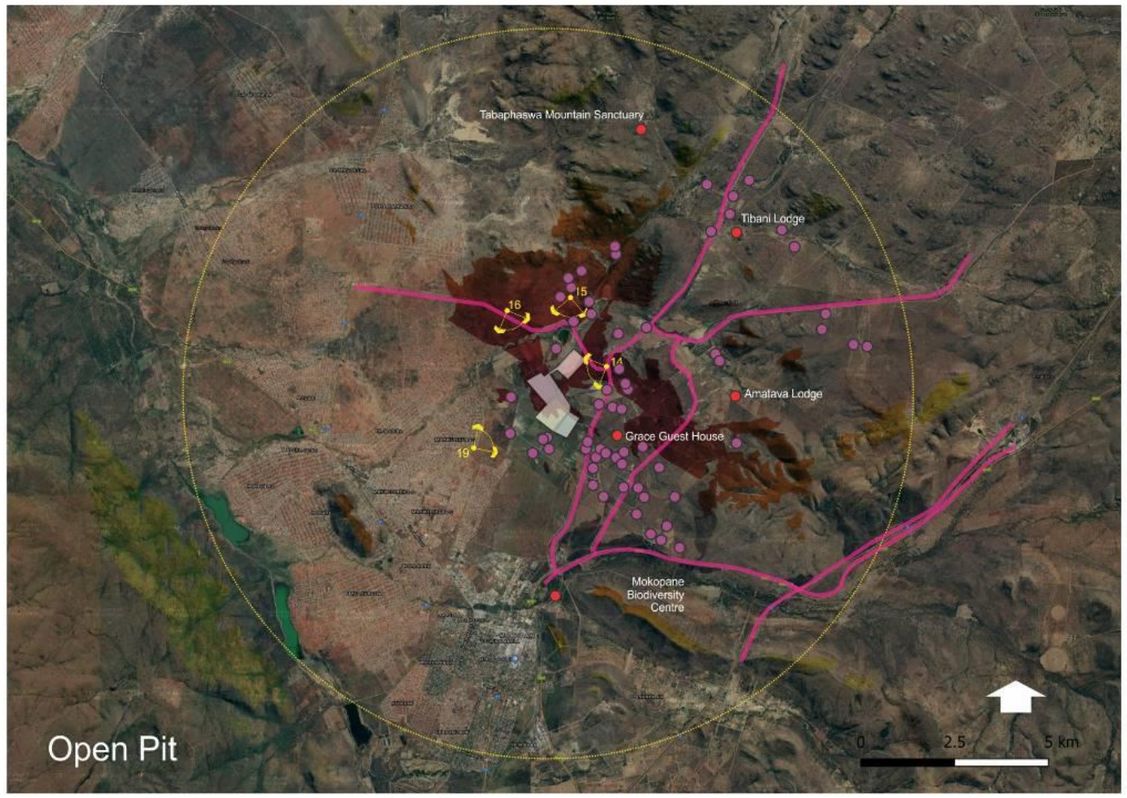
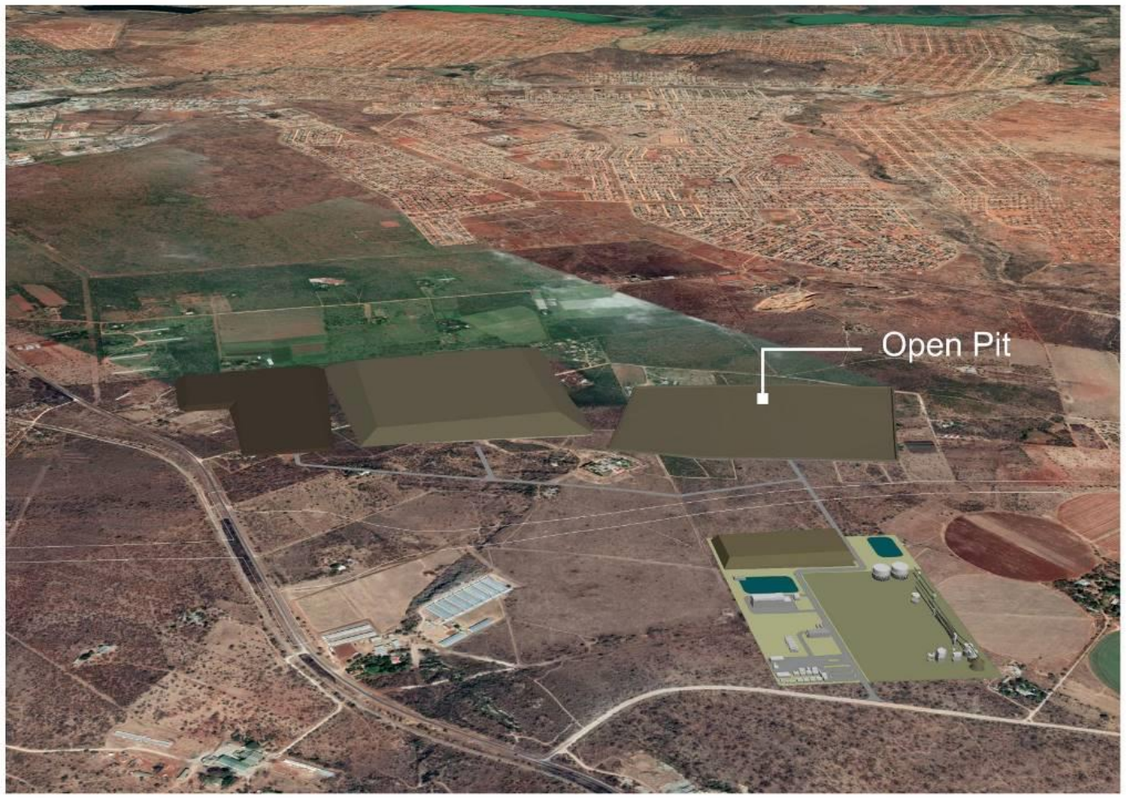
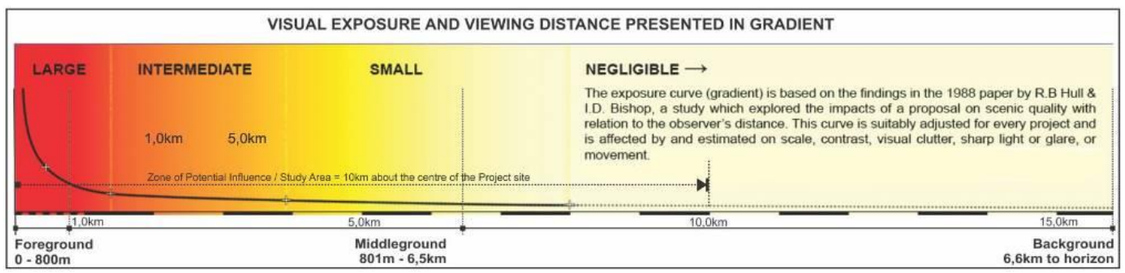

**Figure 85: Landscape Character: Views 13, 14 and 15 (GYLA, 2020)**


**Figure 86: Landscape Character: View 16, 17 and 18 (GYLA, 2020)**


**Figure 87: Landscape Character: Views 19, 20 and 21 (GYLA, 2020)**



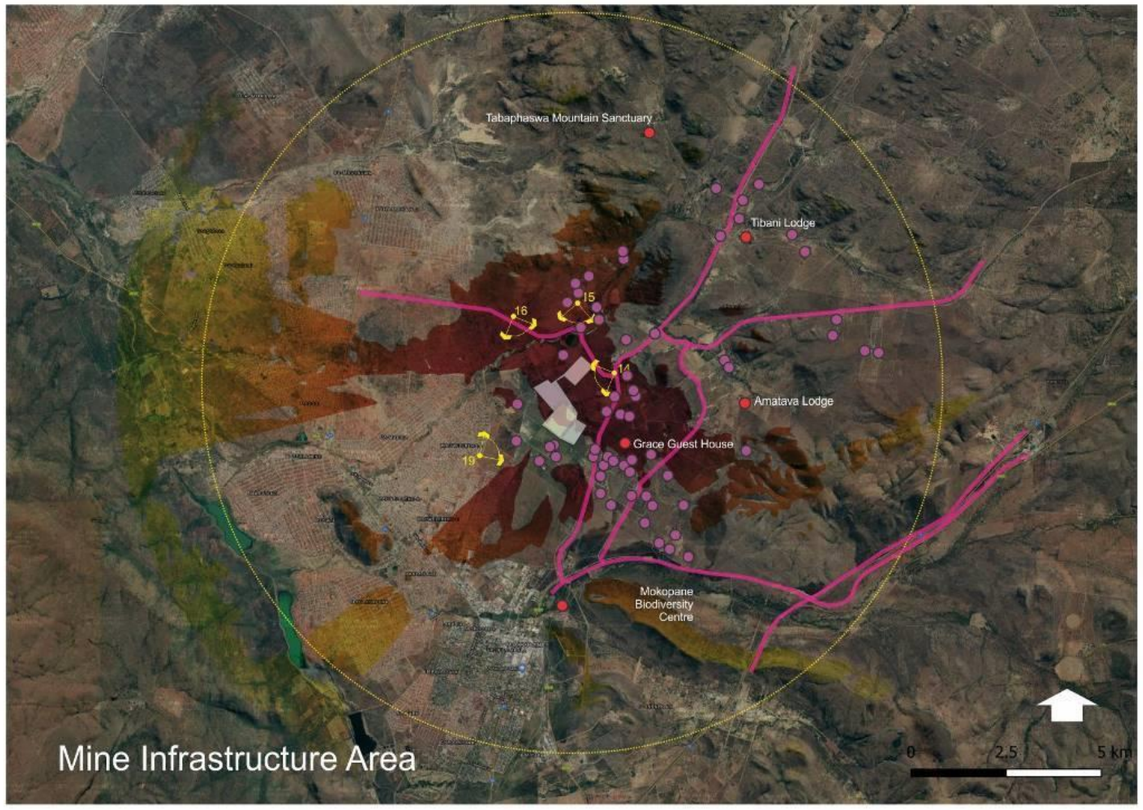



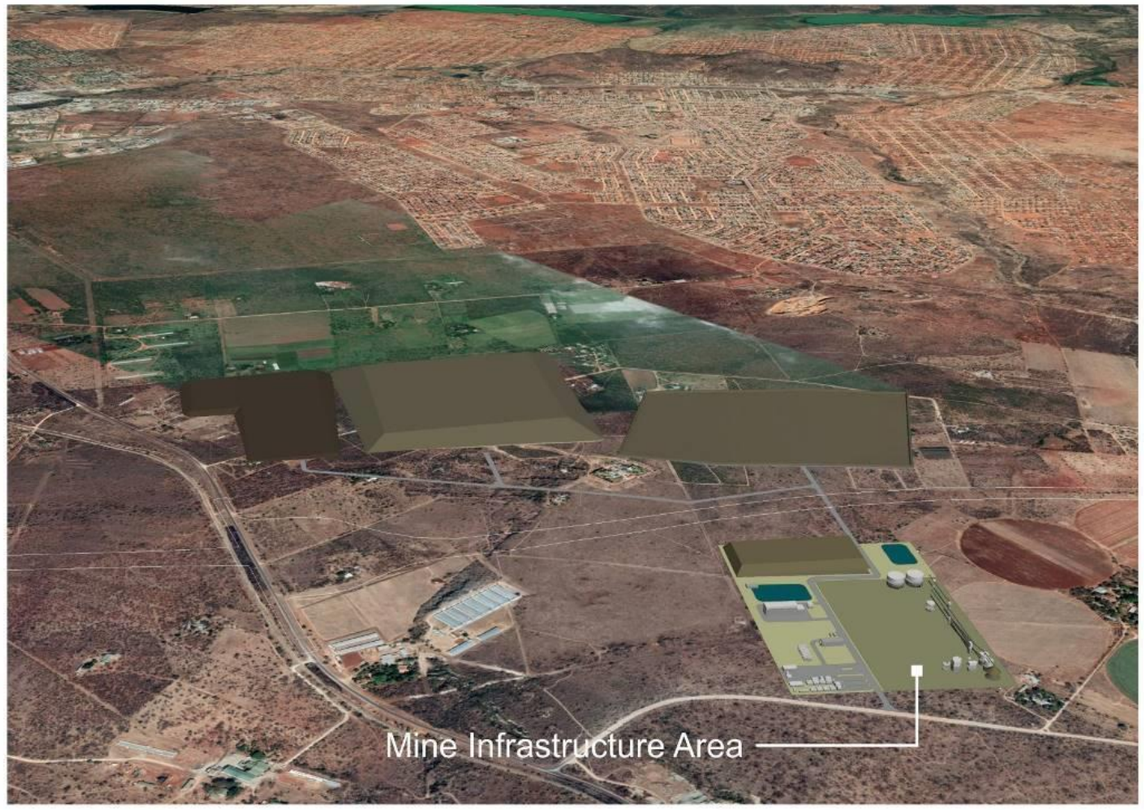


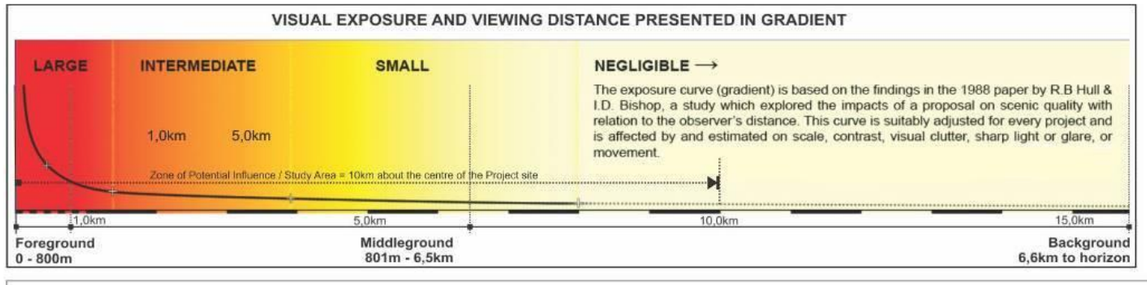
**Note:**
The accuracy of the viewshed analysis depends on the quality of the input digital surface model (DSM). Readily available digital contours for the area are limited to 20m contours. We have interpolated these down to 1m intervals to get better accuracy. However, these types of viewshed investigations (using readily available GIS software and terrain contours only) are limited in their accuracy due to their inability to incorporate vegetation information. On-site observations indicated that most views from within the study area would actually be blocked to the mine. And that no unobstructed views would be available, even within the middle to foreground of views.

