station worldwide with an expected operational lifespan of approximately 50 years. The facility will also be the first flue-gas desulphurisation (FGD) plant in South Africa.

In December 2016 Unit 1 was synchronised with the South African grid, coming online commercially in August 2017. Unit 2 achieved full commercial operation in October 2020. Units 3 to 6 are planned to come online sequentially over the next few years. Kusile will require 15 to 17 Mtpa of thermal coal at full load.

6.4 Pit H Need and Desirability

Since initial inception between AAIC and Eskom in 2005, the New Largo Coal Mine Project, in particular, has been considered a key deposit, critical to the medium to long-term power generation for the Kusile Power Station. Following the completion of a number of feasibility studies by AAIC and New Largo Coal, the Pit H deposit has been delineated as a separate 'development-ready' coal resource within the main project.

Pit H boasts particularly shallow coal (generally within 50 m depth) occurring as a smaller sub-basin separate from the main New Largo deposit further to the north. The resultant low stripping ratio allows for low mining

costs. The site is also supported by existing road infrastructure that will be able to easily transport coal 15 km to the north to Kusile, or south to Kendal. It is expected that pre-stripping at Pit H will begin in Q1 2023, with coal extraction ramping up throughout Q3 2023, and reaching full production of 3 Mtpa by Q4 of 2023.

Once in operation, Pit H is planned to produce a minimum of approximately 3 Mtpa of ROM coal over a total mine life of at least thirteen years. At full production the mine is expected to employ around 150 people, with the much of the projected labour force intended to be sourced from the primary and secondary community zones of influence. It is proposed that the coal will be transported by road the short distance from the mining area to the Kusile Power Station, 15 km to the north, to supply coal to Eskom. Kendal Power Station represents an alternative option for supply, being located approximately 9 km to the south.

Kusile's second unit (Unit 2) came online commercially in October 2020. Unit 2 requires approximately 2.5 Mtpa of coal – which can be met directly by Pit H. Discussions are ongoing between New Largo Coal and Eskom about this supply. Further New Largo coal supply could support the ramp-up in power generation capacity from Kusile, as Unit 3 comes on online in 2030, and beyond. Because mining is now starting earlier than originally planned at Pit H, infrastructure including haul roads, access roads, product stockpiles, destoning plant, and a PCD with a silt trap for dirty water management, is necessary to support the commencement of mining at this location. The destoning plant separates rock from coal, which is necessary to deliver coal of a standard that satisfies the specification set by Eskom.

The amendment to the mine schedule and earlier mining of Pit H, including development of supporting infrastructure at Pit H, will enable New Largo to access higher grade coal reserves at an earlier stage of the Life-of-Mine (LoM) than envisaged in the original mine plan. This is essential as coal currently provides for most of South Africa's primary energy needs. The target destinations are expected to be Eskom (Kendal and Kusile Power Station) and other power producers within South Africa but may vary as market conditions dictate from time to time. The mine will potentially contribute to the reduction of the domestic shortfall of coal, helping Eskom to ensure a sustainable supply of power, which the South African economy depends on.

The additional ecological impacts of the construction and operation of the infrastructure now required at Pit H are expected to be minimal, since although the infrastructure footprint will now be larger, the infrastructure will be located in an area that is currently occupied by maize fields; and as such, no significant additional impacts on ecosystems or biological diversity are anticipated.

6.5 Pit D Need and Desirability

No new infrastructure is required at Pit D to support mining at this location, since this pit will be mined from the western direction from the neighbouring existing Africoal Klipfontein mine, whose existing infrastructure will be used to support mining at Pit D.

The amendment to the mine schedule and earlier mining of Pit D will enable New Largo to access higher grade coal reserves at an earlier stage of the Life-of-Mine (LoM) than envisaged in the original mine plan. This is essential as coal currently provides for most of South Africa's primary energy needs. The target destinations are expected to be Eskom (Kendal and Kusile Power Station) and other power producers within South Africa but may vary as market conditions dictate from time to time. As is the case for Pit H, the coal from Pit D will potentially contribute to the reduction of the domestic shortfall of coal, helping Eskom to ensure a sustainable supply of power, which the South African economy depends on.

The mining footprint of Pit D comprises mostly cultivated fields (soy), with some areas of disturbed secondary grassland, and hillslope seeps; since no infrastructure is proposed at Pit D, no additional ecological impacts to those already assessed in the 2012 EIA, and subsequently authorised, are expected.

6.6 Phase 0 off-loading facility

Phase 0 entails the construction and operation of a product coal off-loading facility adjacent to the MRA boundary with Kusile Power station, with associated required conveyor flights to convey coal to the Kusile coal stockpiling area, and the (authorised) northern access road.

The need for the Phase 0 infrastructure has been precipitated by the need to truck coal from Pit D and Pit H to Kusile Power Station, since the (authorised) conveyor will only be constructed later in the life of mine. In addition, the current high levels of coal truck traffic delivering coal in the quantities required to supply Kusile is causing backlog in their stockyard; the construction and operation of the Phase 0 infrastructure will allow New Largo to avoid contributing to delays in coal delivery, and assist Eskom to ensure a sustainable supply of power to the national grid, which the South African economy depends on. Some of the infrastructure that will be constructed as part of Phase 0 has been previously authorised (e.g. the access road), although some will be located in a slightly different location to what is now being proposed (e.g. the site offices) (Figure 9).

The ecological impacts of the construction and operation of the Phase 0 infrastructure are expected to be minimal, since although the infrastructure footprint will be larger, the infrastructure will be located in an area that is currently occupied by maize fields; and as such, no significant impacts on ecosystems or biological diversity are anticipated.

6.7 Pit F Need and Desirability

New Largo proposes to amend the original mine schedule to commence mining of Pit F at an earlier date than the timeframes stipulated in the original mining schedule. This earlier schedule will require the development of some infrastructure not previously included in the EMP. The coal mined from Pit F will initially be trucked to PCPP for processing. New Largo plans to develop a coal washing plant at the Pit F site to process the coal. The target destinations for the product mined from Pit F will be export as well as the Eskom market (i.e., Kendal and Kusile Power Stations).

The decision to exploit both the export and domestic markets for the Pit F product is based on the mine's development options (accessible reserves at Pit F) while discussions with Eskom continue. Furthermore, the latest eMalahleni Spatial Development Framework (SDF) (2015) has earmarked the Project site for both mining and agricultural activities (eMalahleni Local Municipality, 2015). The eMalahleni SDF (2015) further indicates that the coal industry dominates the economic activities in the region, therefore this aligns with New Largo's intention to go commercialise through the consideration of exporting product.

7.0 PUBLIC PARTICIPATION PROCESS

This section provides an overview of the public participation process undertaken for the original New Largo EMPr (Section 7.1) and for the EMPr Amendment process (Section 7.2). The full report for the public participation process conducted in 2011-2012 is appended to the EIA report appended in APPENDIX C, while the public consultation documents generated for the Pit H and Pit D EA/EMPr amendment process are presented in APPENDIX D and for the Pit F EA/EMPr amendment process in APPENDIX E.

7.1 Summary of Public Participation undertaken in 2012

7.1.1 Public Participation Process undertaken

During the EIA previously conducted for New Largo Colliery (Synergistics, 2012), potential Interested, and Affected Peoples (I&APs) were identified through networking and the use of the AAIC and Eskom I&AP databases developed since 2006. The existing databases included landowners, neighbouring landowners and people who participated in previous EIA processes in the area. Press advertisements and site posters were used to identify new I&AP's.

A background information document (BID) was circulated in March 2011 to all landowners either personally or via registered mail, while all the identified I&APs received an electronic copy via e-mail.

Another BID focusing on the proposed R545 road deviation was distributed in July 2011 to all landowners either personally or via registered mail, while all the identified I&APs received an electronic copy via e-mail. Both these documents included a response sheet and a request for written comments. The BID distributed in July 2011 also highlighted the proposed New Largo Colliery project and invited participants to participate in the EIA process.

General public meetings were held on 12 and 13 May 2011 and a meeting was also held on 20 May 2011 with Dr Koos Pretorius of the Federation for a Sustainable Environment, Ms Carol Wentzel and Ms Annamie Duvenhage from the Bronkhorstspruit and Wilge River Conservation Association in Witbank to discuss the proposed project with them.

A water focus group meeting was held on 26 July 2011 that was attended by approximately 80 people. Concerns regarding water resources were discussed. This meeting came about through a special request by stakeholders during the public meetings which were held on 12 and 13 May 2011. The Draft EIA for the New Largo Feasibility Study went out for review and public consultation during March 2012.

A public meeting was held on the 6th of March 2012 to provide feedback on specialist findings and environmental impacts. An open house session was held from 11h00 to 18h00 where each I&AP could discuss specific environmental issues and concerns. These concerns were captured in the Issues and Response Report and were updated for the Final EIA.

With regards to grave and community relocations, a separate engagement process was followed by Professional Grave Solutions and Digby Wells respectively.

All affected landowners were contacted on an individual basis to discuss their concerns and specific impacts or current environmental and property status on their land. This process continued throughout the EIA process, and was detailed in the Final EIA report.

7.1.2 Summary of key issues raised

Key issues / comments raised during the 2012 EIA process by authorities and I&APs included:

- Loss of wetlands;
- Possible lack of completed Wetland offset plan in advance of construction;

- Late start to construction of New Largo Coal Mine would impact on delivery of coal to Kusile, thus compromising national electricity generation and supply;
- Economic benefits of New Largo Coal Mine and Kusile;
- Economic feasibility of the water treatment plant to treat water for many years post closure;
- Impact on the availability of clean water and impacts on downstream environments;
- Loss of arable land and food production, land capability;
- Air quality (New Largo Coal will operate in an area with elevated baseline emission levels);
- Impacts on neighbours (most of the negative social impacts of a project such as New Largo Coal Mine are often experienced locally by the people living in close proximity to the project);
- Relocation of a section of a Provincial Road (the R545 north-south link between the N4 and N12);
- Impact on grassland remnants currently remaining within mining footprint;
- Impact on localized *Frithia humilis* found on rocky area in northern portion on mining area;
- Concerns that the proponent would not deliver on the commitments in the EMP;
- Impact on properties directly affected by mining (landowners, farm workers, people living on the land, tenants); and
- Job losses and social impacts at closure.