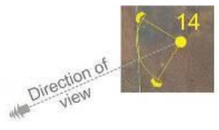
**The viewshed analyses have therefore been included only as a comparative analysis between the 'approved' layout and the proposed 'amended' layout, which is the focus of this VIA.**


**Figure 88: Viewshed Analyses – Open Pit (GYLA, 2020)**



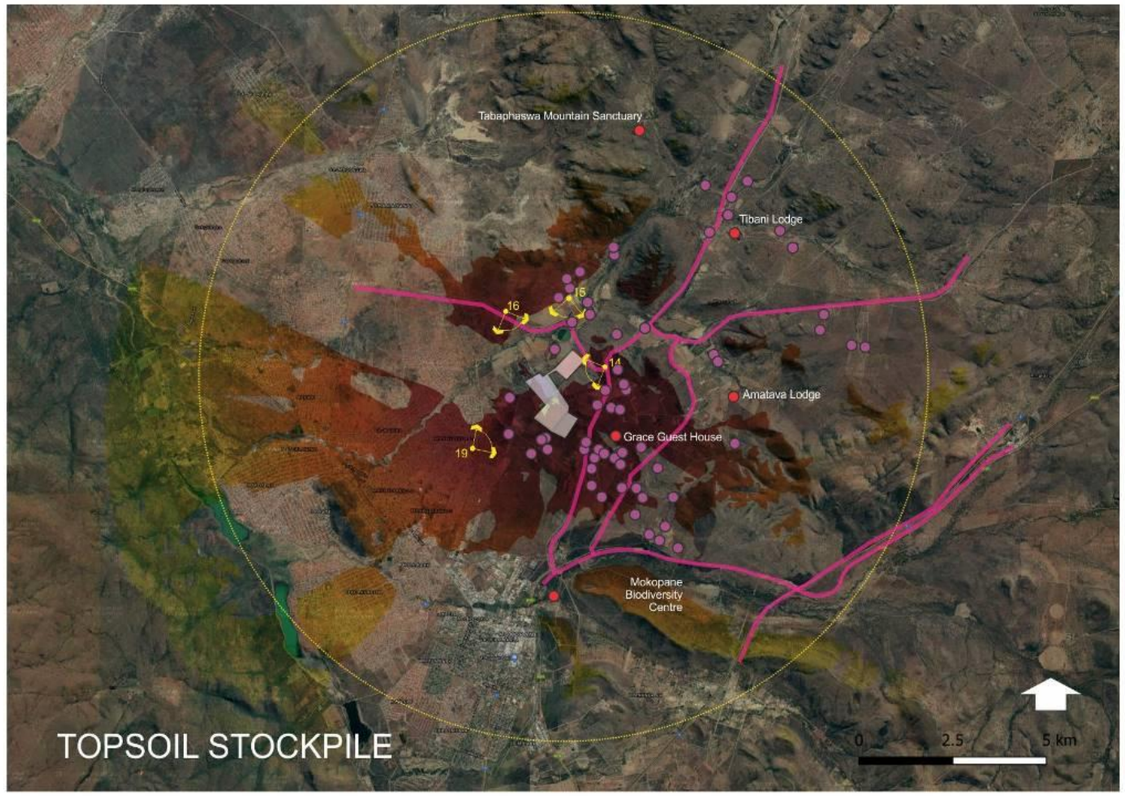



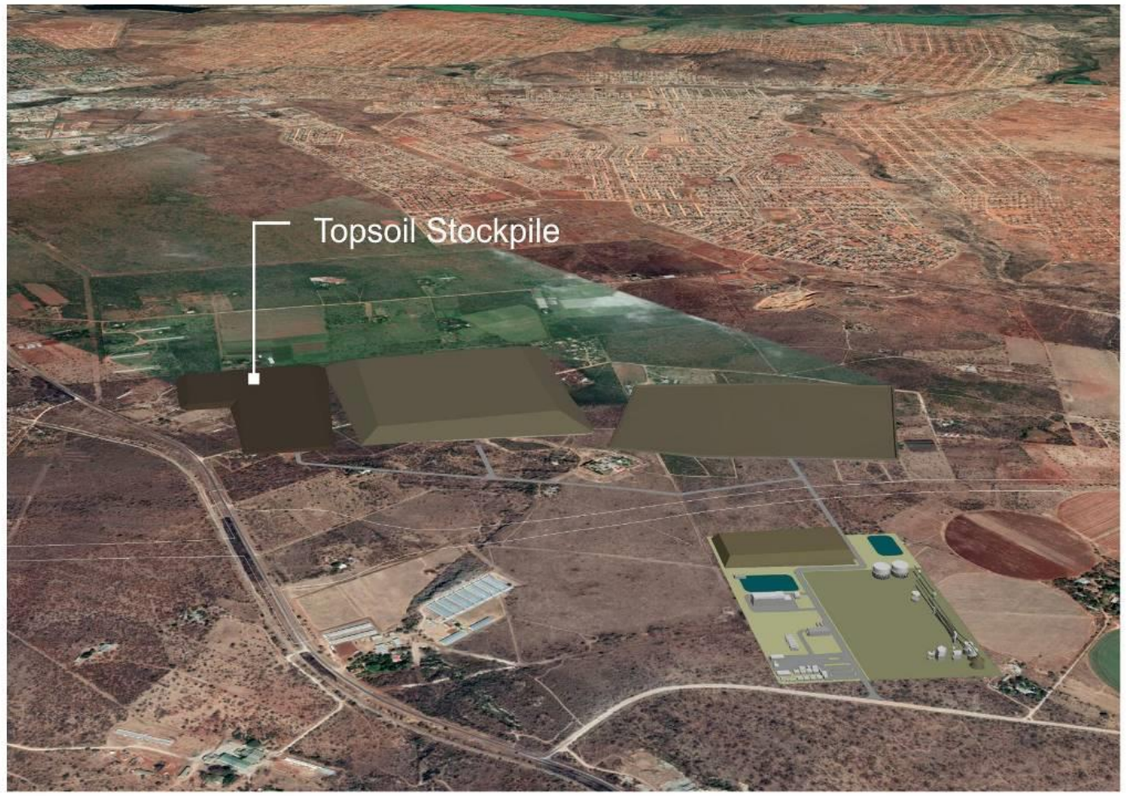

View Points - Simulation

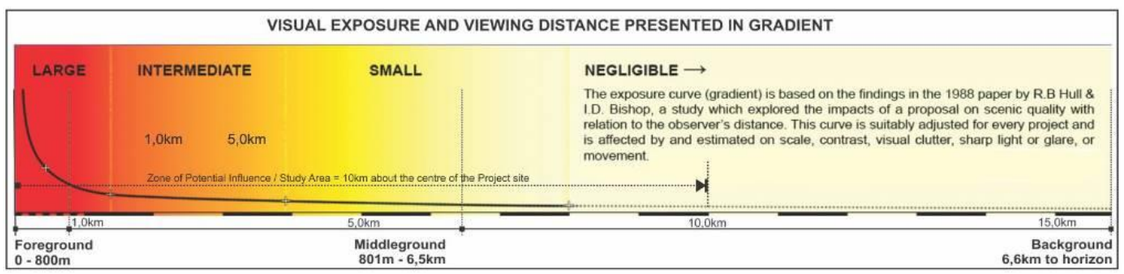
**Note:**
The accuracy of the viewshed analysis depends on the quality of the input digital surface model (DSM). Readily available digital contours for the area are limited to 20m contours. We have interpolated these down to 1m intervals to get better accuracy. However, these types of viewshed investigations (using readily available GIS software and terrain contours only) are limited in their accuracy due to their inability to incorporate vegetation information. On-site observations indicated that most views from within the study area would actually be blocked to the mine. And that no unobstructed views would be available, even within the middle to foreground of views.

**The viewshed analyses have therefore been included only as a comparative analysis between the 'approved' layout and the proposed 'amended' layout, which is the focus of this VIA.**


**Figure 89: Viewshed Analyses – Mine Infrastructure Area (GYLA, 2020)**






**Note:**
The accuracy of the viewshed analysis depends on the quality of the input digital surface model (DSM). Readily available digital contours for the area are limited to 20m contours. We have interpolated these down to 1m intervals to get better accuracy. However, these types of viewshed investigations (using readily available GIS software and terrain contours only) are limited in their accuracy due to their inability to incorporate vegetation information. On-site observations indicated that most views from within the study area would actually be blocked to the mine. And that no unobstructed views would be available, even within the middle to foreground of views.

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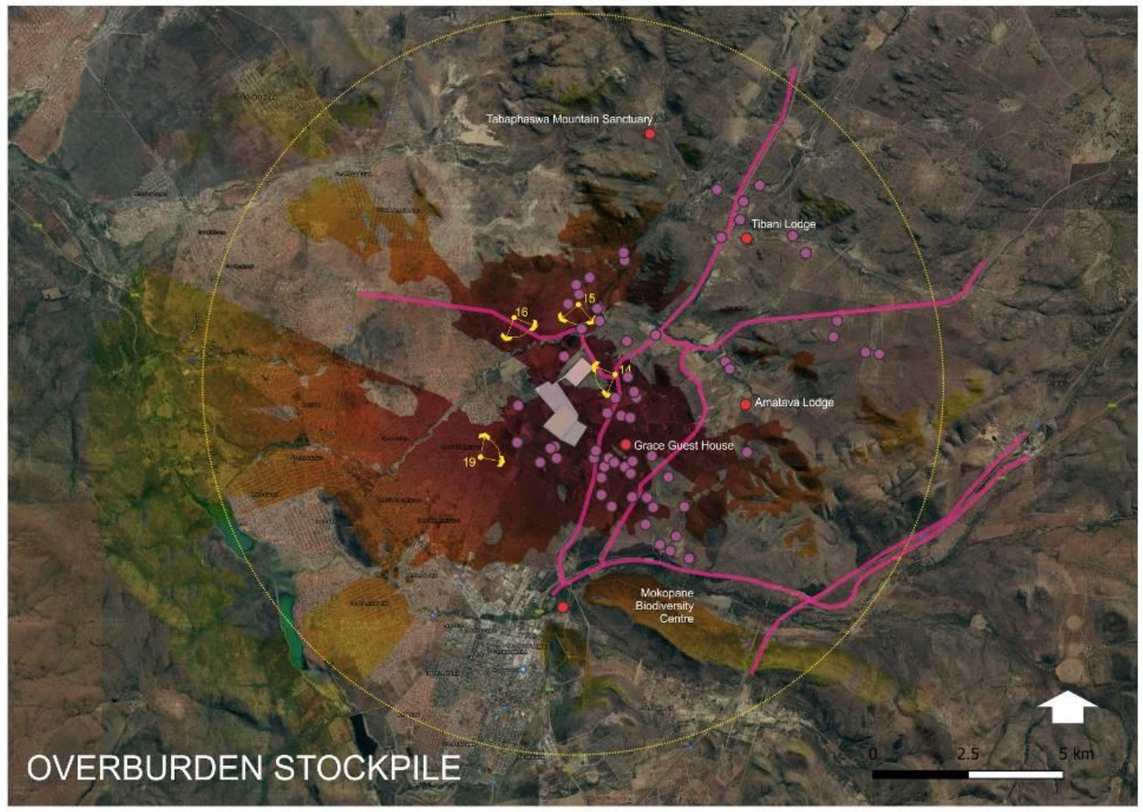
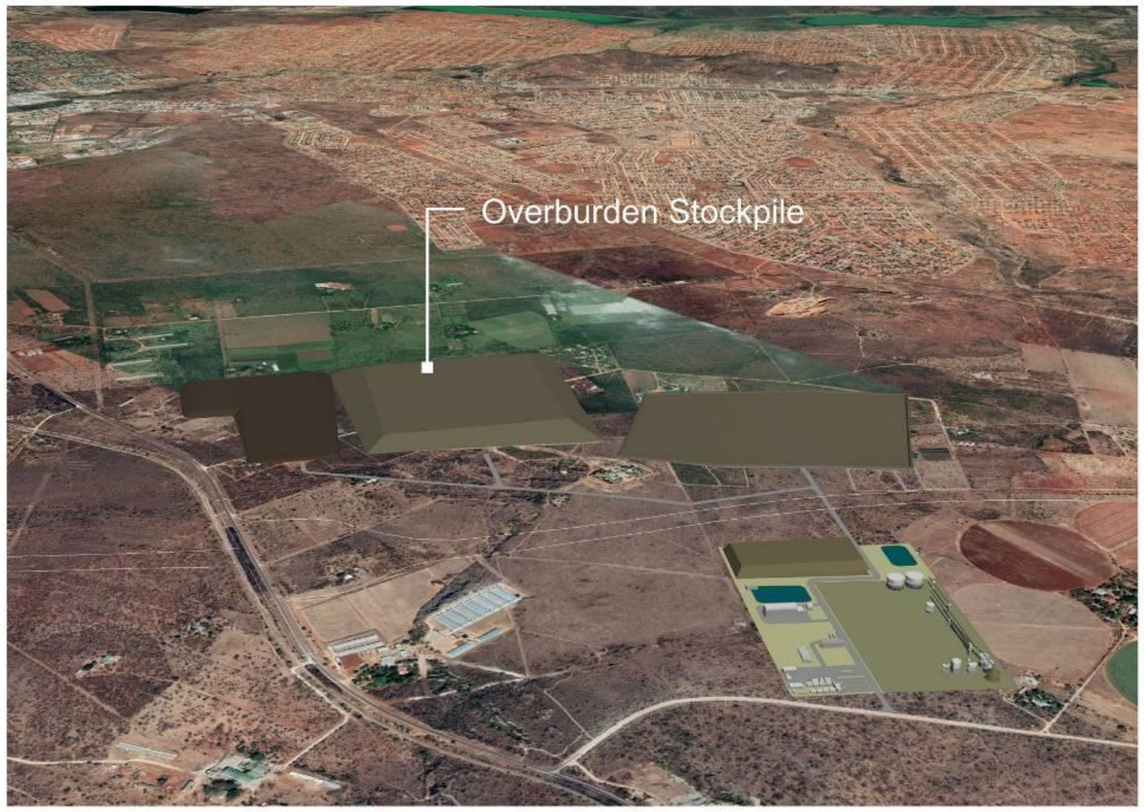
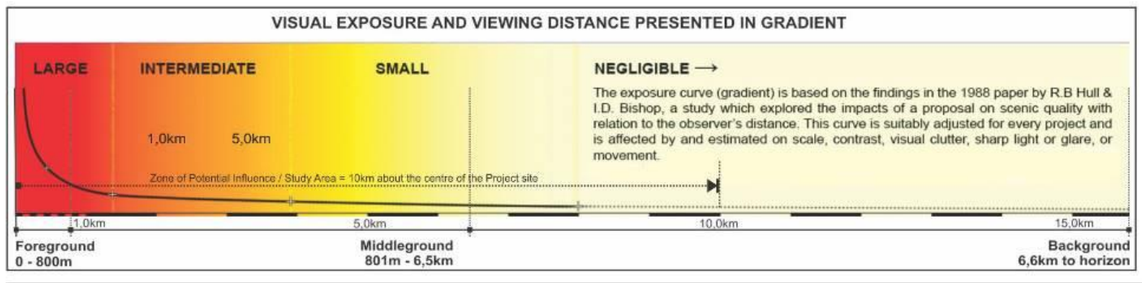
**Figure 90: Viewshed Analyses – Topsoil Stockpile (GYLA, 2020)**






**Note:**
The accuracy of the viewshed analysis depends on the quality of the input digital surface model (DSM). Readily available digital contours for the area are limited to 20m contours. We have interpolated these down to 1m intervals to get better accuracy. However, these types of viewshed investigations (using readily available GIS software and terrain contours only) are limited in their accuracy due to their inability to incorporate vegetation information. On-site observations indicated that most views from within the study area would actually be blocked to the mine. And that no unobstructed views would be available, even within the middle to foreground of views.

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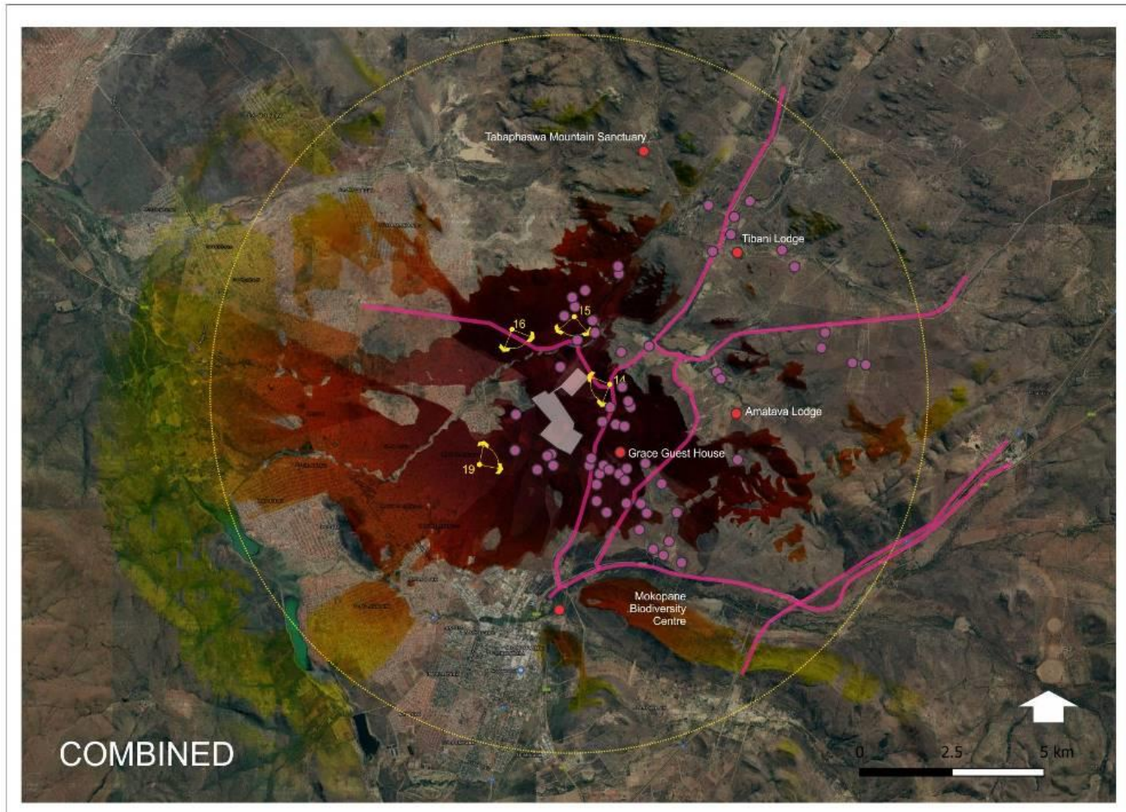
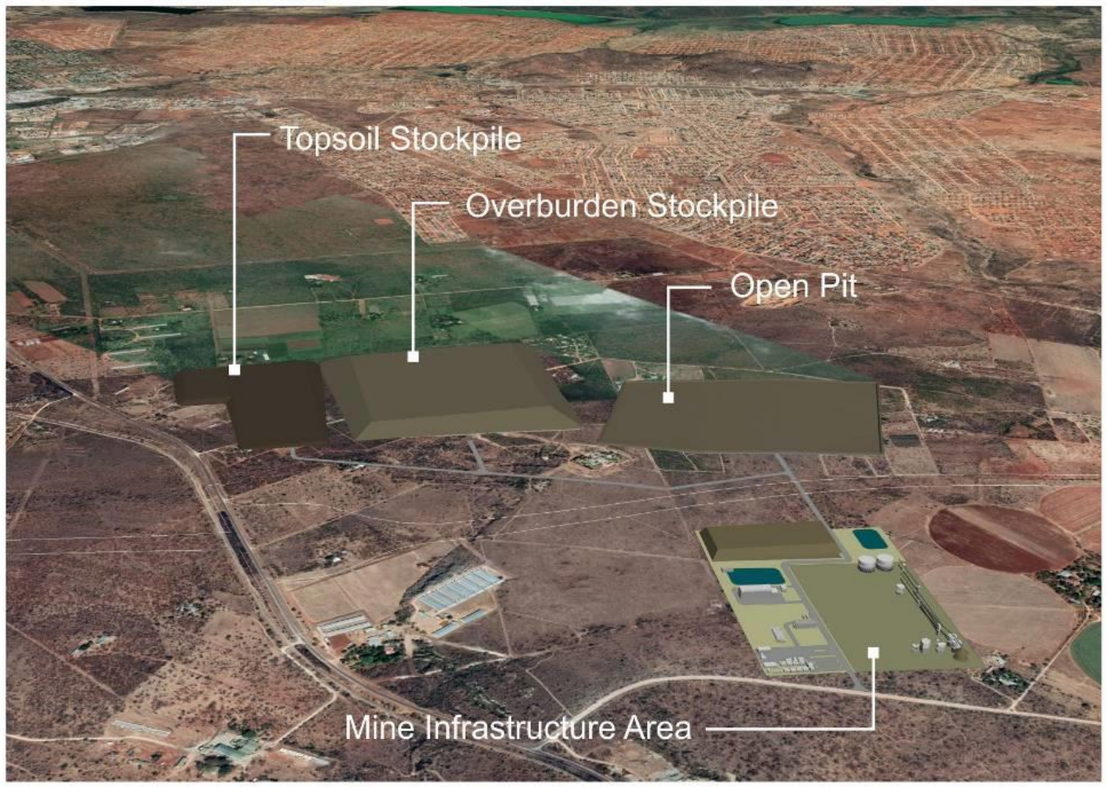
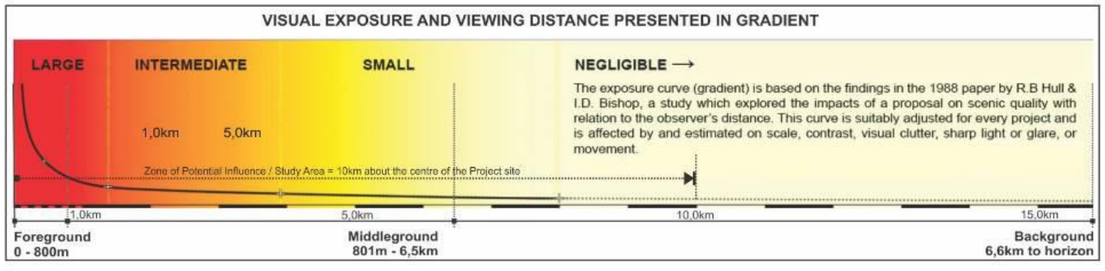
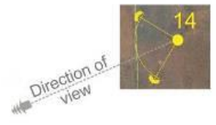
**Figure 91: Viewshed Analyses – Overburden Facility (GYLA, 2020)**




**Note:**
The accuracy of the viewshed analysis depends on the quality of the input digital surface model (DSM). Readily available digital contours for the area are limited to 20m contours. We have interpolated these down to 1m intervals to get better accuracy. However, these types of viewshed investigations (using readily available GIS software and terrain contours only) are limited in their accuracy due to their inability to incorporate vegetation information. On-site observations indicated that most views from within the study area would actually be blocked to the mine. And that no unobstructed views would be available, even within the middle to foreground of views.

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**Figure 92: Viewshed Analyses – All mining activities (GYLA, 2020)**