Each of the key issues were addressed in the 2012 EIA report and EMP.

7.2 Public Consultation Process for the 2020 EMPr Amendment (Pit D & Pit H)

7.2.1 Objectives of Public Participation

The public participation process was designed to provide information to, and receive feedback from, I&APs throughout the EMPr Amendment process, thus providing organisations and individuals and other stakeholders with an opportunity to raise concerns and provide comments and suggestions regarding the proposed project.

The principles that determine communication with society at large are included in the principles of the NEMA (Act 107 of 1998, as amended) and are elaborated upon in General Notice 657, titled "Guideline 4: Public Participation" (Department of Environmental Affairs and Tourism, 19 May, 2006), which states that: "*Public participation process means a process in which potential I&APs are given an opportunity to comment on, or raise issues relevant to, specific matters.*"

Public participation is an essential and regulatory requirement for a EMPr Amendment process and has been undertaken in terms of Chapter 6 of the EIA Regulations GN R.326. Public participation is a process that is intended to lead to a joint effort by stakeholders, technical specialists, the authorities and the proponent/developer who work together to produce better decisions than if they had acted independently.

The public participation process for this project was designed to provide sufficient and accessible information to I&APs in an objective manner.

Opportunities for Comment

Documents were made available at various stages during the EMPr Amendment process to provide stakeholders with information, further opportunities to identify issues of concern and suggestions for enhanced benefits, and to verify that the issues raised have been considered.

7.2.2 Pre-application Phase Capacity Building

New Largo Coal started operations at Pit D in 2020 and is therefore a relatively new existing operation. As part of the commencement of the mining operation, New Largo has been actively engaging with landowners and affected communities. During these meetings, the various mining processes and associated impacts have been discussed, and progress feedback provided.

Furthermore, Focus Group Meetings have been convened with the local farmers (on 18 September 2020), the Kendal community forum (on 21 October 2020), and community I&APs (on 28 January 2021). The key purpose of these meetings was to share information about the project and the EA/EMPr Amendment and WUL application processes; and for I&APs to ask questions, raise issues of concern, contribute comments and suggestions for enhanced benefits.

The meeting invitation letters, presentations and attendance registers are appended in APPENDIX D.

7.2.3 Identification of I&APs

The existing I&AP database generated as part of the 2012 public participation process, has been updated through a process of networking and referral, obtaining information from the recent meetings New Largo Coal has had with stakeholders, as well as the Focus Group Meetings. The I&AP database for the project is appended in APPENDIX D. There are currently 303 stakeholders on the I&AP database.

7.2.4 Registration of I&APs

The NEMA Regulations distinguish between I&APs and registered I&APs.

I&APs, as contemplated in Section 24(4) (d) of the NEMA include: “(a) any person, group of persons or organisation interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity”.

In terms of the Regulations:

“An EAP managing an application must open and maintain a register which contains the names, contact details and addresses of:

- a) All persons who; have submitted written comments or attended meetings with the applicant or EAP;
- b) All persons who; have requested the applicant or EAP managing the application, in writing, for their names to be placed on the register; and
- c) All organs of state which have jurisdiction in respect of the activity to which the application relates.”

Stakeholders who were involved in the consultation process and who attended the focus group meetings have been added to the register. 149 stakeholders registered for the EMPr amendment process (see APPENDIX D for the list of registered stakeholders).

7.2.5 Project Announcement

The project was announced on Friday, **20 November 2020**. Stakeholders were invited to participate in the EMPr Amendment and public participation process and to pass on the information to friends/colleagues/neighbours who may be interested and to register as I&APs.

The project was announced as follows:

- Distribution of the background information document and a letter of invitation to participate to all I&APs on the database, accompanied by a registration, comment and reply sheet that was mailed/emailed to the entire stakeholder database. Copies of the announcement documents are attached in APPENDIX D;

- The above-mentioned documents were made available at the public places listed below and posted to the Golder website www.golder.com/public;

Place	Address
Phola Police Station	2171 Mthimunye Street, Phola
Ogies Police Station	1 Main Road, Ogies
eMalahleni Main Library	Cnr. Hofmeyer and Elizabeth Avenue, eMalahleni
Golder Associates Africa	Building 1, Maxwell Office Park, Magwa Crescent, Waterfall City, Midrand, 1865

- A newspaper advertisement was published in the Witbank News, on **20 November 2020**; and
- Site notices were placed at the entrance to the project site and at visible places at the boundary of the property – see APPENDIX D for the locations of the site notices.

7.2.6 Draft EMPr Amendment Report

The Draft EMPr Amendment Report was placed into the public domain for comment from **Friday 20 November 2020 to Monday, 11 January 2021**. The report was made available at the public places listed above and posted to the Golder website www.golder.com/public.

On 29 December 2020 South Africa was placed under adjusted Level 3 Covid-19 restrictions, limiting the size of indoor public gatherings to below 50 people. For this reason, a public meeting could not be held as originally planned. For this reason, the public comment period on the Draft EMPr was extended by 30 days **from 11 January 2021 to 10 February 2021** to provide stakeholders further opportunity to comment in writing on the Draft EMPr, and a community focus group meeting was convened on 28 January 2021, to convey the outcomes of the environmental impact assessment.

The stakeholder notification emails, focus group meeting invitation letter, presentation and attendance register are appended in APPENDIX D.

7.2.7 Final EMPr Amendment Report

The EMPr Amendment Report was updated after the expiry of the public review period. All the issues, comments and suggestions raised during the comment period on the draft EMPr Amendment report were added to the comments and response report (CRR) that accompanied the Final EMPr Amendment report. The Final EMPr Amendment report has been submitted to the DMRE, and the DWS (2020).

On submission of the Final EMPr Amendment report to the authorities, registered I&AP's will were notified of the submission and the opportunity to request copies of the final reports.

7.2.8 Lead Authority's Decision

Once the DMRE has taken a decision about the project, the Public Participation Office will immediately notify I&APs of this decision and of the opportunity to appeal. This notification will be provided as follows:

- A letter will be sent, addressed to all registered I&APs, summarising the authority's decision and explaining how to lodge an appeal should they wish to.

7.2.9 Summary of key Issues Raised thus Far

The issues raised by stakeholders in the Focus Group Meetings conducted as part of the EA/EMPr Amendment and WULA processes, are summarised as follows:

7.2.9.1 Focus Group Meeting with Affected Farmers

The issues / concerns raised during the focus group meeting of 18 September 2020 are summarised as follows:

- Concerns relating to impact on yield and quality of borehole water;
- Concerns related to the impact the project may have on people's livelihoods and jobs in the area;
- Limitations to further expansions of local businesses, e.g. chicken farms, due to the Kusile Power Station and the New Largo Coal Mine;
- Proximity of chicken farm to Pit D operations and associated impacts, specifically pertaining to biosecurity; and
- Concerns related to safety risks in areas that were previously fenced off for safety reasons, but are currently not fenced since the fences have been removed.

7.2.9.2 Focus Group Meeting with Kendal Community Forum

The issues / concerns raised during the focus group meeting of 21 October 2020 are summarised as follows:

- Concerns about the proximity of Pit H infrastructure to Kendal community;
- Concerns relating to the timing of relocating farmworkers' families;
- Concerns relating to further water quality and quantity impacts on community boreholes;
- Concerns related to the dilapidated state of municipal infrastructure and gravel roads, and whether New Largo Coal will assist the community in this regard, including provision of electricity;
- Concerns related to blasting procedures and blasting causing cracks in homes and responsibilities / grievance mechanisms for addressing complaints; and
- Concerns that the relocation of the R545 will affect the community with regard to access to Ogies, Wilge and other farming areas.

7.2.9.3 Focus Group Meeting with eMalahleni Local Municipality

The issues / concerns raised during the focus group meeting of 27 January 2021 are summarised as follows:

- Recommendations regarding the consideration of municipal by-laws in the final report;
- Requirement to submit dust fallout monitoring reports to the municipality on a quarterly basis; and
- Issues regarding the zoning of the MRA and the requirement for a rezoning application prior to mining.

7.2.9.4 Focus Group Meeting with Community I&APs

The issues / concerns raised during the focus group meeting of 28 January 2021 are summarised as follows:

- Concerns about the language in which the meeting was held;
- Concerns relating to the purpose of the meeting;
- Concerns relating to jobs/opportunities for local communities, and the status of the Community Trust;

- Issues regarding the mining of Klipspruit Colliery, which lies adjacent to New Largo Pit D;
- Expressions of interest in the mining of old Wilge dumps;
- Concerns regarding the involvement of contractors in mining New Largo; and
- Concerns regarding the operation of the New Largo procurement process.

Refer to APPENDIX D for the full Comment and Response Report capturing the issues raised during the public participation process.

7.3 Public Consultation Process for the 2021 EMPr Amendment (Pit F)

7.3.1 Objectives of Public Participation

The overarching objective of the public participation is fully described in Section 7.3.

7.3.2 Identification of I&APs

The existing I&AP database generated as part of the 2012 and 2020 public participation processes, has been updated through a process of networking and referral. The I&AP database for the project is appended in APPENDIX E. There are currently 306 stakeholders on the I&AP database.

7.3.3 Registration of I&APs

Stakeholders who were involved in the consultation process and who will attend the focus group meetings have been added to the register. 149 stakeholders registered for the EMPr amendment process (see APPENDIX E for the list of registered stakeholders).

7.3.4 Project Announcement

The project was announced on Friday, **06 August 2021**. Stakeholders were invited to participate in the EMPr Amendment and public participation process and to pass on the information to friends/colleagues/neighbours who may be interested and to register as I&APs.