**Figure 93: Landscape Character: Simulation View 14 (GYLA, 2020)**

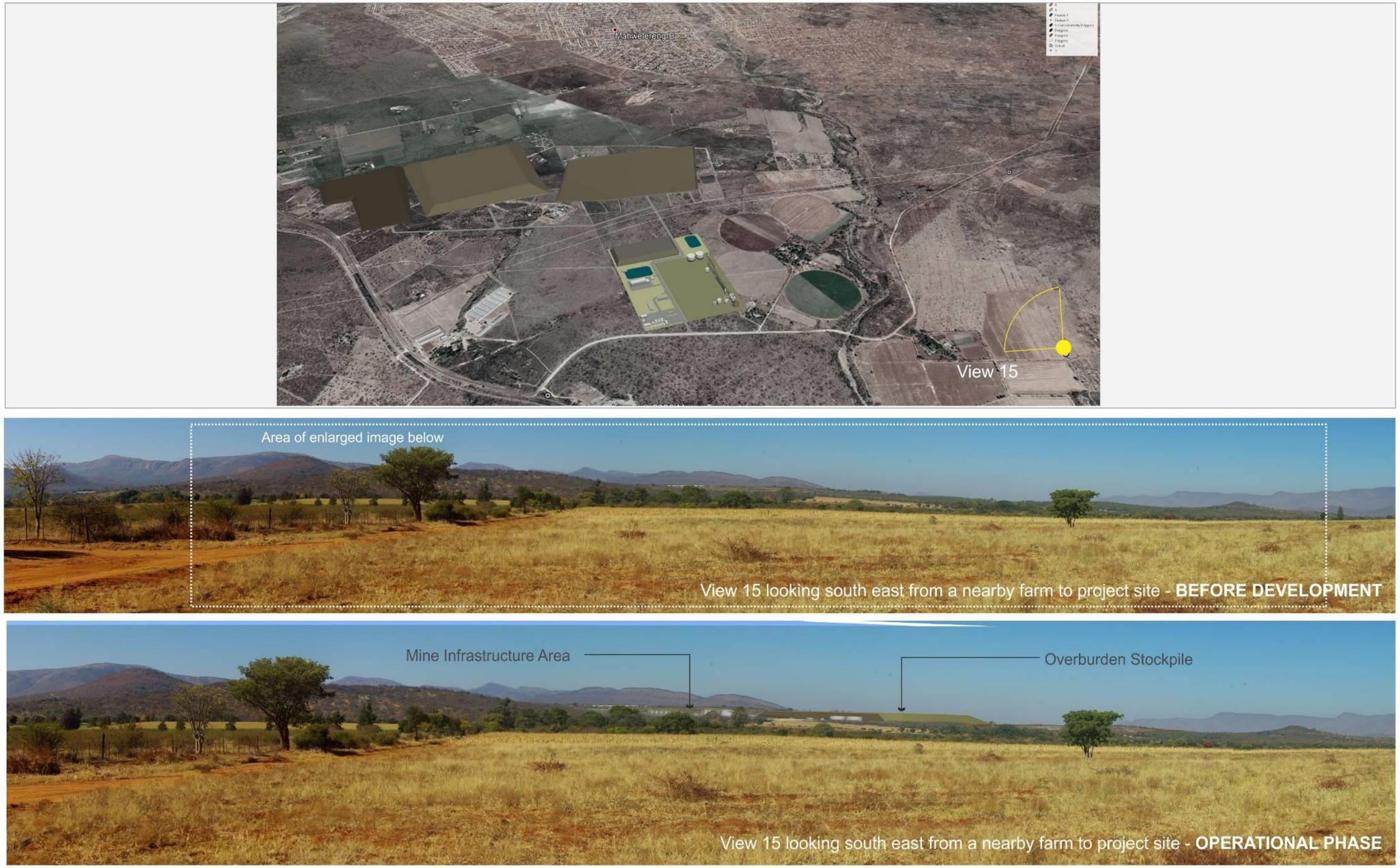


**Figure 94: Landscape Character: Simulation View 15 (GYLA, 2020)**


**Figure 95: Landscape Character: Simulation View 16 (GYLA, 2020)**

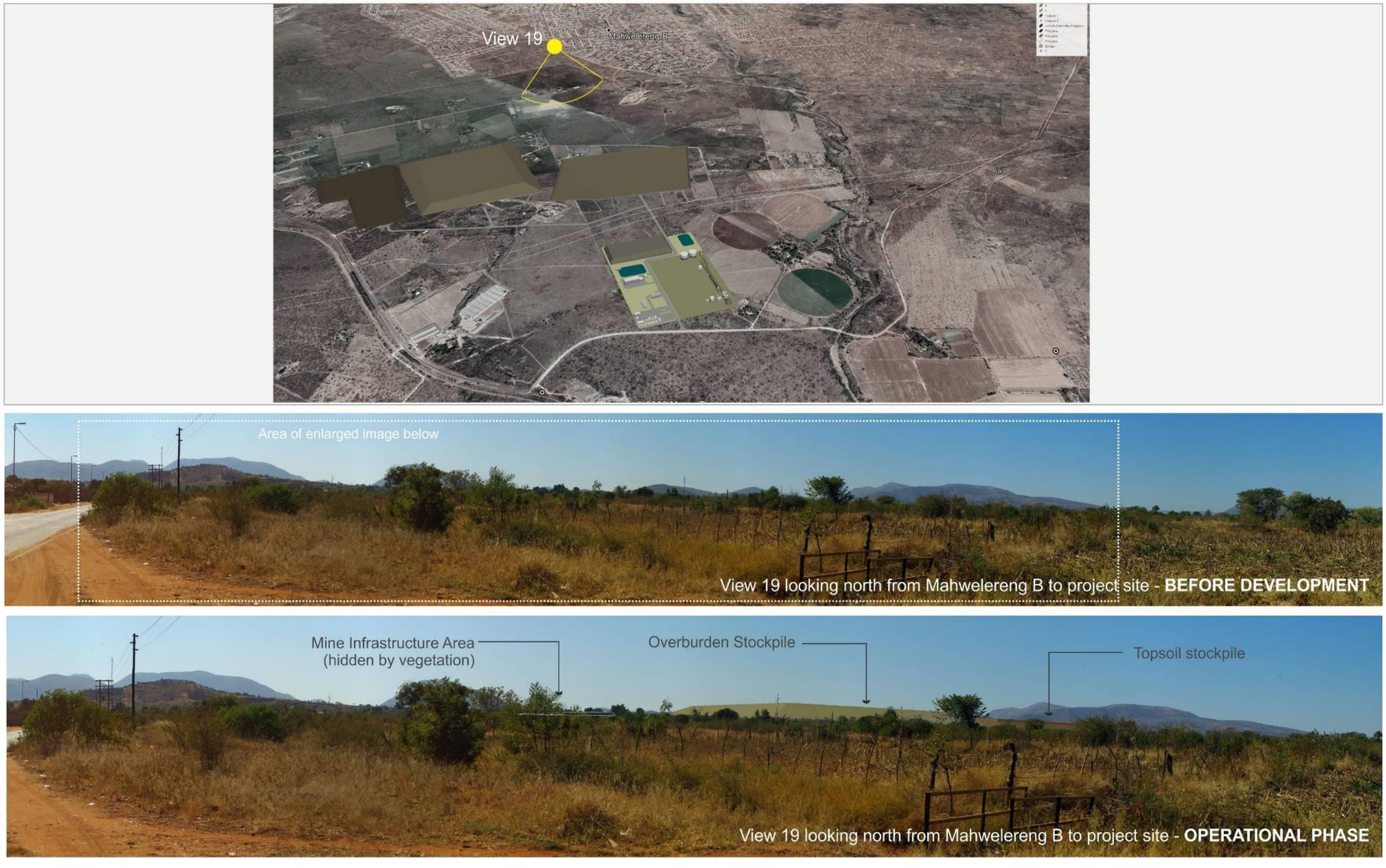


**Figure 96: Landscape Character: Simulation View 19 (GYLA, 2020)**

## 76. APPENDIX 10: PROJECTED NOISE RATING LEVELS

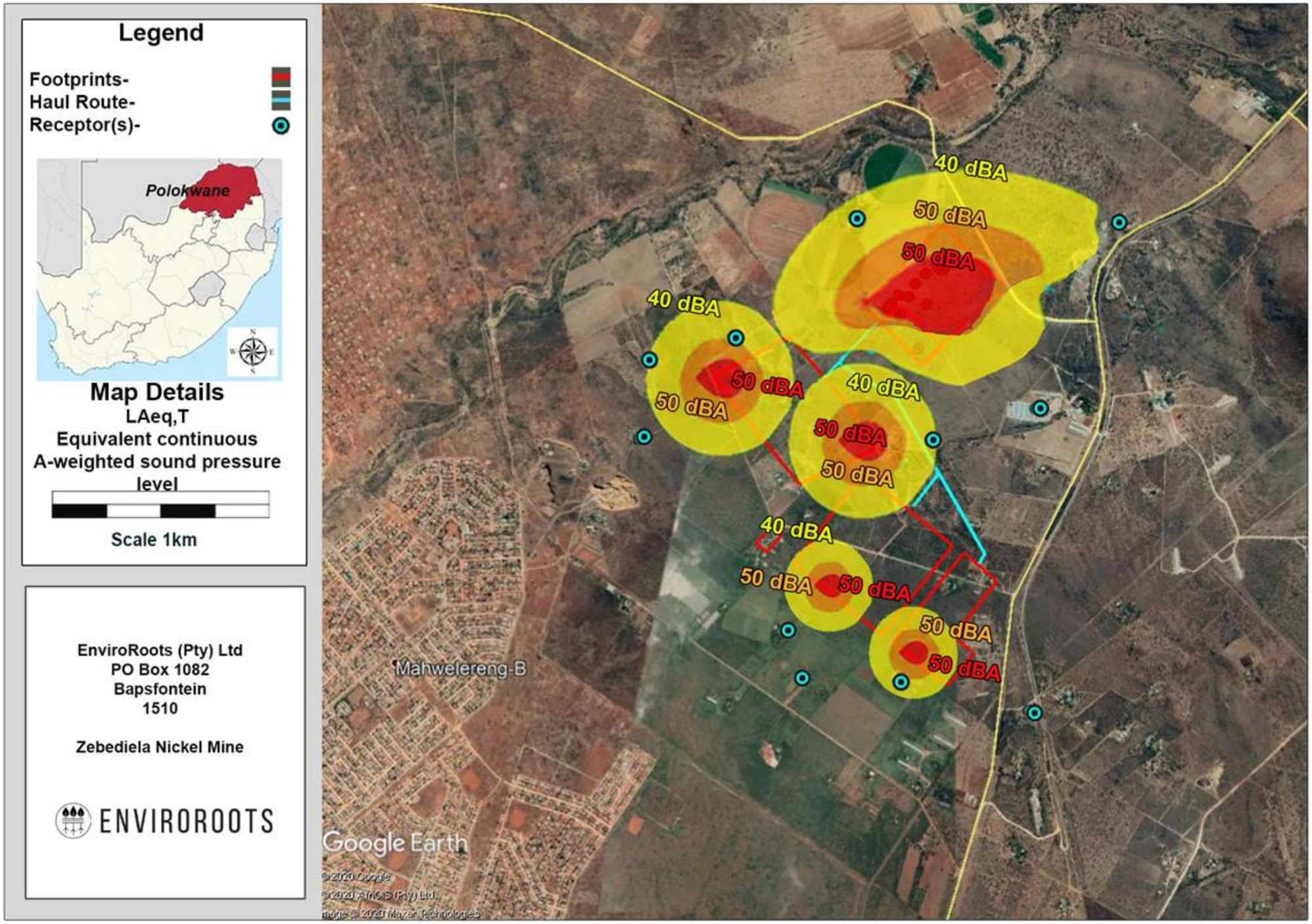


**Figure 97: Equivalent Continuous Rating Level - noise contours LReq,T – Operational Phase**

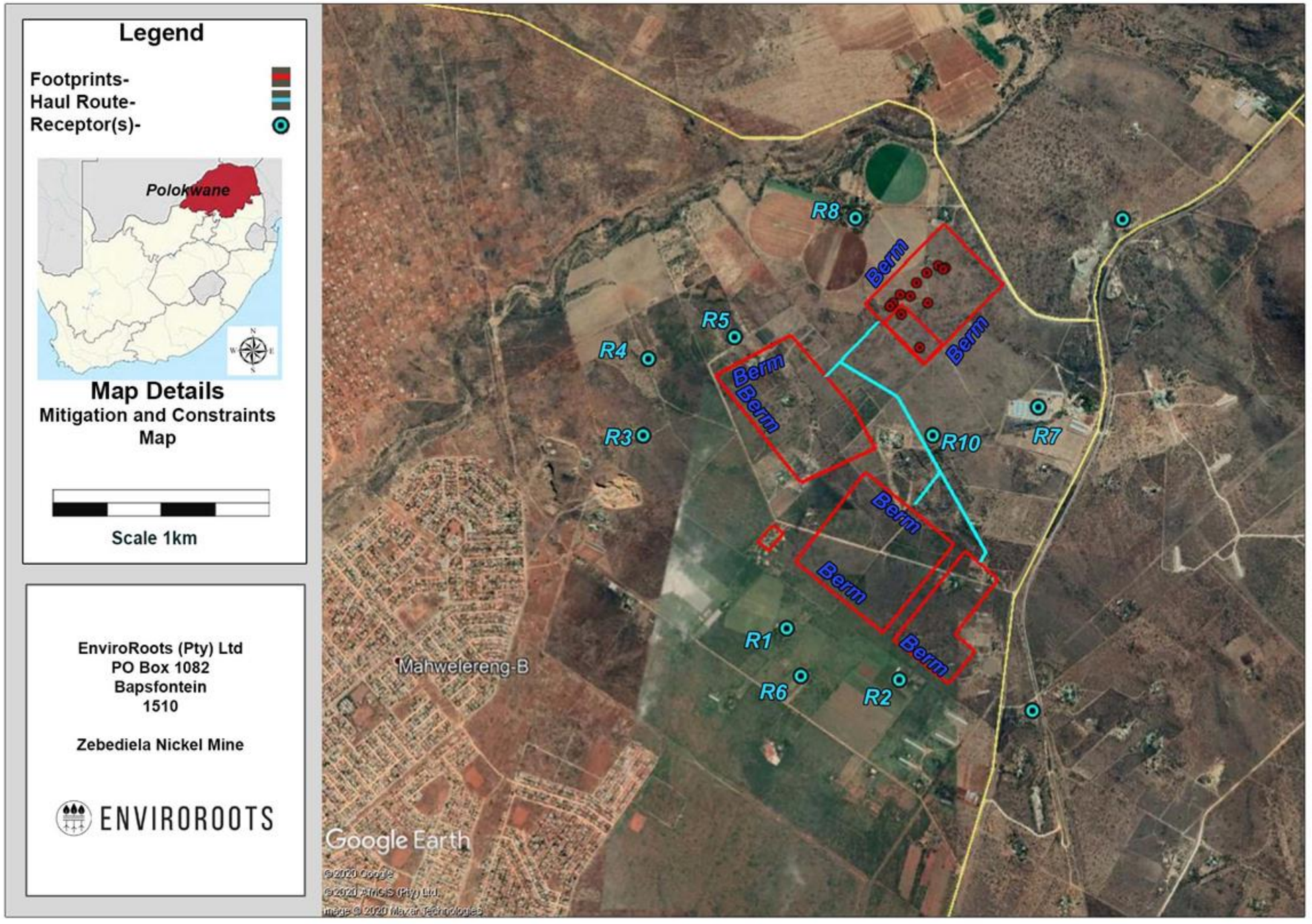


**Figure 98: Mitigation and constraints maps**

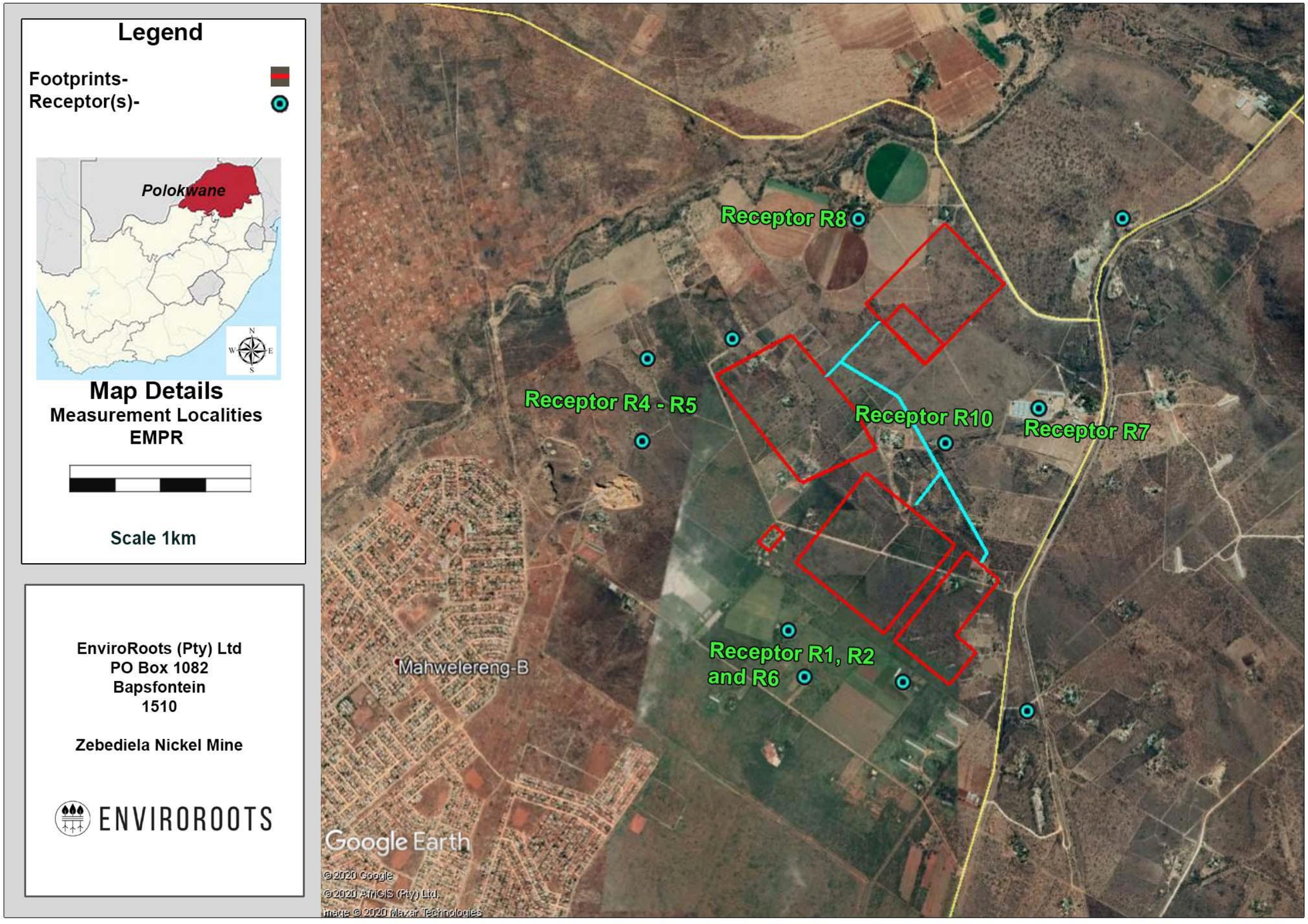


**Figure 99: Monitoring Localities and frequencies**

## 77. APPENDIX 11: ATMOSPHERIC DISPERSION MODELLING

Transporting the Run of Mine (ROM) from the pit to the crusher plant by means of haul trucks (scenario 1) and by means of conveyor (scenario 2) was assessed. The figures below however only reflect scenario 1 as this was the worst-case scenario with the larger impact. It should be noted that the modelled area of exceedance with regards to PM2.5 and PM10 is identical for both scenarios; however a reduction of the area of exceedance for total particulate deposition (dustfall) will be applicable with the use of conveyors (scenario 2).

Figure 106 and Figure 107 indicated the unmitigated and mitigated impact on poultry broilers in the project area due to the proposed project operations.

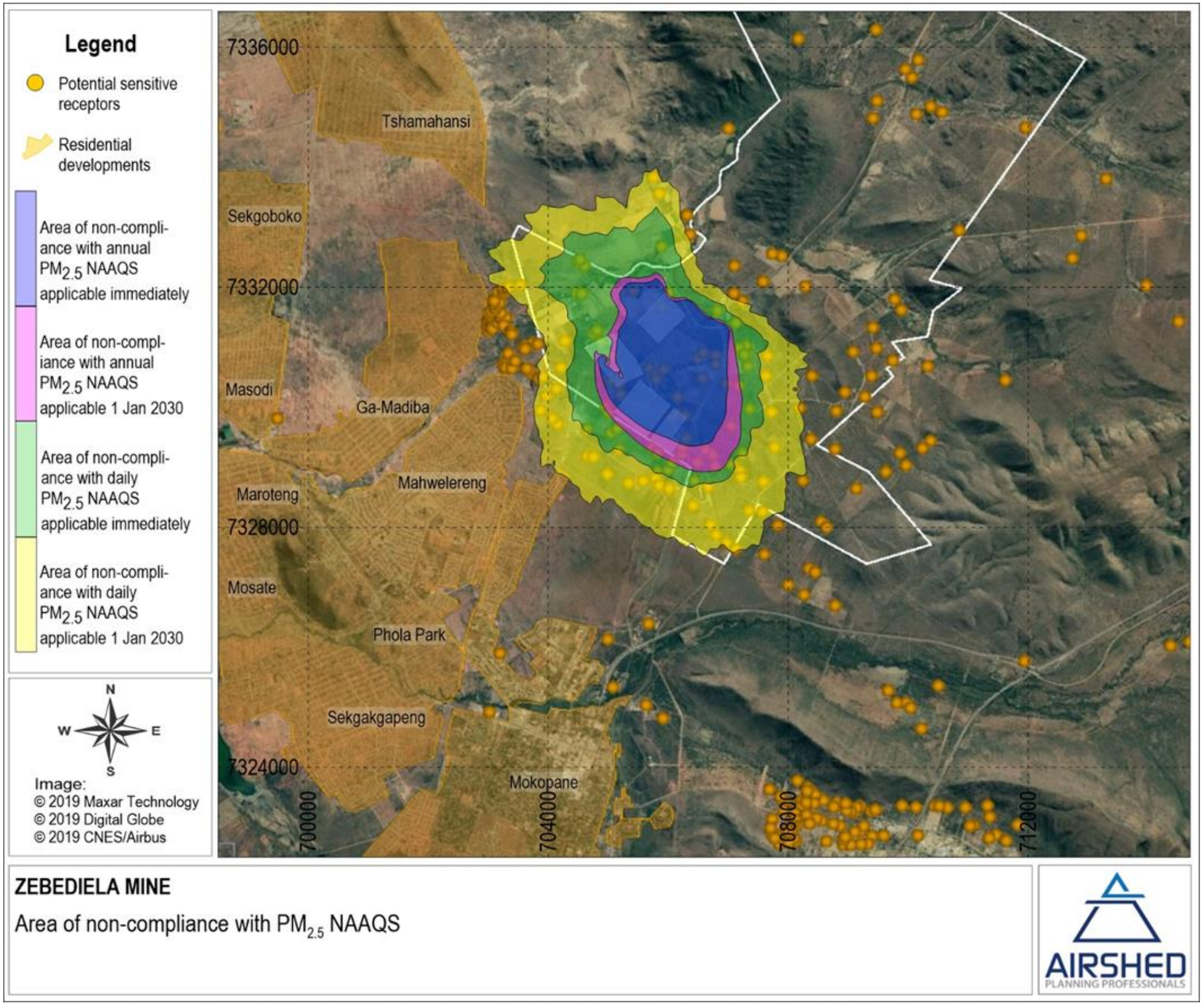


**Figure 100: Area of non-compliance of PM2.5 NAAQS due to routine unmitigated project operations (scenario: hauling of ROM from the pit to the crusher plant via haul trucks)**

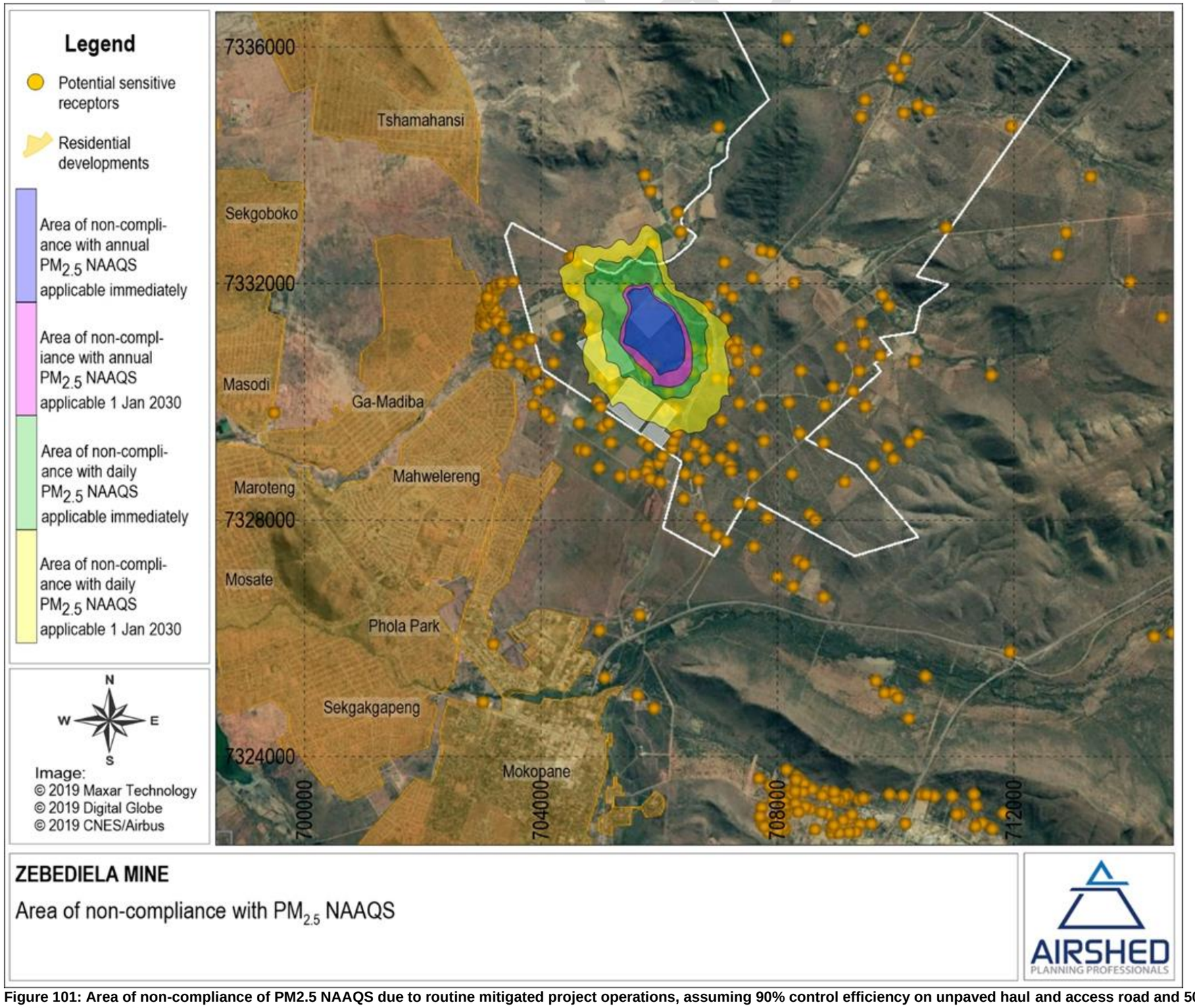


**Figure 101: Area of non-compliance of PM2.5 NAAQS due to routine mitigated project operations, assuming 90% control efficiency on unpaved haul and access road and 50% control efficiency on crushing activities (scenario: hauling of ROM from the pit to the crusher plant via haul trucks)**