The project was announced as follows:

- Distribution of the background information document and a letter of invitation to participate to all I&APs on the database, accompanied by a registration, comment and reply sheet that was mailed/emailed to the entire stakeholder database. Copies of the announcement documents are attached in APPENDIX E;
- The above-mentioned documents will be made available at the public places listed below and posted to the Golder website www.golder.com/public;

Place	Address
Phola Police Station	2171 Mthimunye Street, Phola
Ogies Police Station	1 Main Road, Ogies
eMalahleni Main Library	Cnr. Hofmeyer and Elizabeth Avenue, eMalahleni

- A newspaper advertisement was published in the Witbank News, on **6 August 2021** and in the Coal City News on **20 August 2021** in English and Zulu, respectively; and

- Site notices were placed at the entrance to the project site and at visible places at the boundary of the property – see APPENDIX E for the locations of the site notices.

7.3.5 Draft EMPr Amendment Report

The Draft EMPr Amendment Report will be placed into the public domain for comment. The report will be made available at the public places listed above and posted to the Golder website www.golder.com/public.

7.3.6 Final EMPr Amendment Report

The EMPr Amendment Report will be updated after the expiry of the public review period. All the issues, comments and suggestions raised during the comment period on the draft EMPr Amendment report will be added to the comments and response report (CRR) that will accompany the Final EMPr Amendment report. The Final EMPr Amendment report will be submitted to the DMRE, and the DWS.

On submission of this Final EMPr Amendment report to the authorities, registered I&AP's will be notified of the submission and the opportunity to request copies of the final reports.

7.3.7 Lead Authority's Decision

Once the DMRE has taken a decision about the project, the Public Participation Office will immediately notify I&APs of this decision and of the opportunity to appeal. This notification will be provided as follows:

- A letter will be sent, addressed to all registered I&APs, summarising the authority's decision and explaining how to lodge an appeal should they wish to.

8.0 BASELINE ENVIRONMENTAL ATTRIBUTES

A baseline environment description for the New Largo Coal Mine Project area was compiled by Synergistics in 2011 to 2012 from data gathered via visual inspections of the project area and surroundings, desktop studies and review of existing reports, for the physical environment (climate, topography, soils, geology, air quality, noise, surface water and ground water), biological environment (flora, fauna and wetlands) and socio-economic environment (economic features, population structure, employment, land use, land ownership, land claims and cultural heritage). Where still relevant, key findings from these studies are summarised below, with the full reports appended hereto in APPENDIX C.

Key components of the 2012 baseline description were updated accordingly for the Pit H and Pit D EA/EMPr amendment, and this amendment for Pit F, and includes surface water, groundwater, wetlands, terrestrial and aquatic biodiversity, air quality, noise, heritage, palaeontology, traffic and social aspects. The updated specialist reports are appended in APPENDIX F and APPENDIX G .

8.1 Meteorological Overview

8.1.1 Rainfall

To assess rainfall conditions, the meteorological station based in the town of Ogies (located 4.5 km's south-east of New Largo's MRA) was utilised to provide an understanding of the meteorological characteristics. Due to the very close proximity of this station to New Largo, the experienced meteorological conditions at this station are anticipated to be very similar to that experienced at New Largo. The South African National Accreditation System (SANAS, 2012) TR 07-03 standards stipulate a minimum data recovery of 90% for the dataset to be deemed representative of conditions during a specific reporting period. The percentage recovery for parameters recorded exceeded 90% and is thus considered reliable for use in this assessment. Rainfall is a key influencing factor in ambient air quality:

- Rainfall is typically much higher during the spring and summer months, where approximately 90% of the annual precipitation occurs between October through to April. Little rainfall occurs during the autumn and winter months between May to September. The driest month is usually July. Precipitation usually reaches its peak in January, where in 2019 there was an average of 92 mm. Figure 16 depicts the monthly average rainfall data as observed at Ogies over 2019.

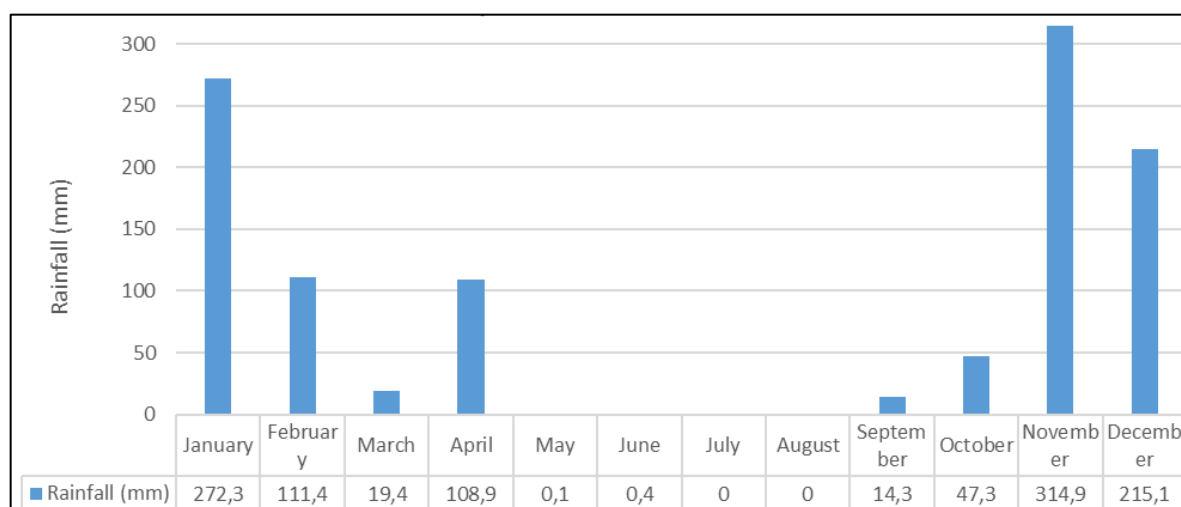


Figure 16: Monthly rainfall at Ogies during 2019 (Source: <https://www.worldweatheronline.com/ogies-weather-averages/mpumalanga/za.aspx>, 19/05/2019)

8.1.2 Temperature

Ogies and New Largo fall within semi-arid climatic conditions, where temperatures are generally warm and temperate with warm summers and cold winters usually associated with frost. The annual average temperature is approximately 16°C. The temperature in January (i.e. during the summer season) averages approximately 20°C, however daily maximum temperatures may exceed 27°C on occasion. June and July are the coldest months (i.e. the winter season), with temperatures averaging approximately 9°C (<https://en.climate-data.org/africa/south-africa/mpumalanga/ogies-189664/,19/05/2019>) (Table).

Table 11: Annual average temperature at Ogies ([https://en.climate-data.org/africa/south-africa/mpumalanga/ogies 189664/, 19/05/2019](https://en.climate-data.org/africa/south-africa/mpumalanga/ogies-189664/,19/05/2019))

Temperature (°C)	January	February	March	April	May	June	July	August	September	October	November	December	Total
Average	20.1	19.7	18.4	15.5	12.1	8.9	8.9	11.6	15.3	17.8	18.6	19.7	15.6
Minimum	13.7	13.4	11.7	8.1	3.7	0	0	2.5	6.7	10.2	11.9	13.2	7.9
Maximum	26.6	26.1	25.2	22.9	20.5	17.8	17.9	20.8	23.9	25.4	25.4	26.3	23.2

8.1.3 Wind Field

To assess wind conditions, site-specific modelled MM5 meteorological data was obtained from Lakes Environmental Software for the period January 2016 to December 2018. The data coverage was centred over the adjacent Klipspruit Colliery discard facility (approximately 1 km south of New Largo's MRA) (anemometer height of 14 m) with a grid cell dimension of 12 km x 12 km over a 50 km x 50 km domain. Due to the very close proximity, the experienced meteorological conditions are anticipated to be almost identical to that experienced on site at New Largo. The percentage recovery for parameters recorded was 100% and is thus considered reliable for use in this assessment. The wind conditions for the site using the modelled MM5 data is discussed below.

Winds at New Largo are predominantly from the northern and south-easterly sectors (Figure 17). Wind speeds are moderate, averaging ± 3 to 5 m/s with a low percentage ($\pm 13\%$) of calm conditions (< 1 m/s).

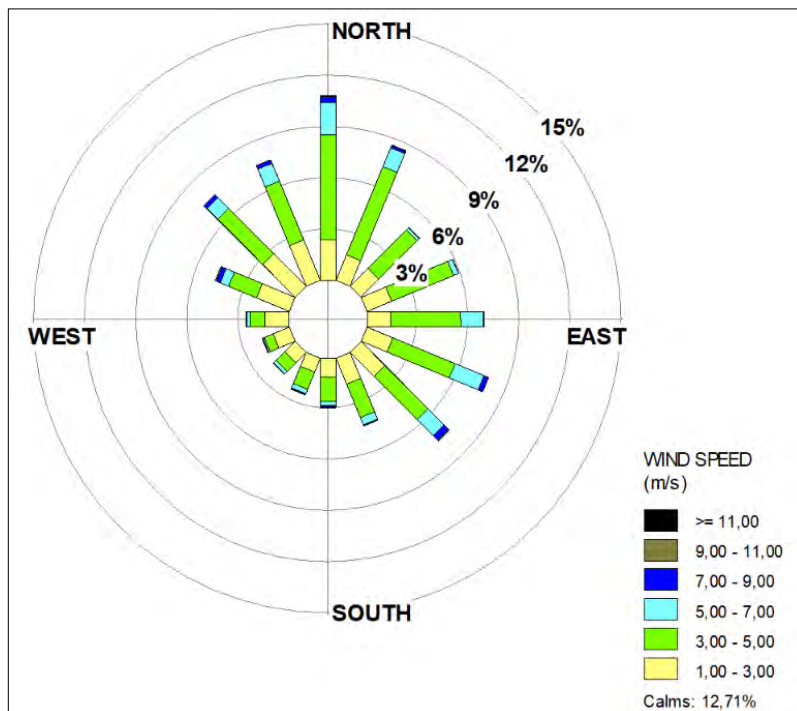


Figure 17: Modelled annual wind rose for New Largo (2016-2018)

8.2 Topography

The general topography is characterised by gently rolling terrain with no steep inclines. The elevation of the topography in the area ranges from 1 654 mamsl to 1 349 mamsl.