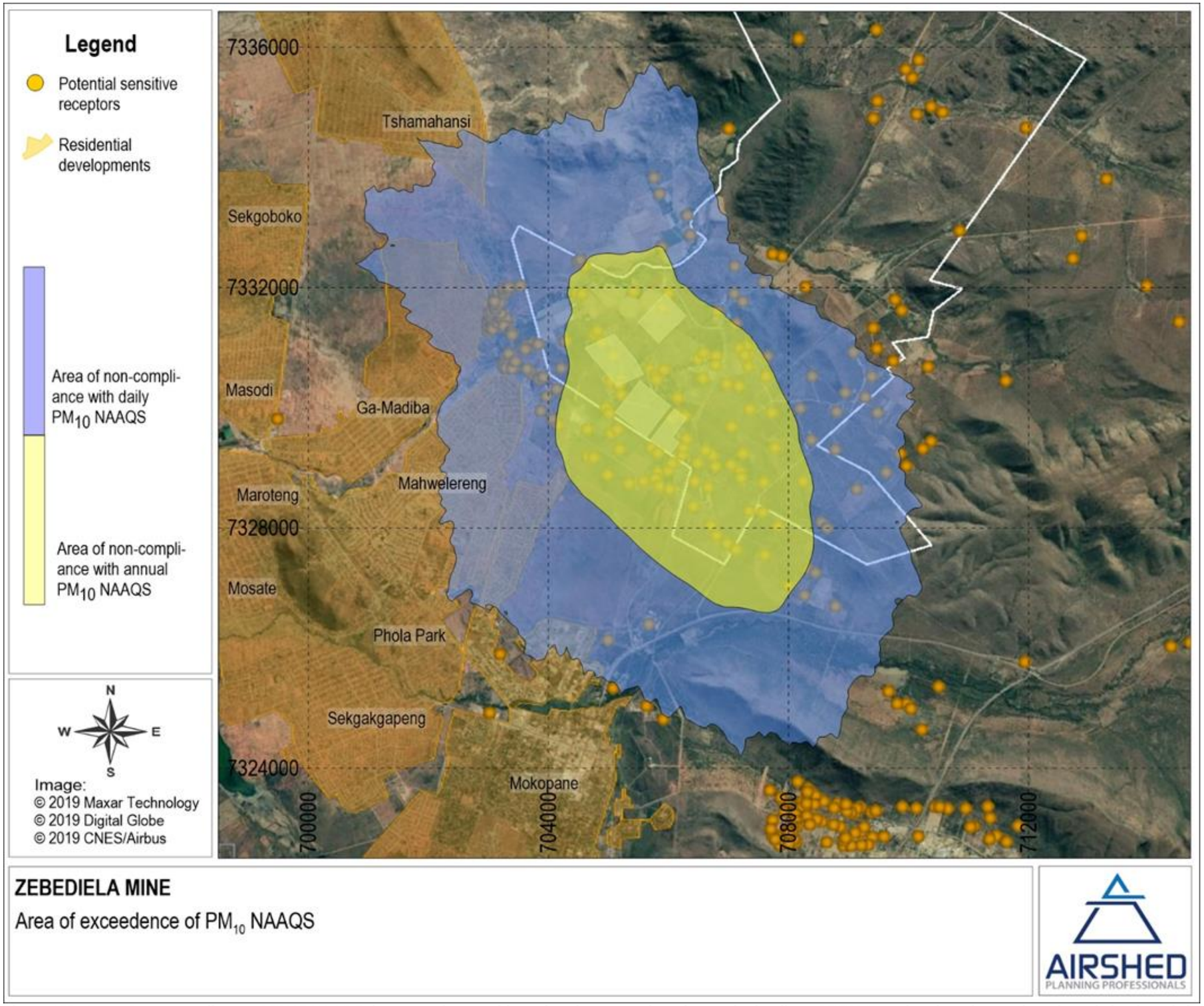


**Figure 102: Area of non-compliance of PM10 NAAQS due to routine unmitigated project operations (scenario: hauling of ROM from the pit to the crusher plant via haul trucks)**

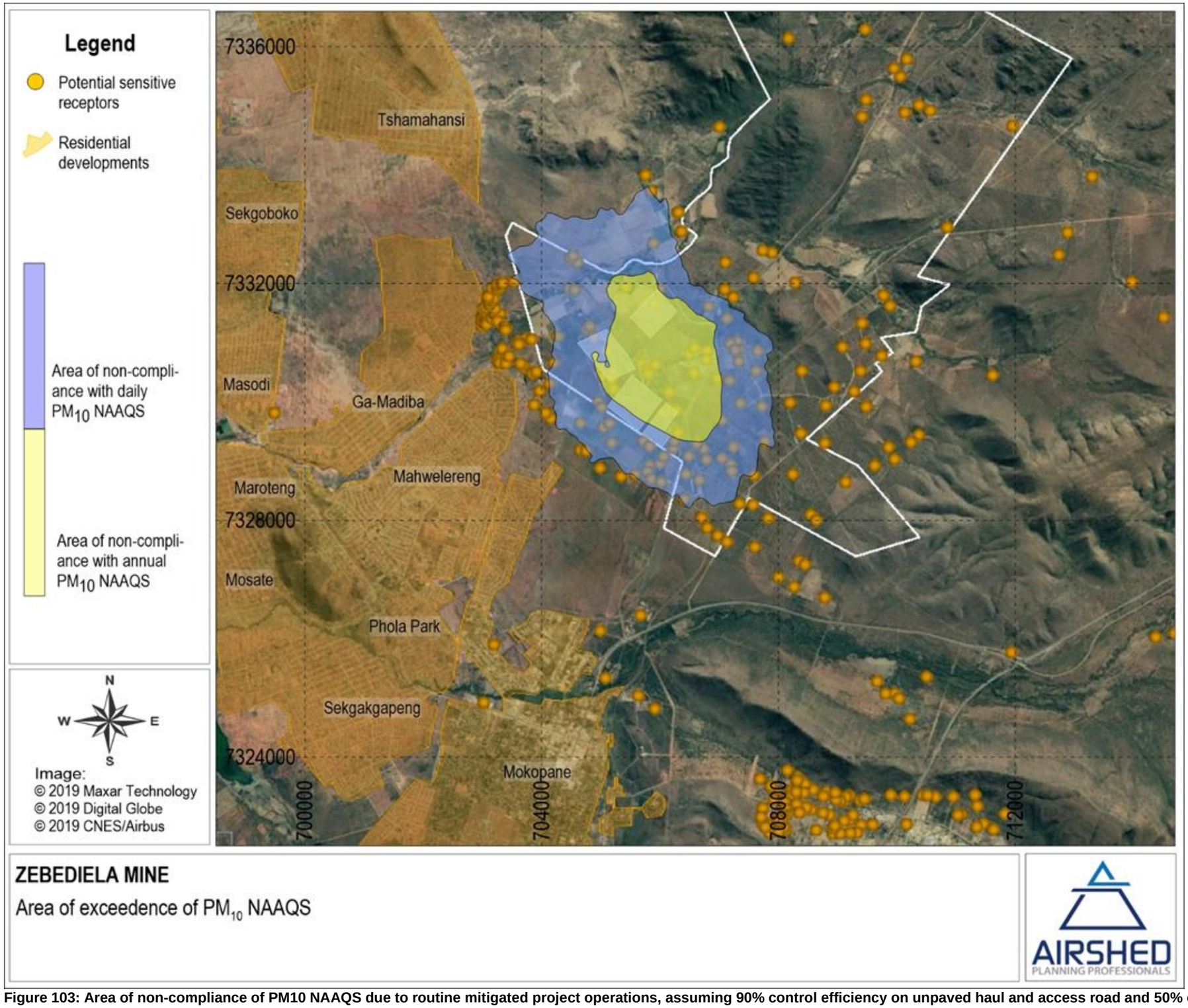


**Figure 103: Area of non-compliance of PM10 NAAQS due to routine mitigated project operations, assuming 90% control efficiency on unpaved haul and access road and 50% control efficiency on crushing activities (scenario: hauling of ROM from the pit to the crusher plant via haul trucks)**

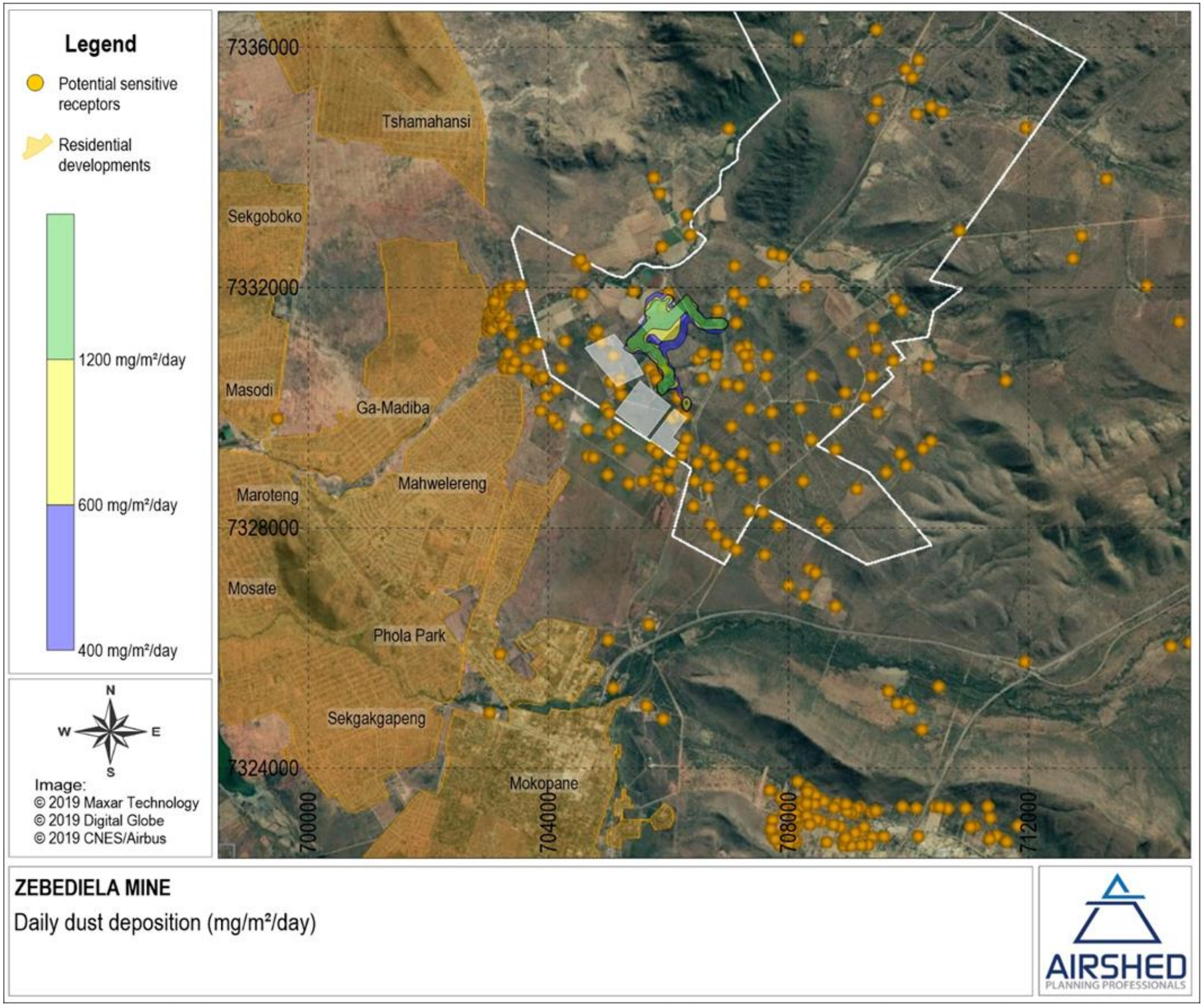


**Figure 104: Total particulate deposition due to routine unmitigated project operations (scenario: hauling of ROM from the pit to the crusher plant via haul trucks)**

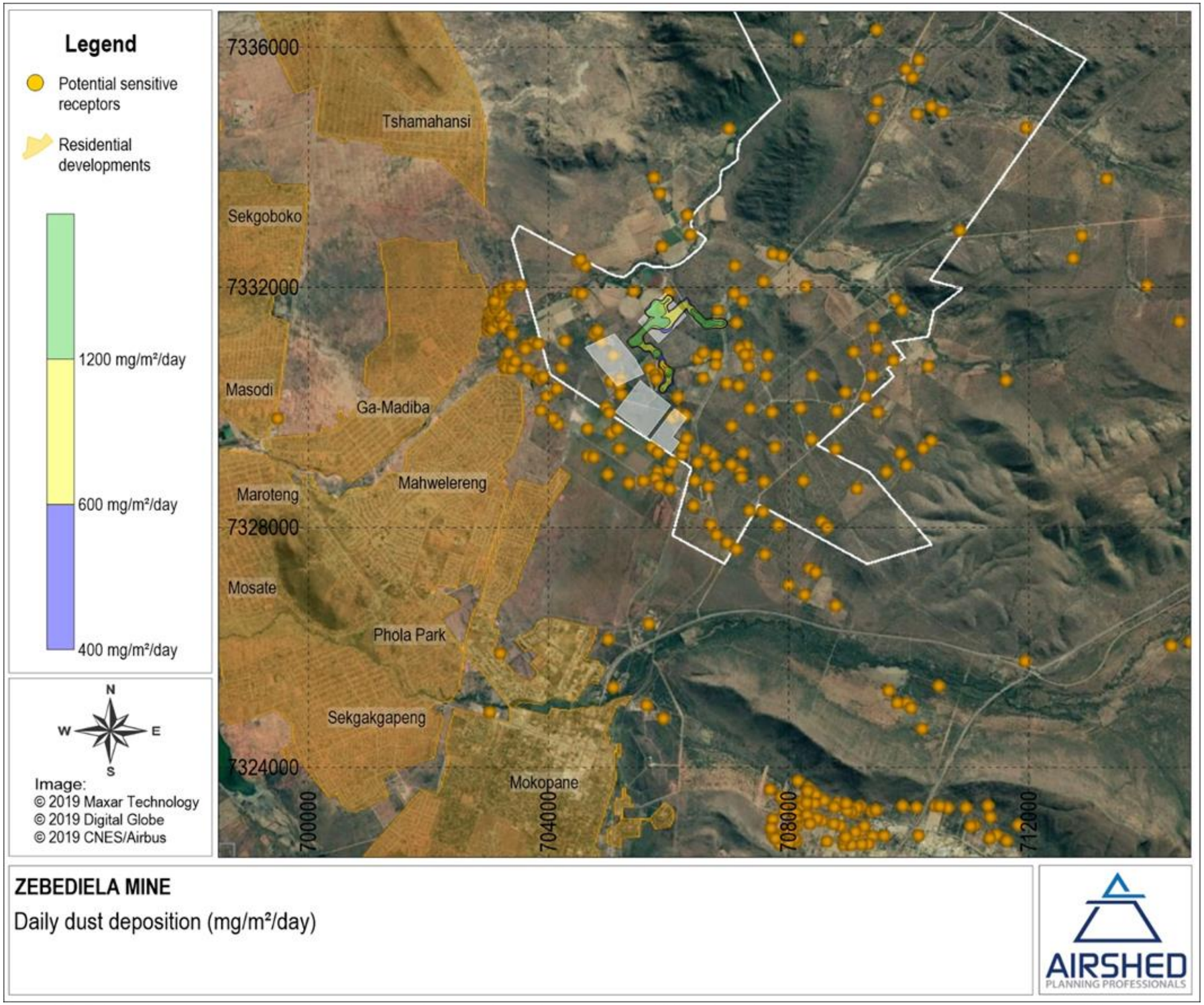


**Figure 105: Total particulate deposition due to routine mitigated project operations, assuming 90% control efficiency on unpaved haul and access road and 50% control efficiency on crushing activities (scenario: hauling of ROM from the pit to the crusher plant via haul trucks)**

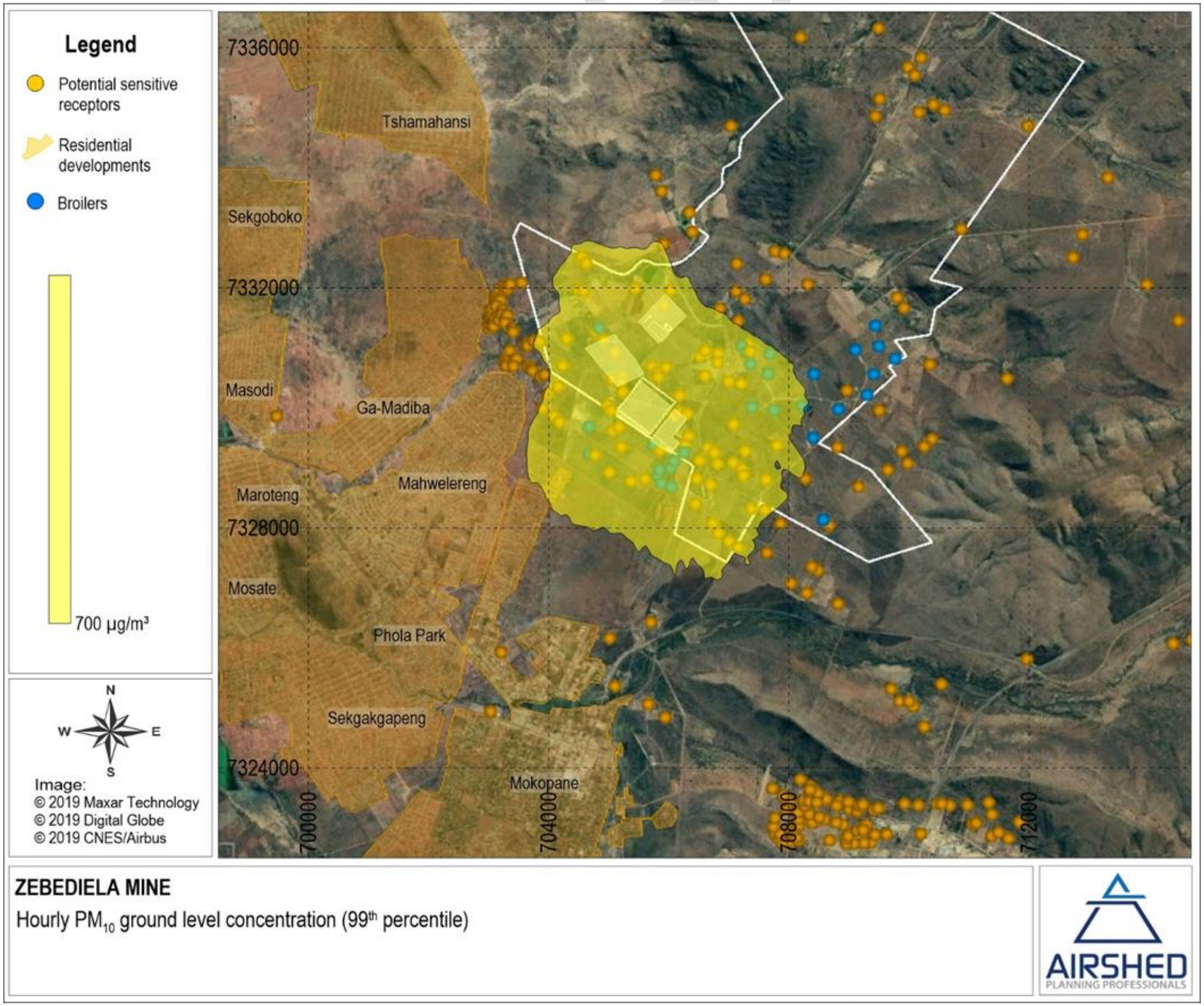


**Figure 106: Hourly PM10 ground level concentrations due to routine unmitigated project operations (scenario: hauling of ROM from the pit to the crusher plant via haul trucks)**

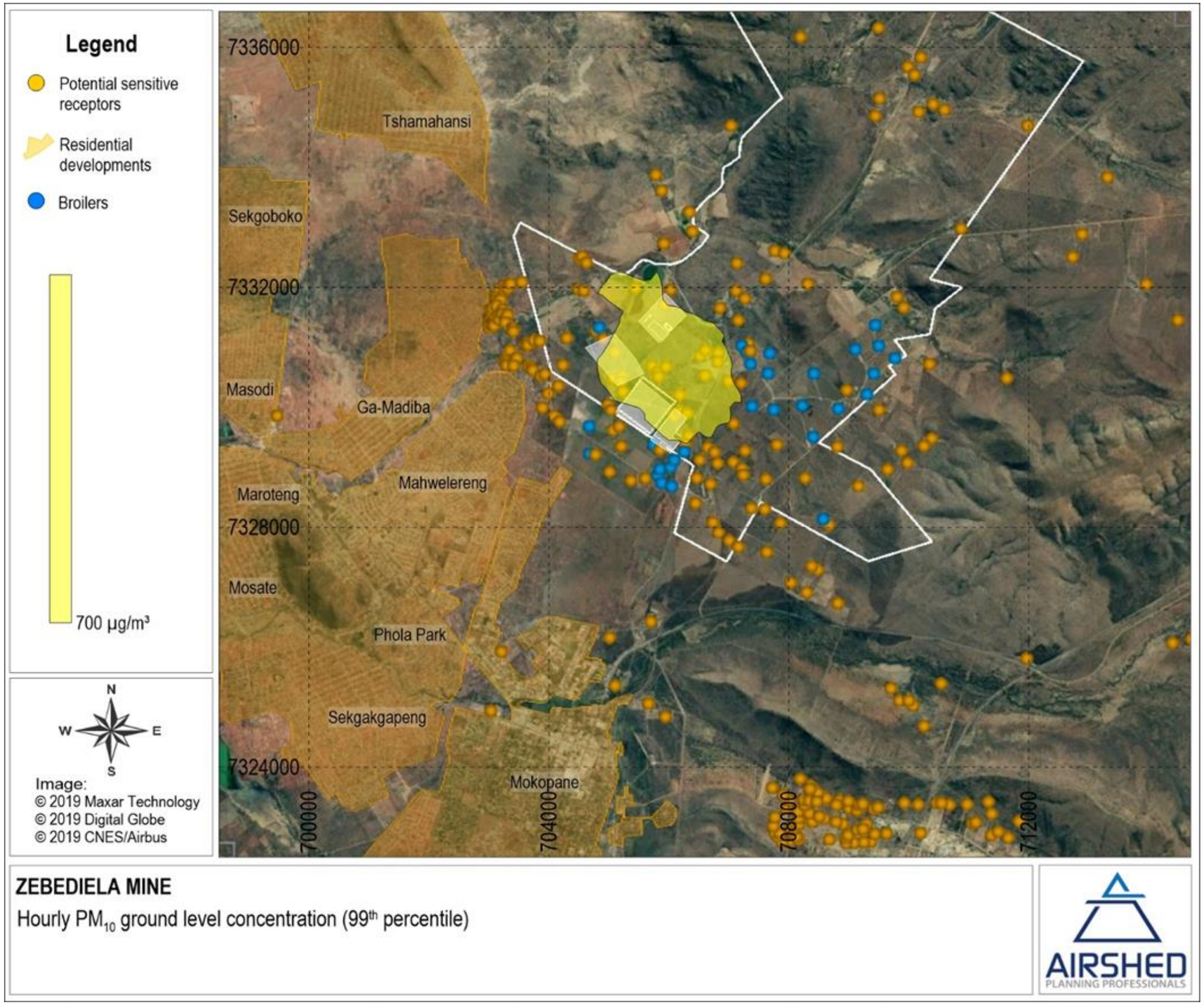


**Figure 107: Area of non-compliance of PM10 NAAQS due to routine mitigated project operations, assuming 90% control efficiency on unpaved haul and access road and 50% control efficiency on crushing activities (scenario: hauling of ROM from the pit to the crusher plant via haul trucks)**