8.3 Land Cover

Figure 18 shows the 2018 land cover classification for the entire New Largo MRA, while Figure 19 shows the land cover classification specifically associated with Pits D and H.

It is evident that the majority of land within and surrounding the MRA is classified as 'cultivated land', with mines and quarries also abundant (Figure 18). Non-developed land cover classes, such as 'forested land', 'grassland', 'wetlands/waterbodies' are present in the landscape, however, these are generally confined to small, localised portions. This land cover pattern, represented by a prevalence of modified habitats and only small and spatially discrete areas of natural habitat, is largely mirrored at a local scale at Pit D and Pit H (Figure 19). Pit F follows a similar land cover pattern, represented largely by areas of modified habitats with scattered groups of grassland and wetland classes.

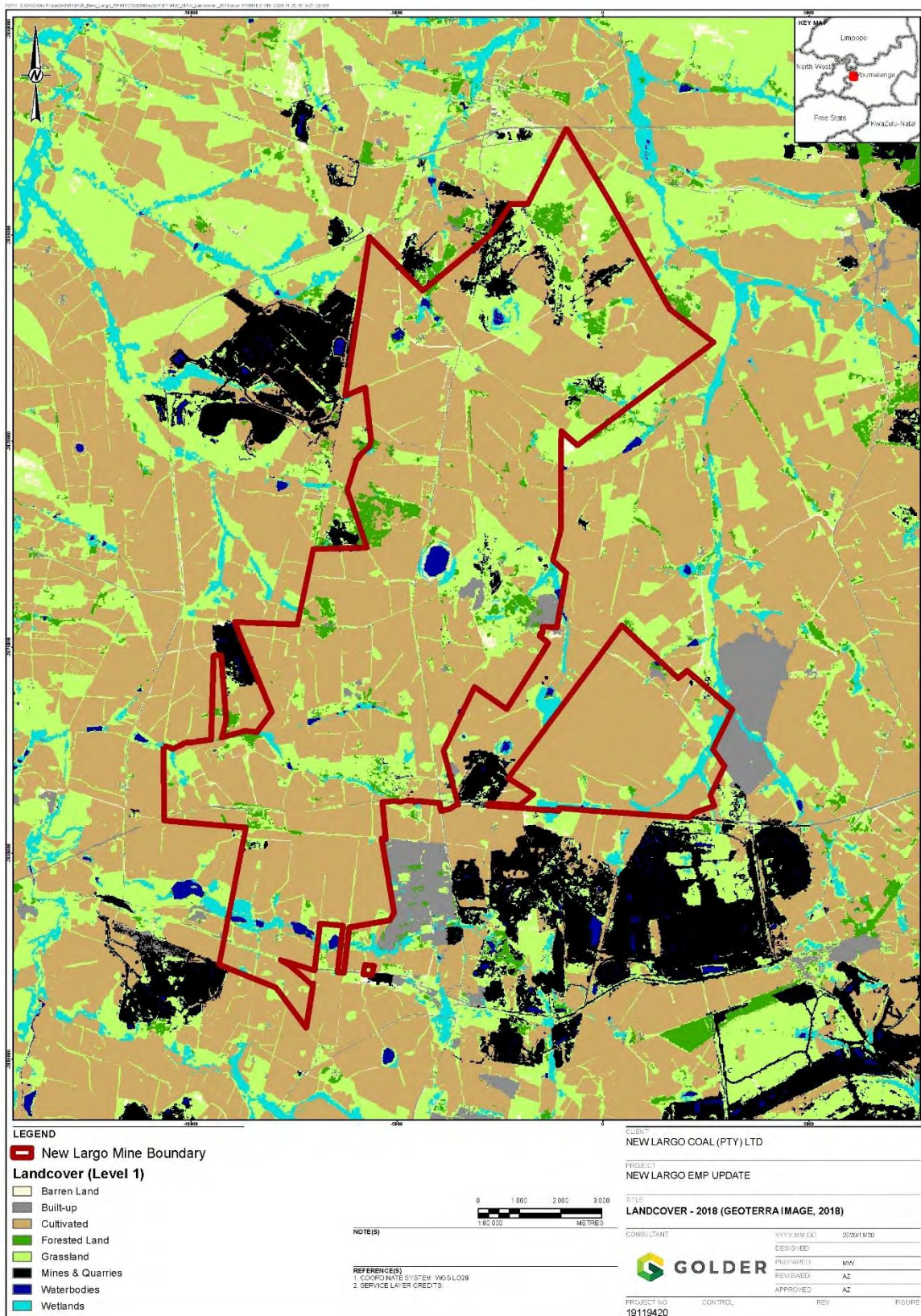


Figure 18: Land cover of the entire New Largo mining rights area (GeoTerra Image, 2018)

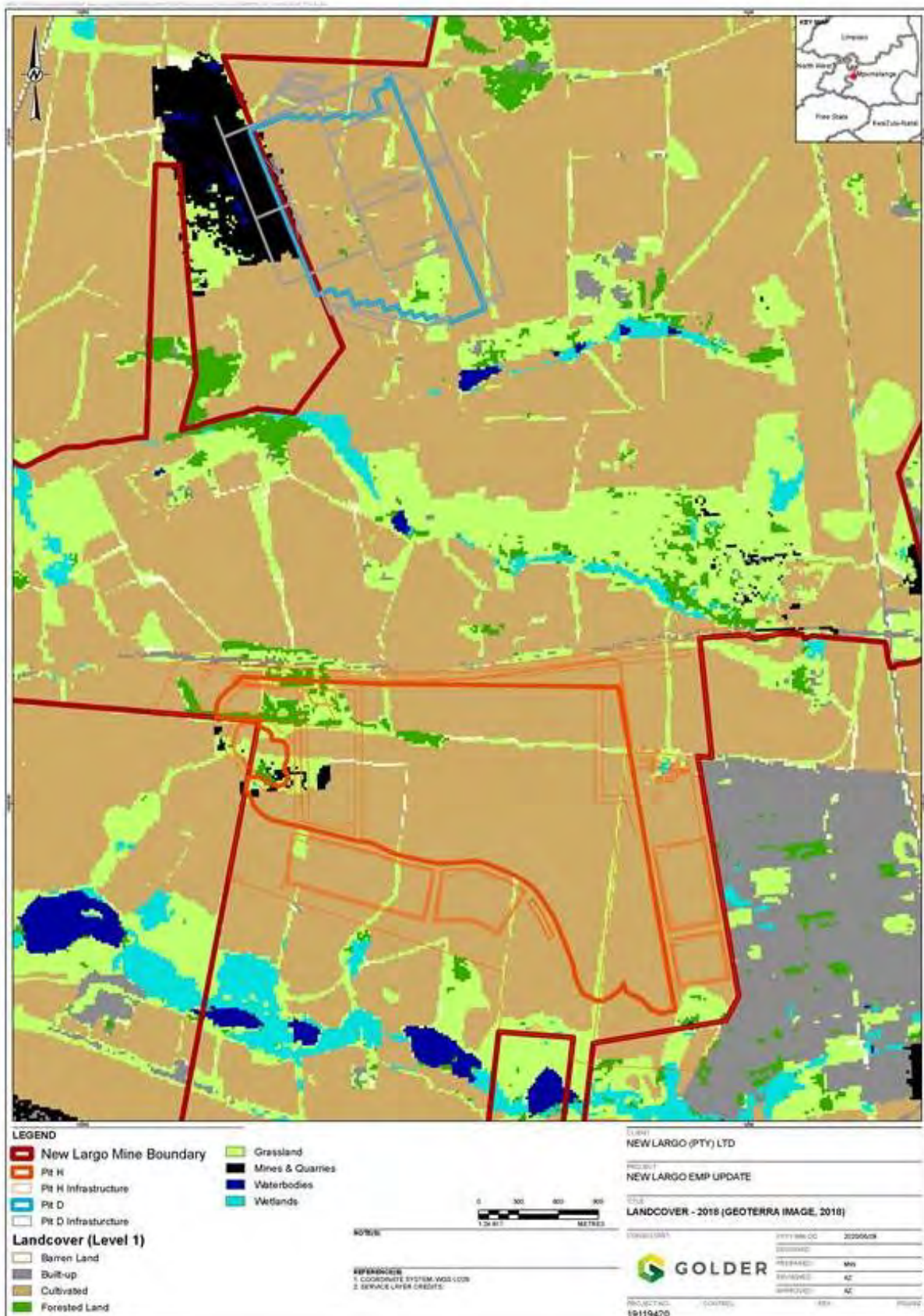


Figure 19: Land cover associated with Pit H and Pit D (GeoTerra Image, 2018)

8.4 Soils

A baseline soil study was conducted in 2006 (SES, 2006) and an impact assessment study was further undertaken in 2012 (Synergistics, 2012) (APPENDIX C), with updates conducted in 2020 for Pits H & D (APPENDIX F) in and 2021 for Pit F (APPENDIX G). The 2020 study included reconnaissance soil and land use surveys to inform the re-evaluation of the impact assessment on the soil and land capability of Pit H and Pit D, while the main focus of the 2021 study was on the soil and land capability of Pit F. The following sections characterise the soils differentiating between 2006, 2012, 2020 and 2021.

8.4.1 Soil Forms

The majority of soil forms encountered in the study area are of the orthic phase, include Hutton and Clovelly. Some hydromorphic soil forms were also identified, including the Longlands as shown on Figure 20 (Synergistics, 2012).

8.4.2 Physical Characteristics

The physical characteristics of the soil encountered include (Synergistics, 2012):

- Topsoil clay percentages that range from 12% - 25% depending on the host geology from which they are derived,
- Subsoil clays that range from 18% to greater than 45%,
- Moderate to good in-situ permeability rates (0.74 to 2.15m/day),
- Moderate to good intake (infiltration) rates of 5 to 12 mm/hr, and
- Moderate (80 to 120 mm/m) water holding capacities.