## 78. APPENDIX 12: GROUNDWATER MODELLING MAPS

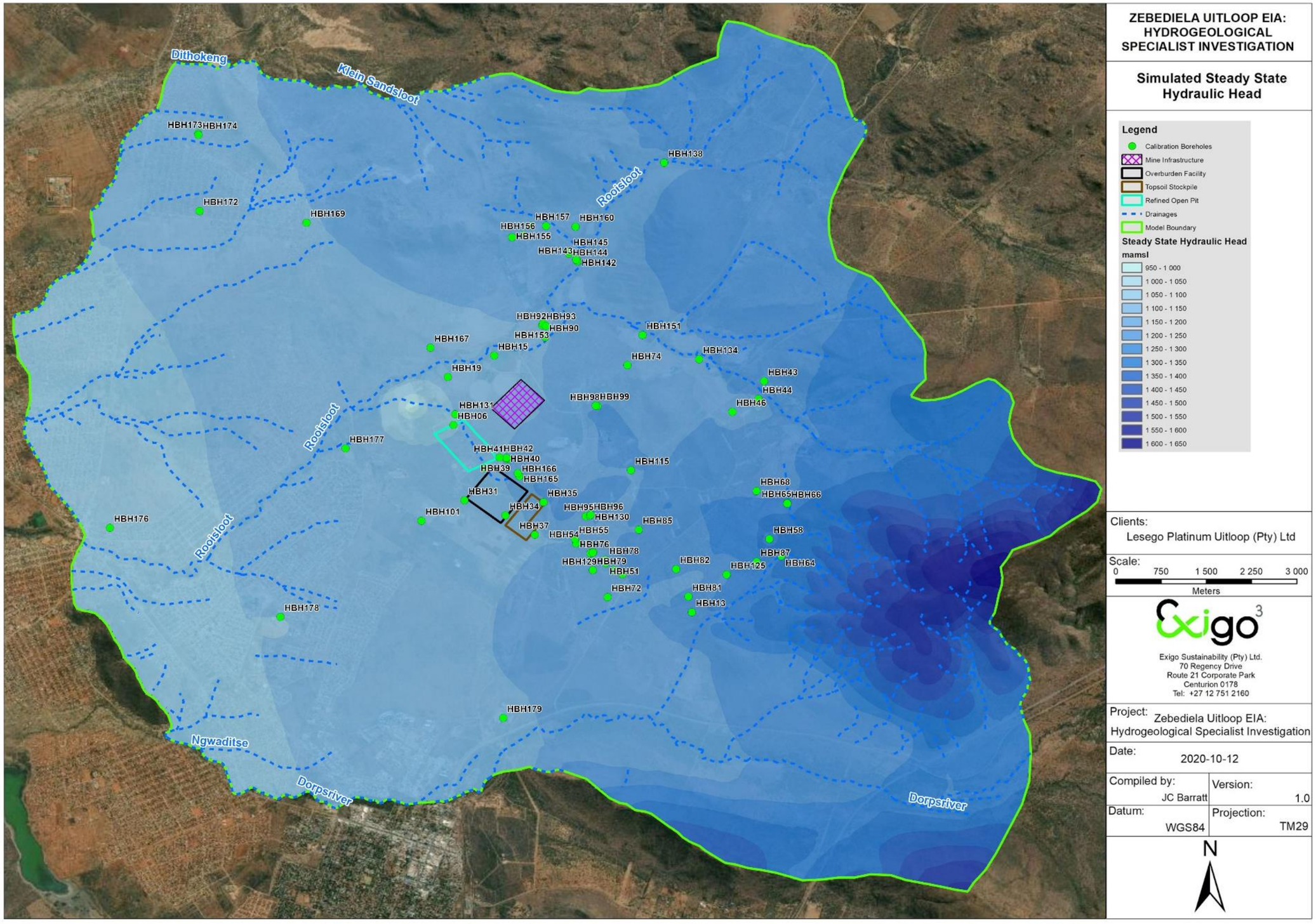


**Figure 108: Simulated steady-state hydraulic head**

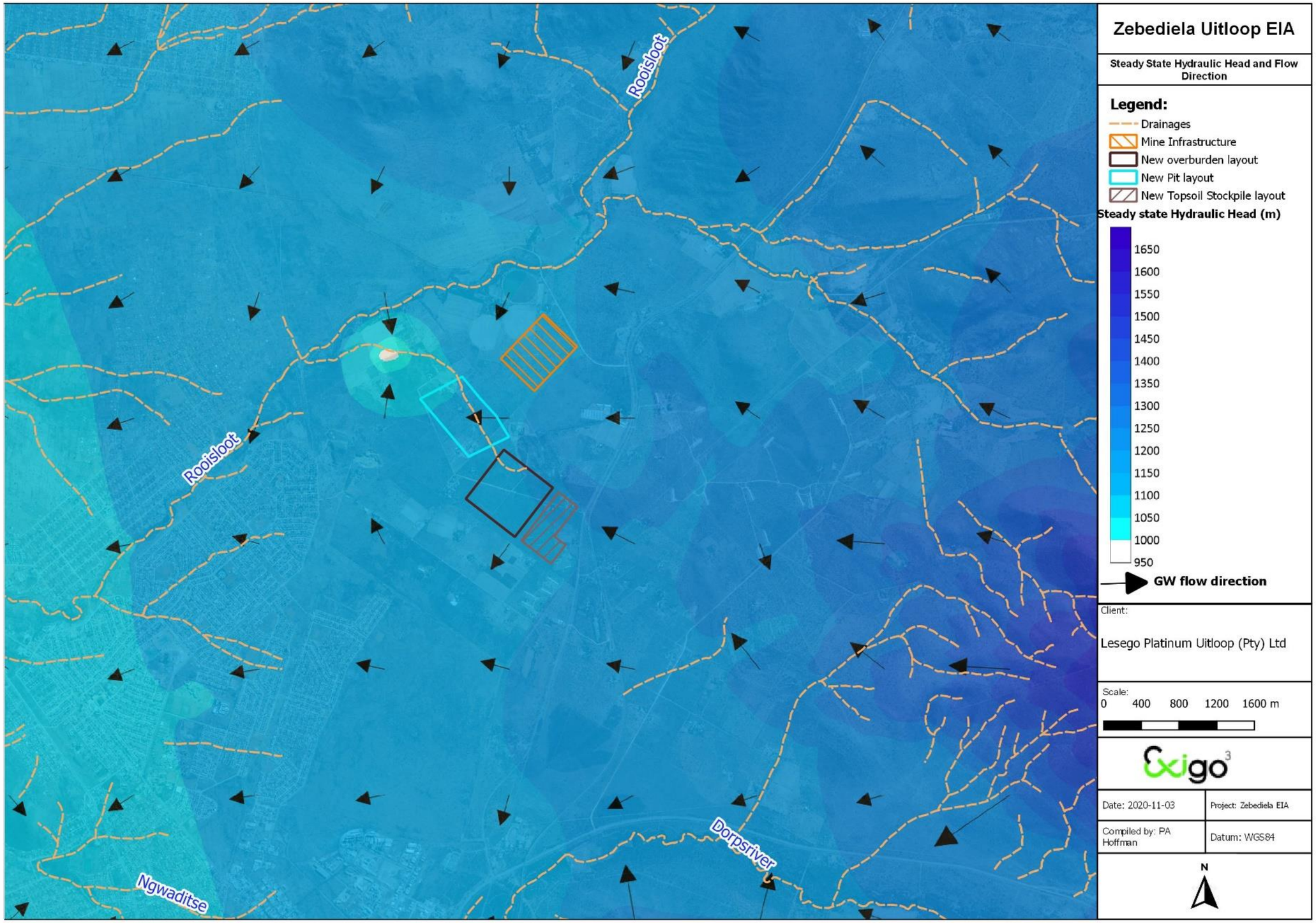


**Figure 109: Steady-state simulated hydraulic head and groundwater flow direction**

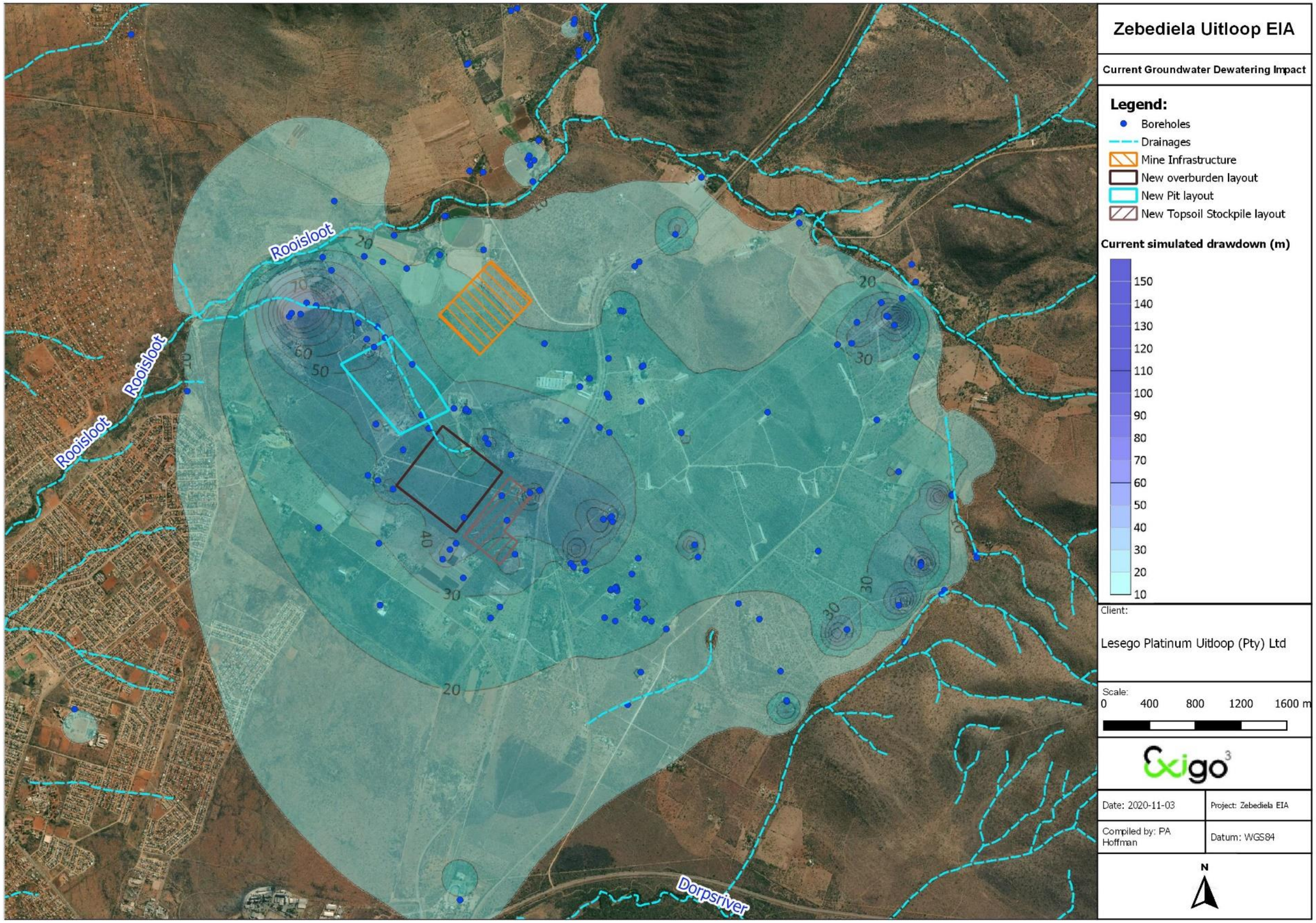


**Figure 110: Current 2020 simulated groundwater dewatering impact-Pre mining**

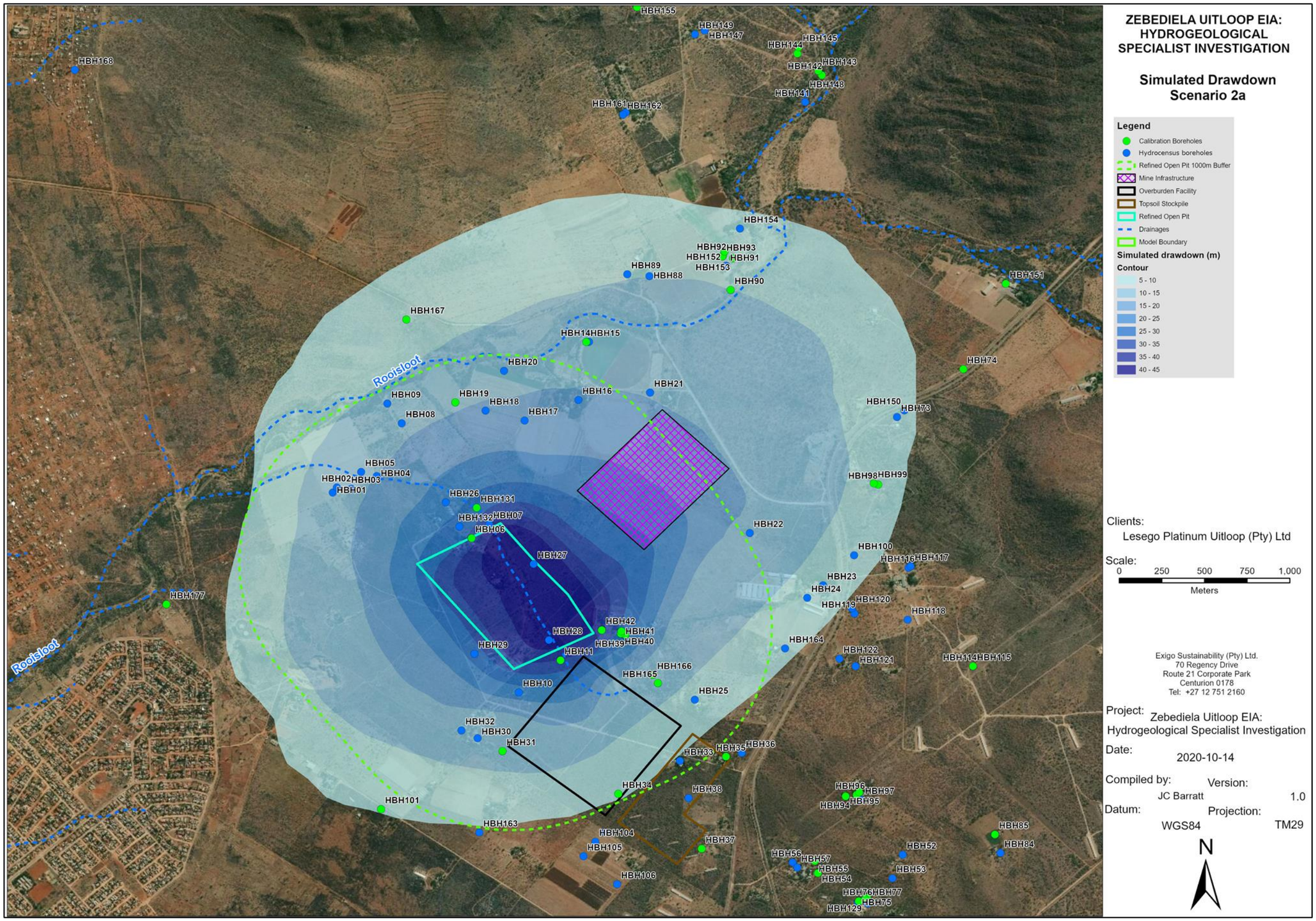


**Figure 111: Scenario 2a's simulated ROI during the LoM operational phase**

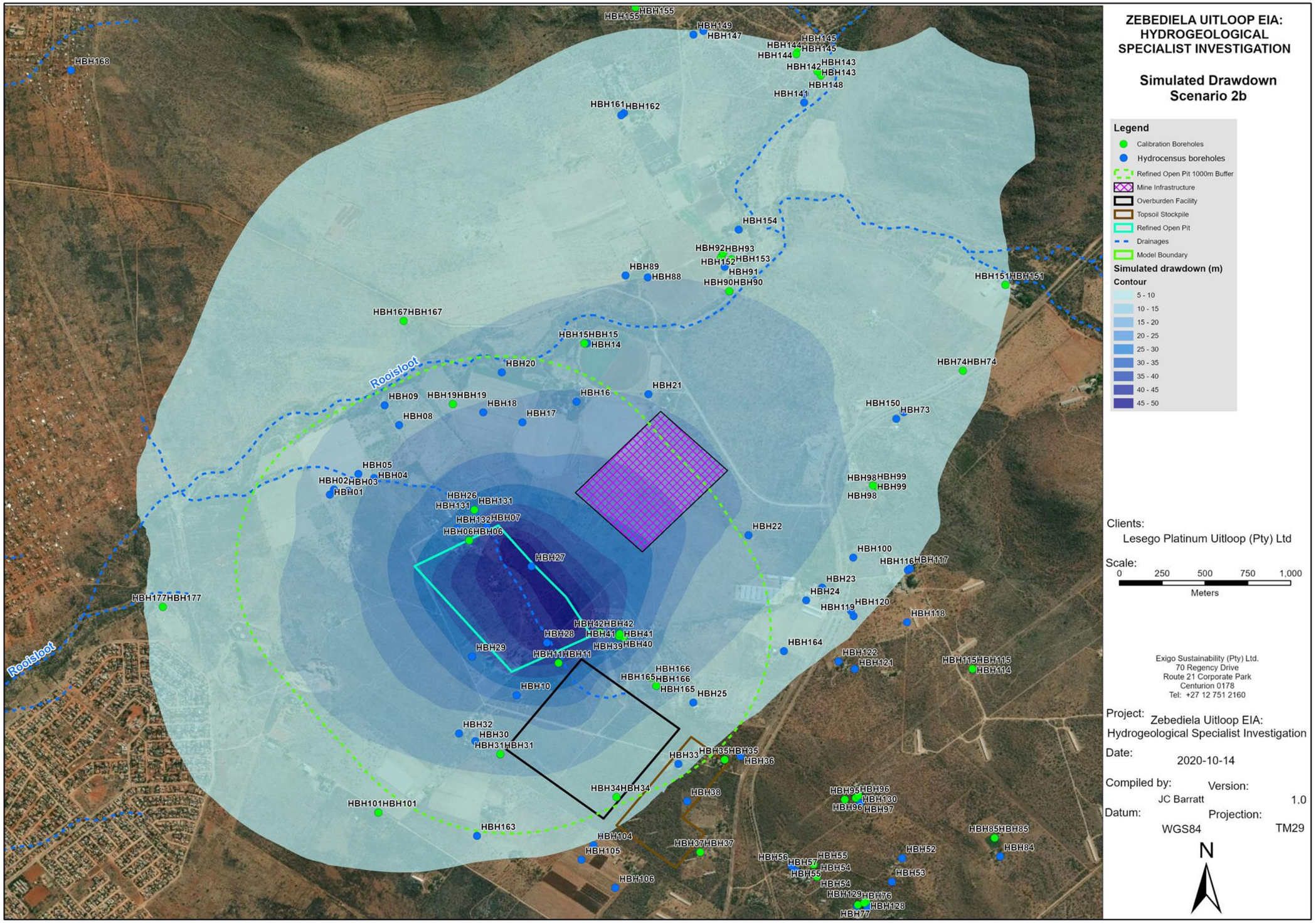