The major soil types that exhibit moderate structure and which were encountered within the study area are associated with the more highly hydromorphic soil forms and colluvial soils associated with the low lying areas in and around the drainage lines and wetland environments (Synergistics, 2012).

8.4.3 Chemical Characteristics

In general, the chemical analysis returned results typical for soils derived from sedimentary parent materials (Synergistics, 2012). A sample was taken from the soils derived from the more basic parent materials, from the two major pans, and from the areas bordering the wetlands (Transition Zone). The results of the analysis indicate the following general trends:

- A pH range of between 3.70 and 6.55 (slightly acid) for the range of soils within the site
- Calcium, phosphorous and potassium levels are average to slightly higher than average
- Sodium, zinc and magnesium values are generally moderate to slightly low
- The organic carbon matter content varies from 0.19% to 4.23% C but is generally low (<0.75% C).

The study area has been affected by the commercial farming that has been practiced for many years on significantly large portions of the study area. It is likely that these activities will have impacted on the soil chemistry and to a limited extent on the landforms that have developed.

8.4.4 Soil Reconnaissance Survey

A reconnaissance survey (1 observation point per 100 ha) was conducted in June 2020, to confirm the findings of the baseline study in 2006, specifically for Pit H and Pit D. A site visit was conducted in July 2021, specifically for Pit F.

8.4.4.1 Pit H

A total of six (6) auger holes were drilled up to 120 cm or refusal at the footprint of Pit H to assess the physical properties of the soil against the baseline conditions. A summary of field descriptions from each auger hole is presented in Table . The dominant soil forms were Hutton (716 ha of the infrastructure footprint) and Clovelly (75 ha of the infrastructure footprint) found within the mid slope and upper foot slope terrain units. The area covered by Hutton and Clovelly soil forms were mostly cultivated.

The remaining areas were covered by Westleigh (33 ha of the infrastructure footprint) and shallow Hutton soil forms (39 ha of the infrastructure footprint). The Westleigh soil form was observed to be moist and becoming saturated with depth. The shallow Hutton soil form was characterised by weathered sandstone at shallow depth of <45 cm. Areas covered by Westleigh and shallow Hutton soil forms were on undisturbed grassland.

Table 12: Physical properties and soil forms at Pit H

Soil Map Unit	Dominant Soil form	Texture	Effective soil depth (cm)	Summarised descriptions	Area (%)*
Pit H					
sHu	Shallow Hutton	Sand (Sa)	20	Dark brown (10YR 4/6) fine sandy orthic A on yellow red (5YR 5/6) coarse sand on highly weathered sandstone observed at 45 cm below ground level found on upper mid slope terrain units. Observation ID – RP5	39
Cv	Clovelly	Sand (Sa)	32	Yellow brown (2.5YR 4/2) fine sandy orthic A with small quartz stones (20 -30%) on red (2.5YR5/8) fine sandy apedal B observed up to 120 cm below ground level found on mid slope and foot slope terrain units. Observation ID – RP4	75
Hu	Hutton	Sand (Sa)	50	Dusky red (2.5YR3/2) fine sandy orthic A on red (2.5YR4/8) fine sandy red apedal B observed up to 120 cm below ground level on mid slope and foot slope terrain units. Observation ID – PD1A, RP10 & RP11	716
We	Westleigh	sandy clay (SaCl)	30	Brown (10YR4/3) fine sandy orthic A that is compacted on surface on yellow brown (10YR5/8) fine sandy clay soft plinthic horizon with red large soft mottles observed up to 120 cm on lower foot slope terrain unit. Observation ID – RP9	33
Shaft	Old shaft area			Old shaft area where the ground has subsided in certain areas	11

Note: * Approximate areas where infrastructure and the pit area will be located.

8.4.4.2 Pit D

A total of five (5) auger holes were drilled up to 120 cm or refusal along areas of proposed infrastructure at Pit D to assess the physical properties of the soil against the baseline conditions. The dominant soil forms were Hutton (194 ha of the infrastructure) and Mispah soils forms (110 ha of the infrastructure) as shown on Figure 21. Cultivated areas were on Hutton soil form whilst natural grassland was on Mispah soil form characterised by shallow bedrock (sandstone). **Although Mispah soil form was not delineated in the 2007 baseline study, the soil form could be susceptible to erosion due to a high index of erosion of 1.45** which is a product of the erodibility factor and slope percentage as determined by Wischmeier et al. (1971). The erosion factor is determined from the soil texture, permeability and organic matter content and soil structure (Wischmeier et al., 1971). A summary of field descriptions from each auger holes are presented in Table 13.

Table 13: Physical properties and soil forms at Pit D

Soil Map Unit	Dominant Soil form	Texture	Effective soil depth (cm)	Summarised descriptions	Area (%)*
Pit D					
Ms	Mispah	Sand (Sa)	15	Brown (7.5YR5/3) fine sandy orthic A with small quartz stone on highly weathered sandstone observed from 15 cm below ground level on upper mid slope to crest positions. Observation ID – PD1& PD3	110
Hu	Hutton	Loamy sand (LmSa)	43	Dusky red (2.5YR3/2) fine loamy sand orthic A with severe sealing on surface and slight crusting. A red (2.5YR4/8) fine loamy sand apedal B with 10-15% quartz stones was observed under the orthic A up to 120 cm below ground level on mid slope to upper foot slope terrain units. Observation ID – PD2 &PD2A &PD3A	194

Note: * Approximate areas where infrastructure and the pit area will be located.

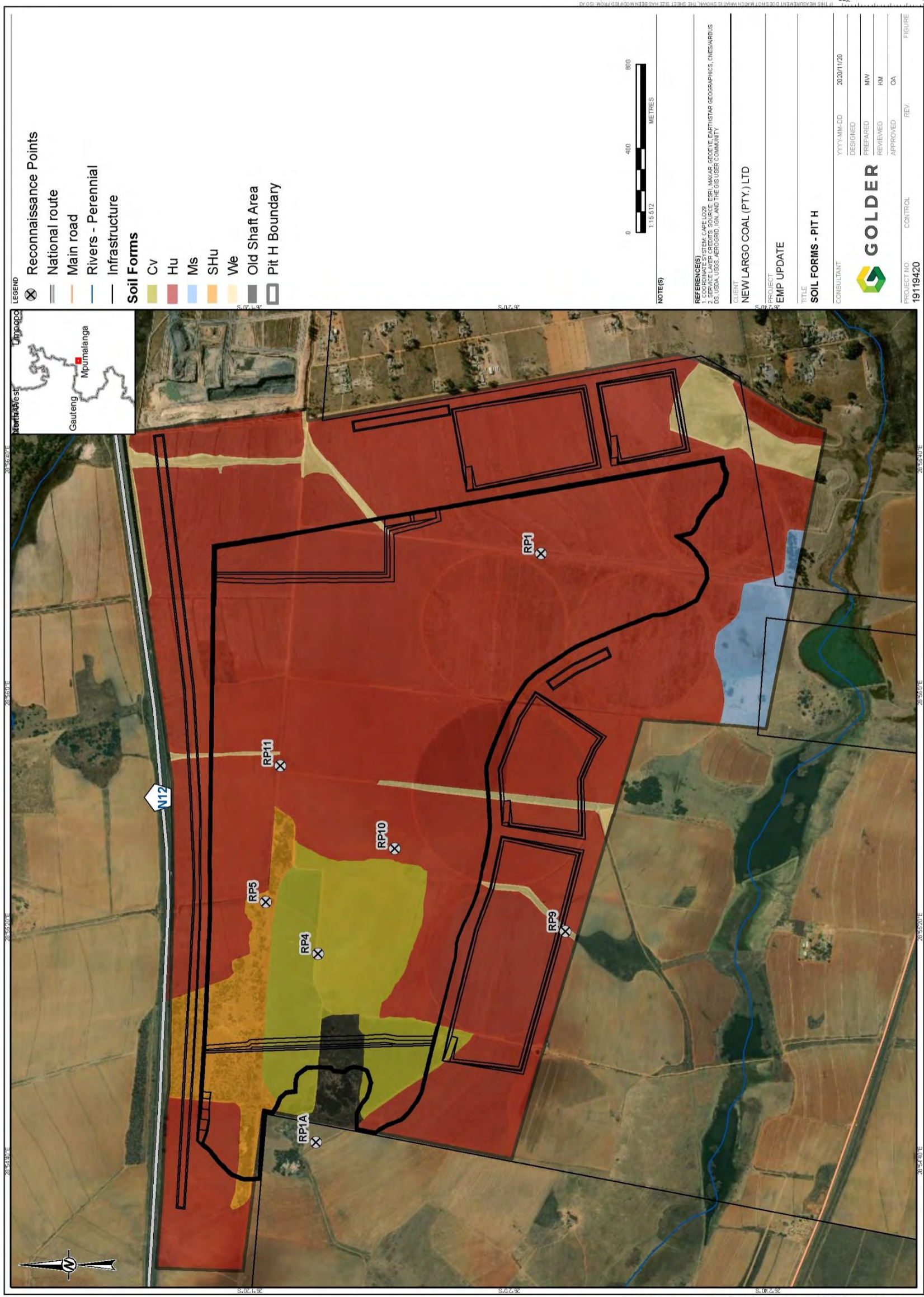


Figure 20: Map showing the spatial distribution of soil forms identified at Pit H

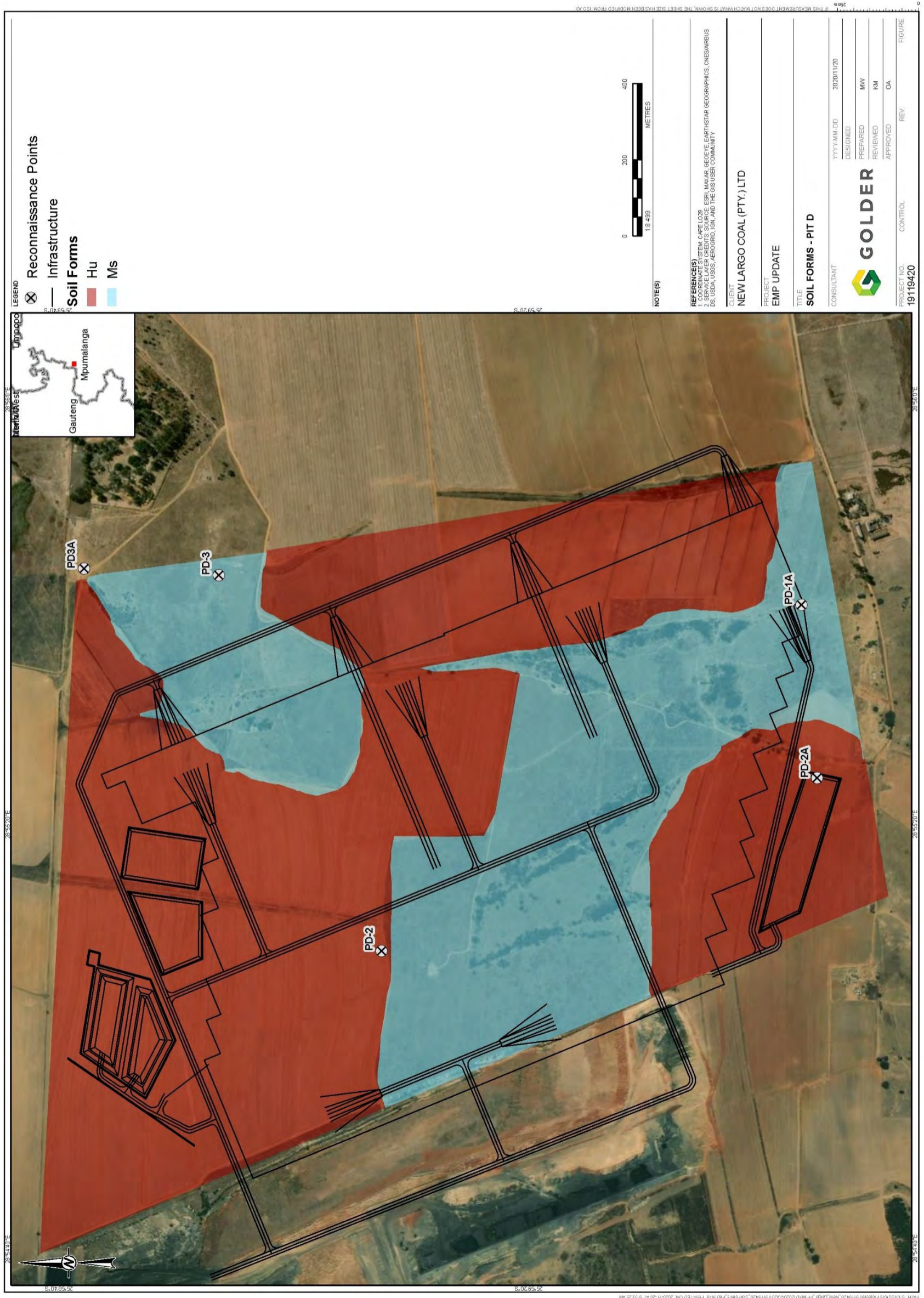


Figure 21: Map showing the spatial distribution of soil forms identified at Pit D

8.4.4.3 Pit F

A one-day field inspection was conducted on 26 July 2021. The outcomes of the site visit undertaken were in agreement with the original findings of the Specialist Soil and Land Capability Impact Assessment and Management Programme (Synergistics Environmental Services, 2012). Sandy, well-drained red to yellow-brown soils largely devoid of macrostructure were identified as very dominant across the proposed Pit F area and the proposed infrastructure area north of the site. The dominant land use identified was maize cultivation, which was seen across the vast majority of the site. While the soils were clearly disturbed as a result of the cultivation, so were not present in their original horizons, the existence of Hutton and Clovelly soil forms of varied depth was clear across the vast majority of the site. Wetland soil was identified by the existence of soil mottles over two small portions of the site; an area in the north of the site, in agreement with the previous study undertaken and a small area within the pit itself (Figure).

8.4.5 Land Capability

The soil specialist studies conducted by SES in 2006 and 2012 indicated the dominant land capability as arable or grazing land with the remaining areas classified as wilderness comprising of natural bush, grasslands and wetlands (SES, 2012).

Since soils were not collected for laboratory analyses, the land capability of the proposed footprint was assessed in accordance with the Chamber of Mines of South Africa guidelines for the Rehabilitation of Mined Land, 2006 as shown in Table 14.

Table 14: Pre-mining land capability requirements (Chamber of Mines, 1981)

Criterion	Descriptions
Wetlands	<ul style="list-style-type: none"> ■ Land with organic soils or ■ A horizon that is gleyed throughout more than 50% of its volume and is significantly thick, occurring within 750 mm of the surface
Arable land	<ul style="list-style-type: none"> ■ Land, which does not qualify as a wetland ■ The soil is readily permeable to the roots of common cultivated plants to a depth of 750 mm ■ The soil has a pH value of 4.0 and 8.4 ■ The soil has a low salinity and SAR ■ The soil has a permeability of at least 1.5 mm per hour in the upper 500 mm of the soil ■ The soil has less than 10% (by volume) rocks or pedocrete fragments larger than 100 mm in diameter in the upper 750 mm ■ Has a slope (%) and erodibility factor (k) such that their product is <2.0 ■ Occurs under a climatic regime which facilitates crop yields that are at least equal to the current national average for these crops, or is currently being irrigated successfully
Grazing land	<ul style="list-style-type: none"> ■ Land, which does not qualify as wetland or arable land ■ Has soil, or soil-like material, permeable to roots of native plants, that is more than 250 mm thick and contains less than 50% by volume of rocks or pedocrete fragments larger than 100 mm ■ Supports, or is capable of supporting, a stand of native or introduced grass species, or other forage plants, utilizable by domesticated livestock or game animals on a commercial basis

Criterion	Descriptions
Wilderness land	<ul style="list-style-type: none"> ■ Land which does not qualify as wetland, arable land or grazing land.

Although the land capability of Pit H was conducted at a larger scale, Golder increased the resolution of mapping to gain an understanding of the land capability at Pit H, Pit D and Pit F. The land capability of Pit H comprise of the following, as shown on Figure :

- Arable land (807 ha);
- Grazing land (40 ha);
- Wetland (32 ha); and
- Wilderness (32 ha).

The land capability of Pit D comprises of the following as shown on Figure :

- Arable (111 ha); and
- Grazing land (194 ha).

The land capability of Pit F is characterised by small areas of rocky outcrop and wetland areas, and large areas of deep, well-drained soils often associated with cultivated lands.

8.4.6 Land Use

The pre-mining land-use at Pit H area was rain-fed (dry land) cultivation of maize fields, wilderness and majority being irrigated land (i.e., centre pivot irrigation system). The findings of the site walkover conducted on 11 June 2020 indicated similar pre-mining land use to that observed in 2006. The footprint area of Pit D comprised of bean plantations and undisturbed grassland.

The dominant land use identified for Pit F during the 2021 assessment was maize cultivation, which was seen across the vast majority of the site, indicating similar land use patterns to Pits D and H.

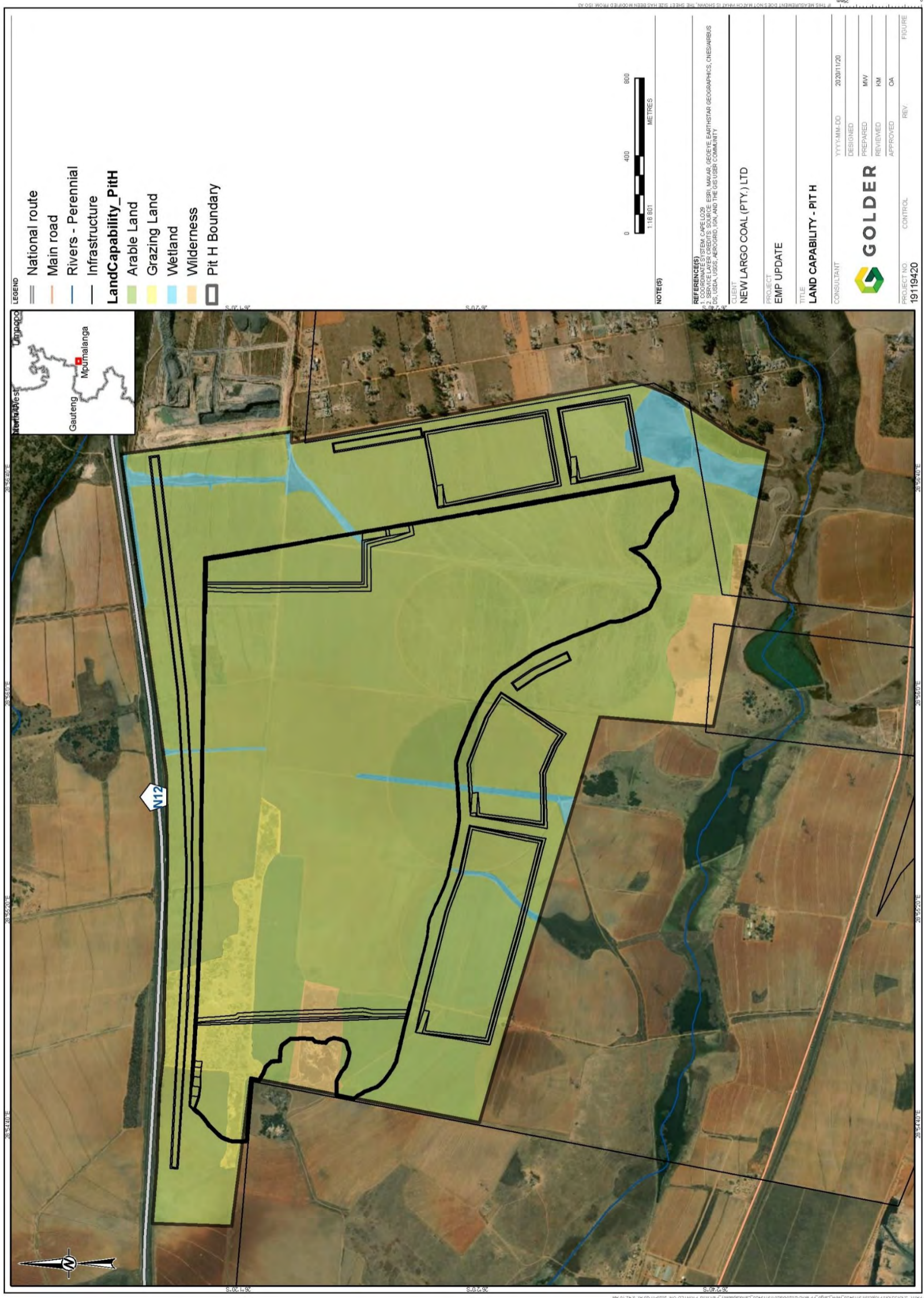


Figure 22: Map showing the land capability of Pit H

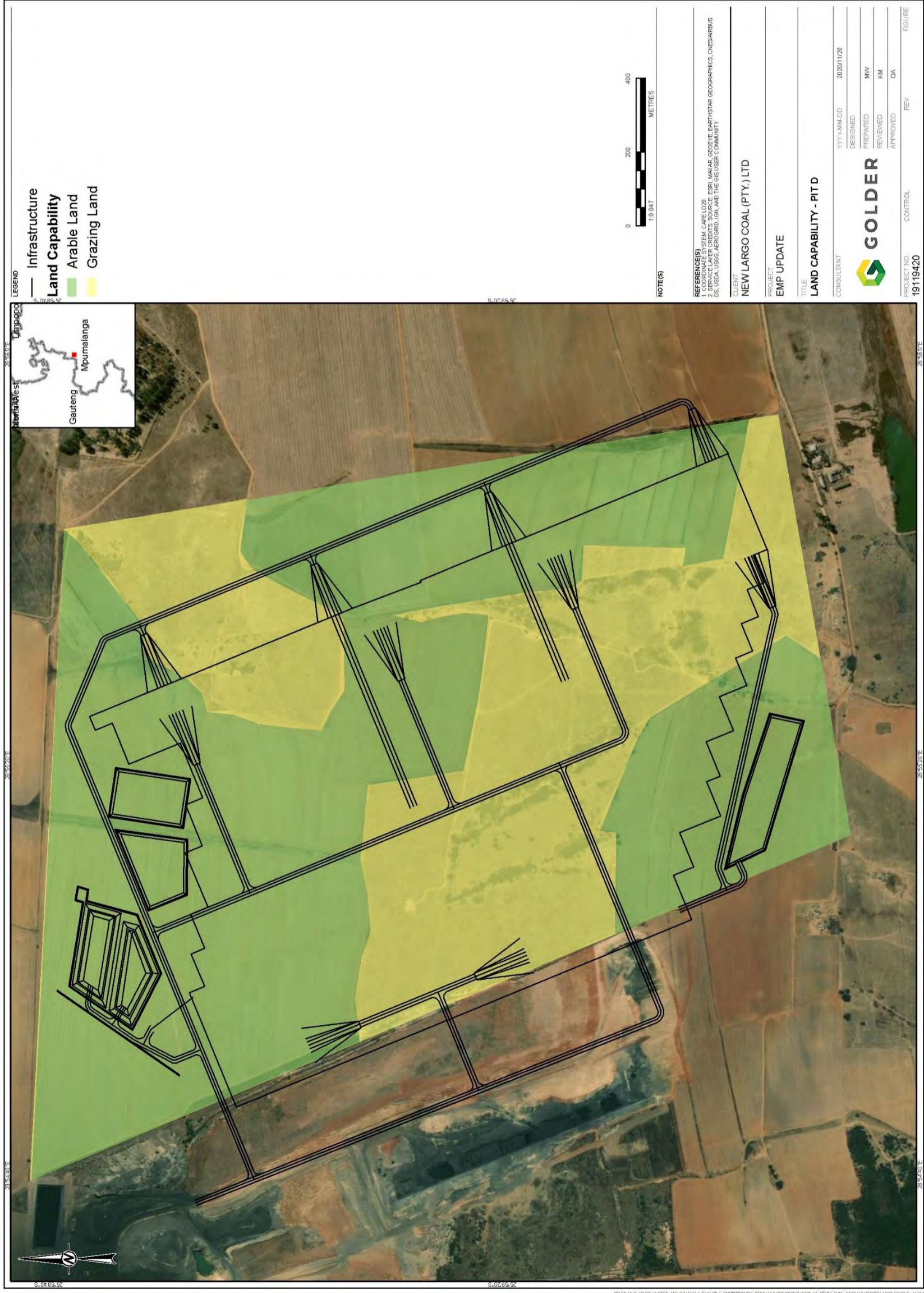


Figure 23: Map showing the land capability of Pit D

8.5 Ambient Air Quality

An air quality study was undertaken in 2012 by Airshed Planning Professionals (**APPENDIX C**), with updates conducted in 2020 (APPENDIX F) and 2021 (APPENDIX G). The following sections characterise the ambient air quality at New Largo.

The New Largo and the surrounding areas fall within the Highveld Priority Area (HPA) and are therefore subject to its AQMP (DEA, 2015). The HPA AQMP was established to help alleviate the large amounts of air pollution that the region was experiencing. Exceedances of particulate matter (PM₁₀), sulphur dioxide (SO₂), nitrogen dioxide (NO₂) and ozone (O₃) have often been recorded in the pollution hotspots of the eMalahleni, Kriel, Steve Tshwete, Ermelo, Secunda, Ekurhuleni, Lekwa, Balfour and Delmas areas (DEA, 2015).

8.5.1 Local Sources of Emissions

There have been significant changes in the emission sources within the project area since the original 2012 EIA. Potential sources of air pollution within vicinity of the New Largo include:

- Agricultural activities;
- Biomass burning;
- Domestic fuel burning;
- Mining activities (including New Largo's existing operations);
- Vehicle emissions (tailpipe and entrained emissions); and
- Power generation.

8.5.2 Sensitive Receptors

Sensitive receptors are defined by the United States Environmental Protection Agency (EPA) as areas where occupants are more susceptible to the adverse effects of exposure to pollutants. These areas include but are not limited to residential areas, hospitals/clinics, schools and day care facilities and elderly housing.

In 2012, the sensitive receptors identified by Airshed (2012) included the residential areas of Wilge, Kendal Forest Holdings, Phola and Ogies. Other sensitive receptors in the region (i.e. in excess of 20km away) included the residential areas of Botleng and Delmas to the west-south-west, Clewer, Vosman, KwaGuqa, Hlalanikahle to the east-north-east and Bronkhorstspuit to the north-west (Airshed, 2012).

It is noted that the distribution of sensitive receptors within the local area have remained relatively unchanged since 2012 other than natural expansion and growth of the residential areas over time. Most of the individual farm residences remain throughout the MRA; and the only "new" significant sensitive receptor identified is the informal settlement behind Vlakfontein mine and adjacent to the R545. This community originated from the old farm workers accommodations pre 2012 and has subsequently become an informal settlement over the last eight years.

The following sensitive receptors within a 10 km radius of New Largo were identified for use within this assessment and are further presented in Table 15 and Figure 24.

Table 15: Sensitive receptors surrounding the New Largo Pit F (within a 10 km radius)

Sensitive Receptor ID	Receptor Name	Coordinates		Distance (km)	Direction from Pit F
		Longitude (°)	Latitude (°)		
SR1	Arbor Primary School	28.890	-26.048	9.54	South west

Sensitive Receptor ID	Receptor Name	Coordinates		Distance (km)	Direction from Pit F
		Longitude (°)	Latitude (°)		
SR2	Dwaalfontein Primary School	28.889	-25.987	9.42	West northwest
SR3	Gekombineerde Skool Ogies	29.068	-26.049	7.15	South east
SR4	Hlanga Phala Primary School	29.033	-26.007	2.17	East
SR5	Imbalenhle Primary School	28.972	-26.041	2.97	South southwest
SR6	Mabande Secondary School	29.032	-26.005	1.91	East
SR7	Mehlwana Secondary School	29.039	-25.995	2.70	North east
SR8	Ogies Clinic	29.057	-26.050	6.12	South east
SR9	Phola Clinic	29.036	-26.008	2.50	East
SR10	Sibongindawo Primary School	28.969	-25.923	8.09	North
SR11	Thuthukani Primary School	29.039	-26.009	2.94	East
SR12	Residential Area 1	28.950	-26.012	2.70	West
SR13	Residential Area 2	28.962	-26.007	2.09	West
SR14	Residential Area 3	28.962	-25.988	2.77	North west
SR15	Residential Area 4	28.986	-25.976	1.64	North northwest
SR16	Residential Area 5	29.072	-26.024	6.55	East
SR17	Residential Area 6	28.994	-25.961	2.76	North
SR18	Residential Area 7	29.000	-25.962	2.45	North
SR19	Residential Area 8	29.008	-25.963	2.48	North
SR20	Residential Area 9	29.024	-25.963	3.96	North northeast
SR21	Residential Area 10	29.011	-25.988	0.38	North
SR22	Residential Area 11	29.027	-26.006	1.50	East
SR23	Residential Area 12	29.037	-25.974	3.89	North northeast
SR24	Residential Area 13	29.049	-25.974	4.81	North east
SR25	Residential Area 14	29.062	-25.961	6.65	North east

8.5.3 New Largo Ambient Air Quality Monitoring

8.5.3.1 Dust Fallout Monitoring

Dust fallout monitoring at New Largo is currently conducted at eleven monitoring locations, all equipped with single dust fallout units and in line with the National Dust Control Regulations and the ASTM D1739-70 methodology. Table presents site classifications and coordinates for each dust fallout unit.

The most current dust fallout monitoring results for the period August 2020 to July 2021 are presented in Table 7. Results indicate that currently NL02 (four exceedances), NL05 (four exceedances), NL07 (five exceedances), NL06 (five exceedances) and NL08 (six exceedances) monitoring locations are non-compliant with the National Dust Control Regulations (which allow for two non-sequential exceedances over a rolling twelve-month period), whilst all remaining dust fallout monitoring locations are compliant with the National Dust Control Regulations.

Furthermore, to date:

- A non-residential network average of 604 mg/m²/day was recorded, with the average below the non-residential dust fallout guidelines of 1200 mg/m²/day; and
- A residential network average of 560 mg/m²/day was recorded, with the average below the residential dust fallout guidelines of 600 mg/m²/day.

Table 16: Dust fallout site classifications and locations

Bucket ID	Classification	Latitude (°S)	Longitude (°E)
NL01	Non-residential	26° 1'52.14"	28°54'41.98"
NL03	Non-residential	26° 2'27.50"	28°55'8.00"
NL04	Non-residential	26° 1'10.70"	28°55'23.70"
Kusile	Non-residential	25°55'37.00"	28°56'25.50"
Malachite	Non-residential	25°56'60.00"	28°56'58.30"
NL02	Residential	26° 2'39.60"	28°56'54.42"
NL05	Residential	26° 0'49.30"	28°53'58.70"
NL06	Residential	26° 2'23.20"	28°56'58.45"
NL07	Residential	26° 2'0.00"	28°57'0.03"
NL08	Residential	26° 1'37.00"	28°56'47.50"
Wilge Post Office	Residential	25°58'42.04"	28°58'52.77"

8.5.3.2 PM₁₀ Particulate Monitoring

New Largo currently does not undertake any particulate matter monitoring. As such, particulate matter data was sourced from the Zibulo Colliery, located approximately 1 km south east of the proposed New Largo Pit F operations. Data for the January to December 2020 period (the most recent annual calendar period) was obtained and has been discussed below for use within this assessment.

Particulate matter at Zibulo Colliery is currently monitored at the Ogies School, using a Topas monitor mounted on a solar-powered monitoring trailer. Data recovery for the January to December 2020 monitoring period was above the minimum requirement of 90% as stipulated by the SANAS, 2012 TR 07-03 standards, with a data

recovery of 92% and 91% for PM₁₀ and PM_{2.5}, respectively, and thus considered to be reliable for this assessment.

For the period January to December 2020, the PM₁₀ 24-hour (131 µg/m³) and annual average (44 µg/m³) was non-compliant with the 24-hour and annual average PM₁₀ standards of 75 µg/m³ and 40 µg/m³, respectively. The PM_{2.5} 24-hour (37 µg/m³) annual average (14 µg/m³) was however compliant with the 24-hour and annual average PM_{2.5} standards of 40 µg/m³ and 20 µg/m³, respectively.

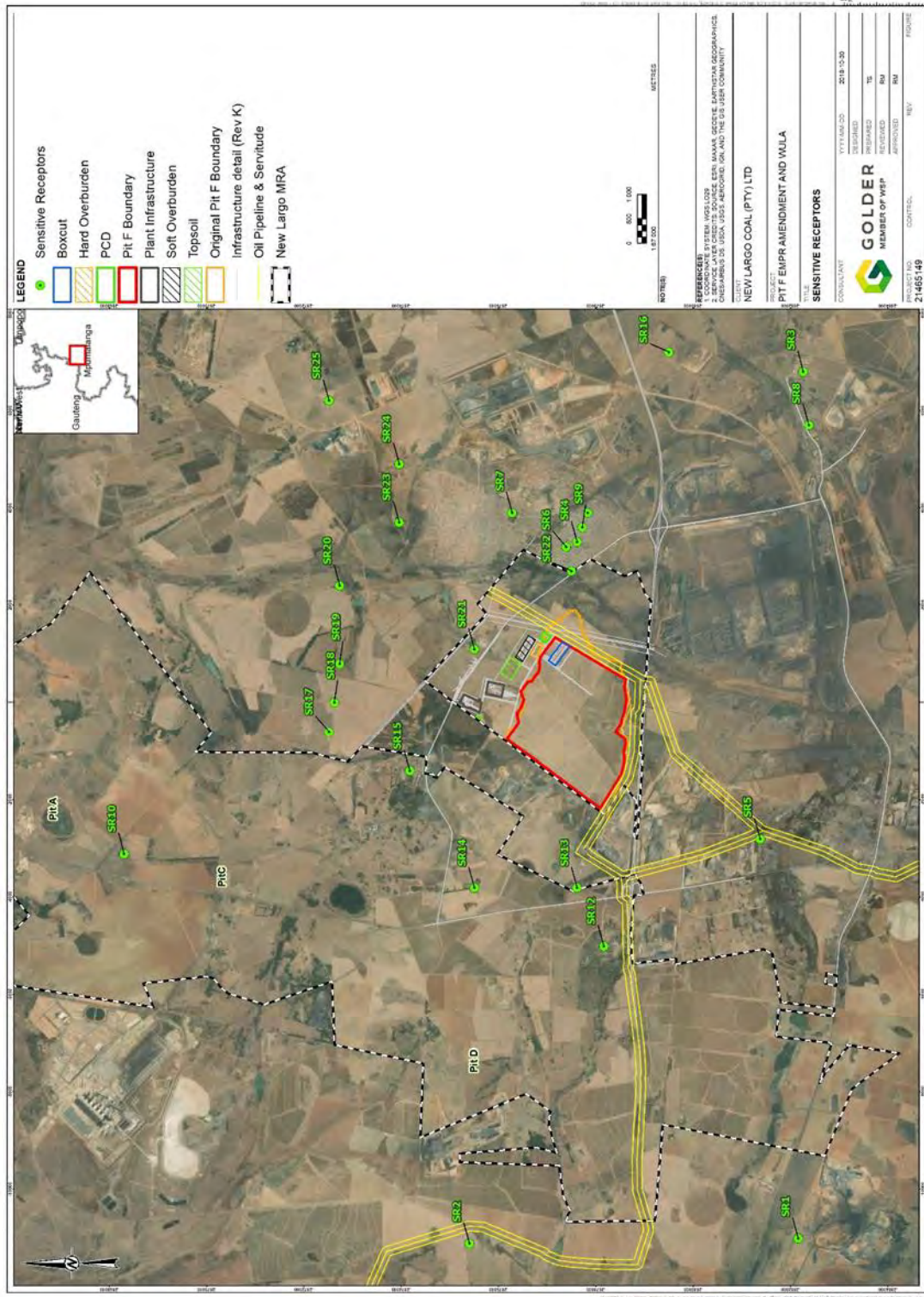


Figure 24: Sensitive receptors surrounding New Largo Operations

Table 17: Dust fallout results for a rolling twelve-month period

Sample Location	Guidelines	Dust Fallout (mg/m ² /day)												Compliant			
		Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21				
NL01	1200	1018	-	-	-	-	-	-	-	756	-	-	-	-	-	-	Decommissioned
NL03	1200	962	-	-	360	554	701	412	640	640	305	638	187	306	306	306	Yes
NL04	1200	-	-	-	295	378	1 527	389	672	672	198	392	349	303	303	303	Yes
Kusile	1200	464	857	811	625	485	714	277	712	712	490	310	441	489	489	489	Yes
Malachite	1200	714	982	796	569	114	-	-	496	496	161	664	575	621	621	621	Yes
NL02	600	719	888	766	614	264	415	229	713	713	288	531	467	672	672	672	No (four exceedances)
NL05	600	606	846	681	769	205	346	263	411	411	227	244	373	-	-	-	No (four exceedances)
NL06	600	799	1 038	974	951	443	559	404	870	870	199	371	294	502	502	502	No (five exceedances)
NL07	600	1 004	793	910	625	475	1 741	288	516	516	260	432	328	-	-	-	No (five exceedances)
NL08	600	1 220	849	1 104	923	333	994	483	1 147	1 147	168	494	389	332	332	332	No (six exceedances)
Wilge Post Office	600	557	554	-	-	-	-	-	-	-	-	167	317	254	254	254	Yes

⁽¹⁾ NL04 (August 2020) stand stolen

⁽²⁾ NL01 and NL04 (September and October 2020) stand stolen

⁽³⁾ NL03 (September and October 2020) stand burned by veld fires

⁽⁴⁾ Wilge Post Office (October 2020 to April 2021) stand stolen

⁽⁵⁾ NL01 (November 2020 to February 2021 and April 2021 to June 2021) bucket stolen

⁽⁶⁾ Malachite (January and February 2021) bucket stolen

⁽⁷⁾ NL05 (July 2021) stand burned by veld fires

⁽⁸⁾ NL07 (July 2021) stand removed

8.6 Traffic

A traffic impact assessment study for the proposed R545 relocation was conducted in 2012 (WSP, 2012) (APPENDIX C). New traffic studies were undertaken in 2020 (APPENDIX F) and in 2021 (APPENDIX G) to assess the impact of the implementation of changes to the mining sequence and additional supporting infrastructure for New Largo (Pit D, Pit H and Pit F), where coal will be hauled between these mini pit operations and the nearby Kusile and Kendal Power Stations and PCPP. The below sections summarise the baseline traffic situation in the study area.

8.6.1 2020 Traffic Surveys

Manual traffic surveys were done during a 12-hour period (06:00 – 18:00) on 30 July 2020 on six homogenous road sections (Figure 26) and were chosen for capacity and operational analyses, namely:

- Section AI – R545 from the intersection with R686 in the north (A) to the interchange with the N12 in the south (I);
- Section AB – R686 from the intersection with R545 (A) to the main access to the Kusile Power Station (B);
- Section BC – R686 from the main access to the Kusile Power Station (B) to the interchange with the N12 (C);
- Section IF – D686 from the interchange with the N12 (I) to the intersection with R555 (F);
- Section FG – D686 from the intersection with R555 (F) to the intersection with D683 (G); and
- Section GH – D683 from the intersection with D686 (G) to the access to the Kendal stockyard (H).

The current weekday AM Peak Hour occurred between 6:15 and 7:15, and the weekday PM Peak Hour between 15:45 and 16:45.