**Figure 112: Scenario 2b's simulated ROI during the LoM operational phase**

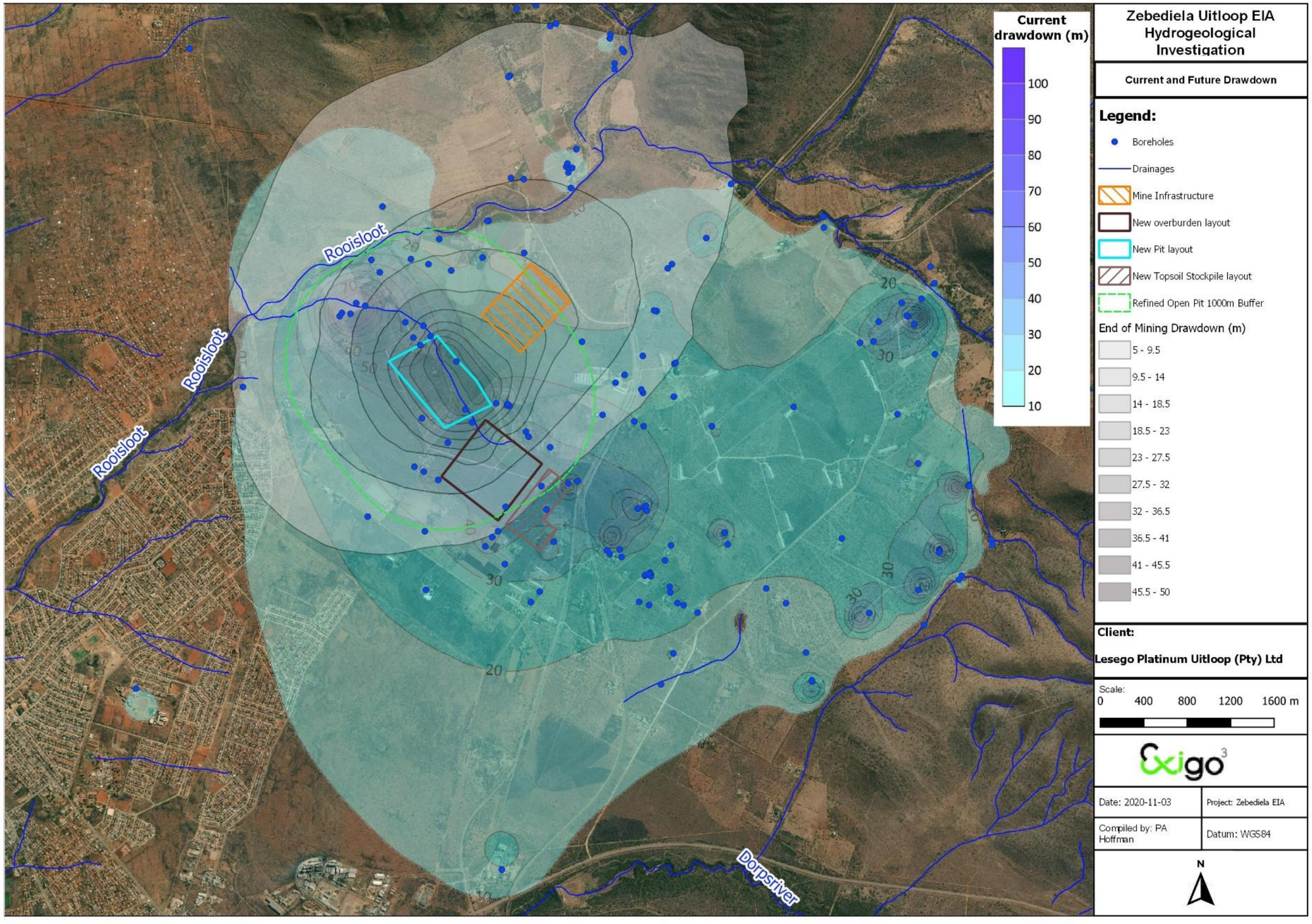


**Figure 113: Current and future mine dewatering impact zones**

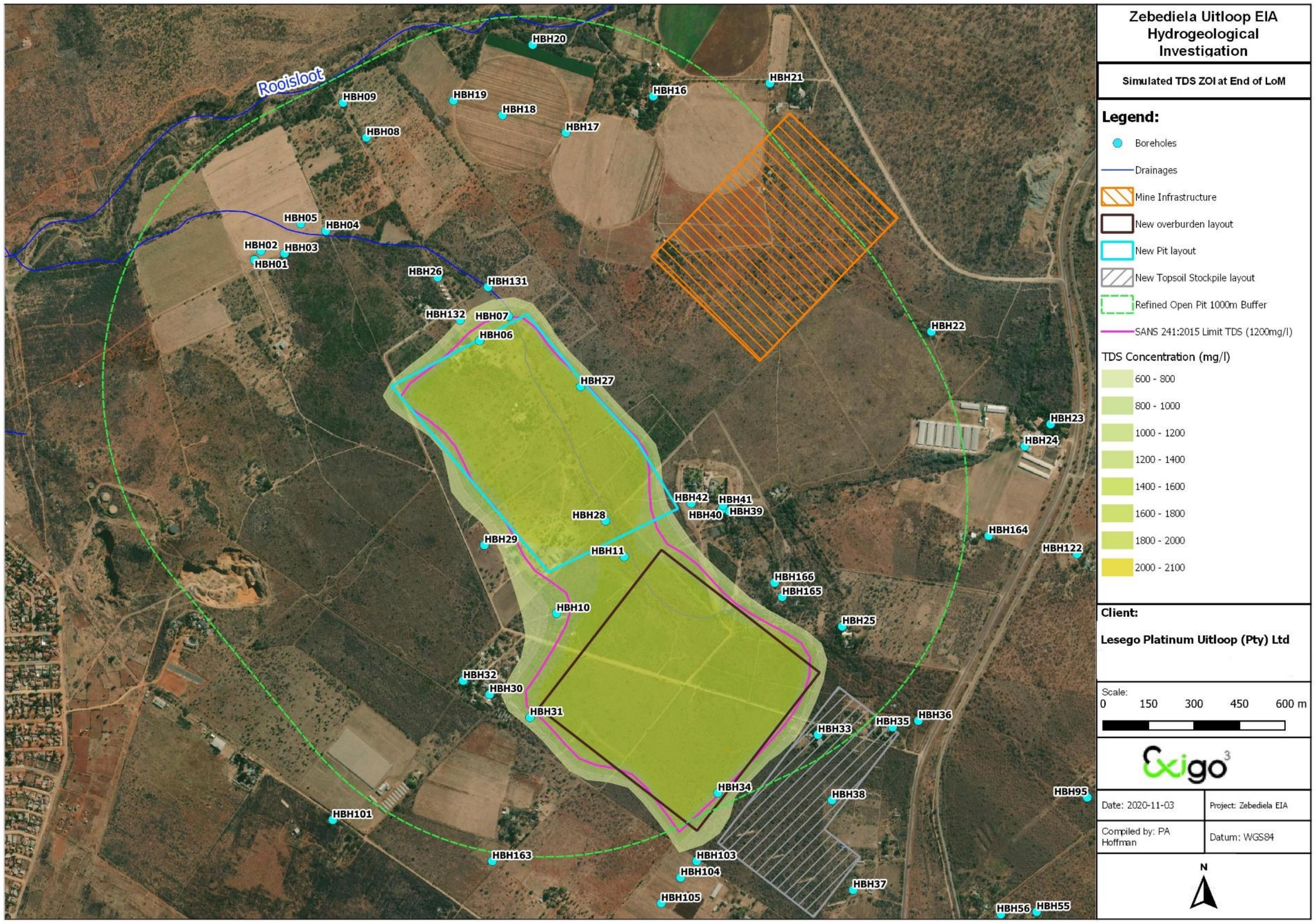


**Figure 114: Simulated unmitigated TDS ZOI during LoM**

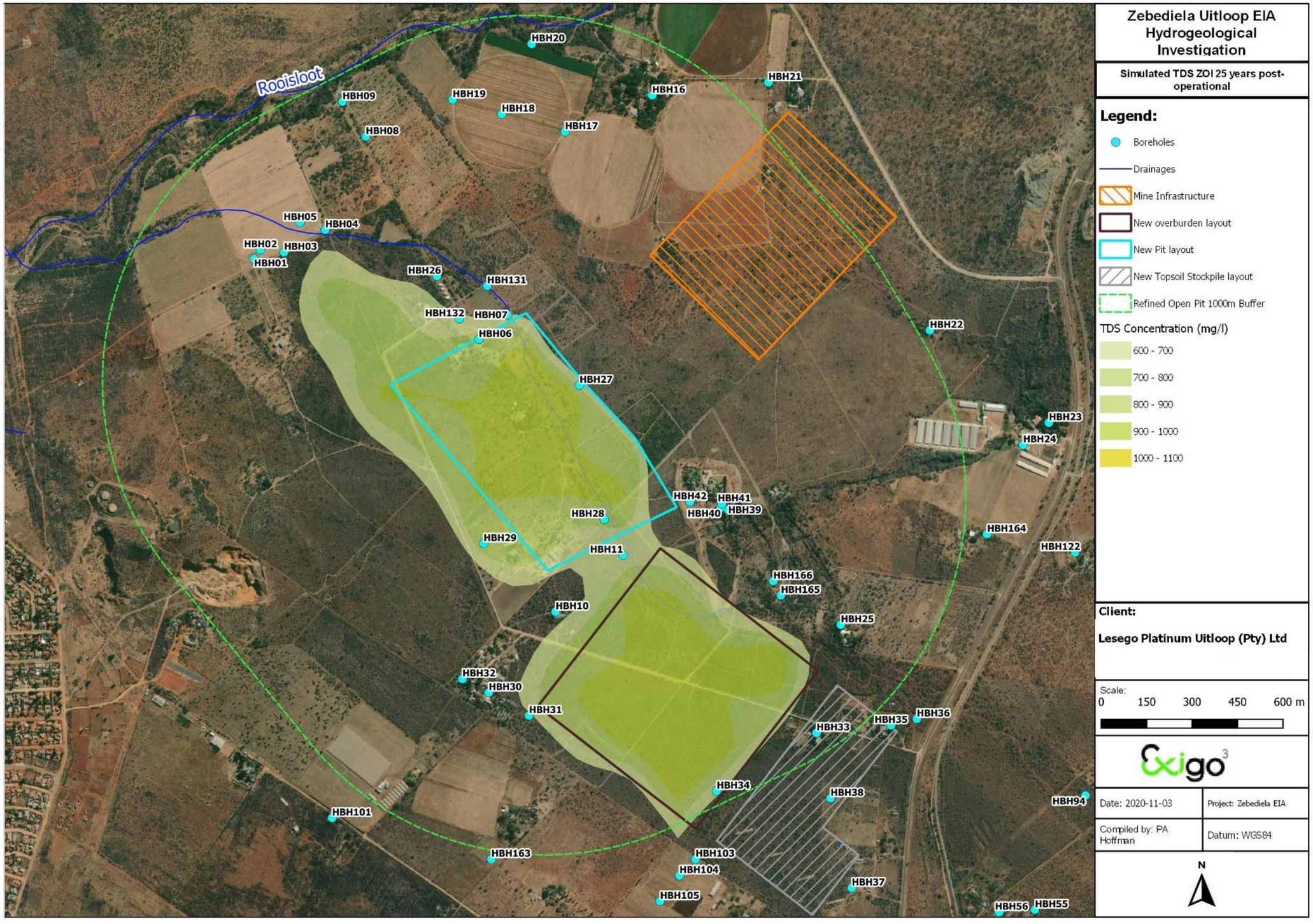


**Figure 115: Simulated unmitigated TDS ZOI 25 years post-operational**

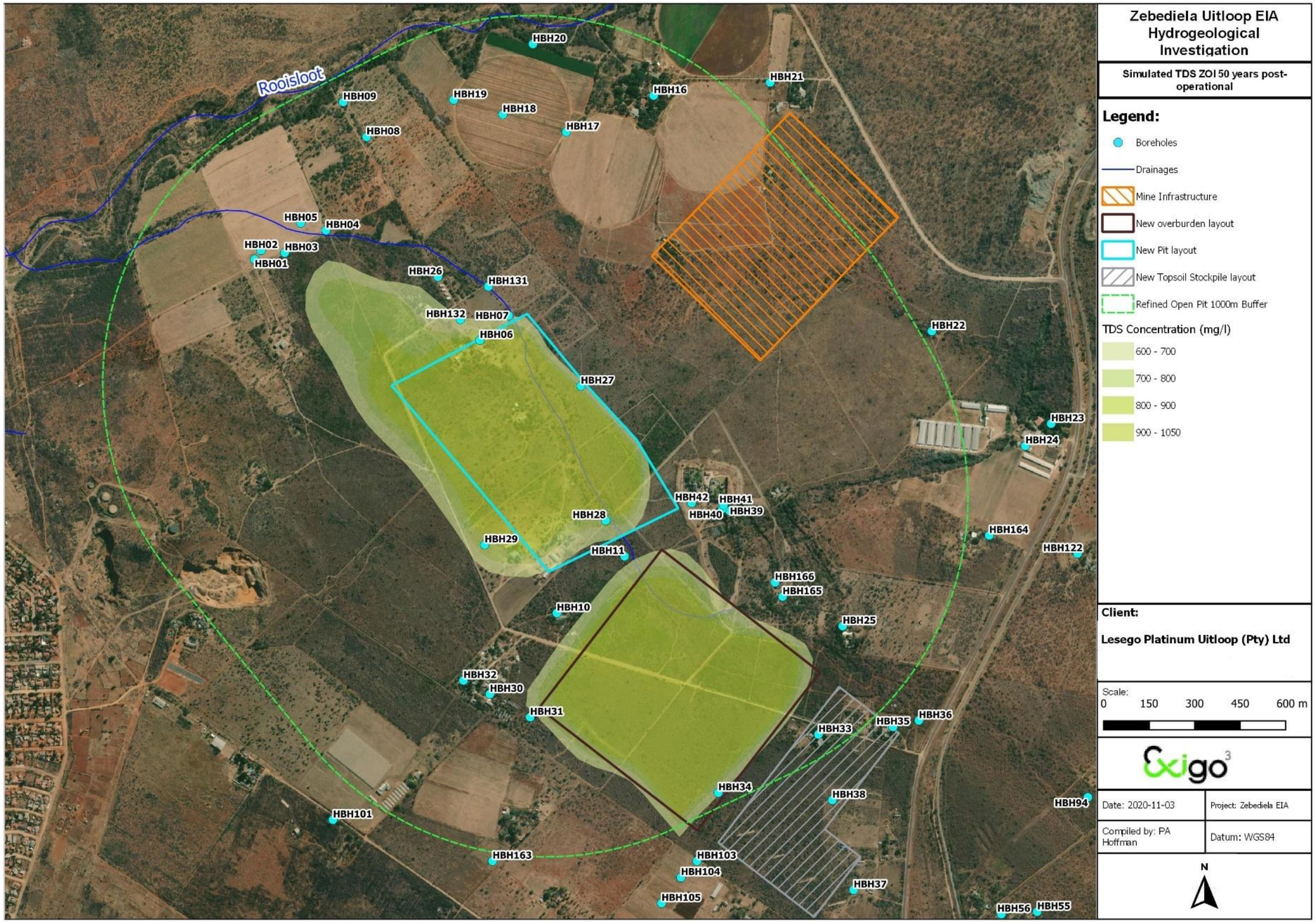


**Figure 116: Simulated unmitigated TDS ZOI 50 years post-operational**

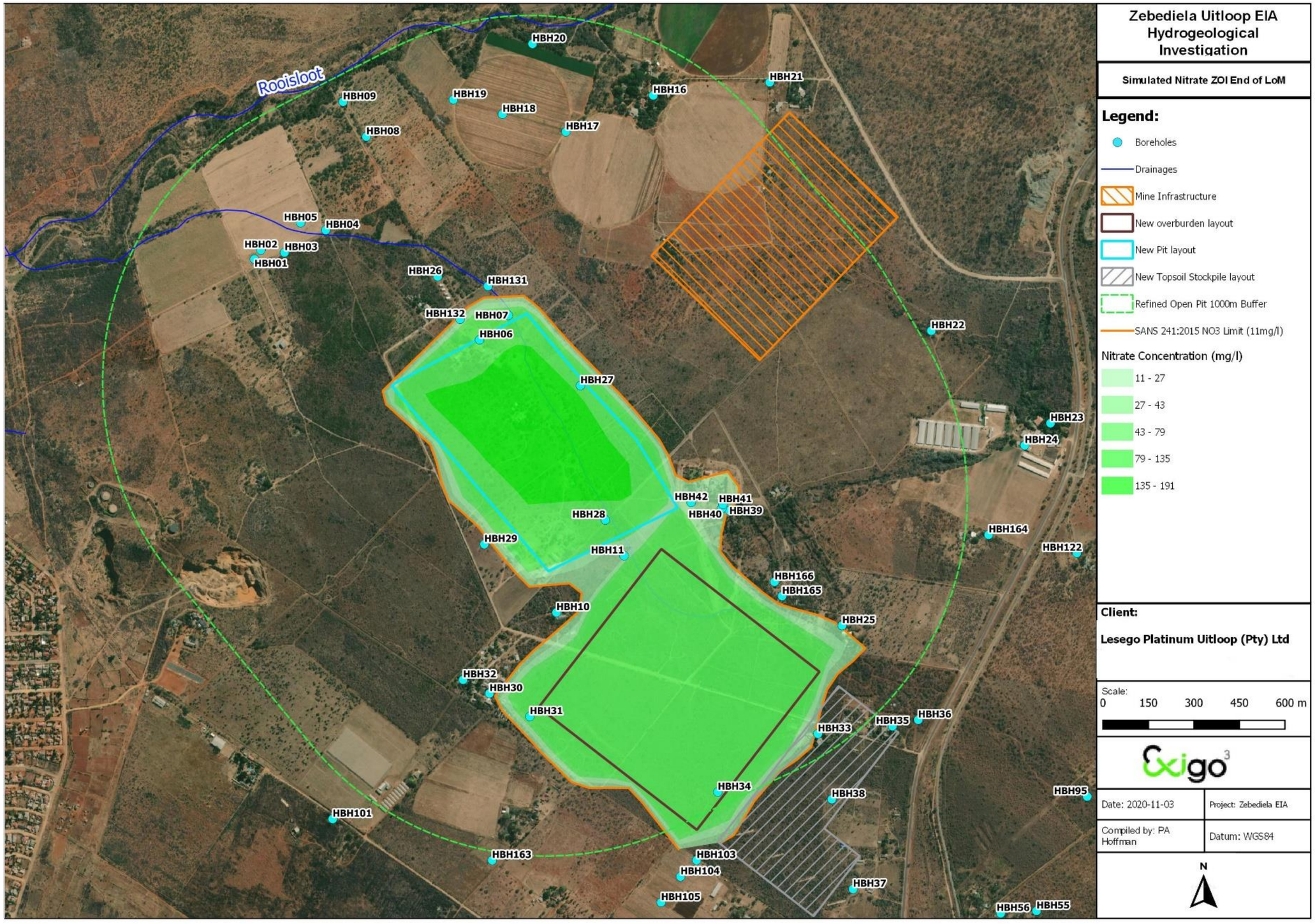


**Figure 117: Simulated nitrate ZOI during LoM**

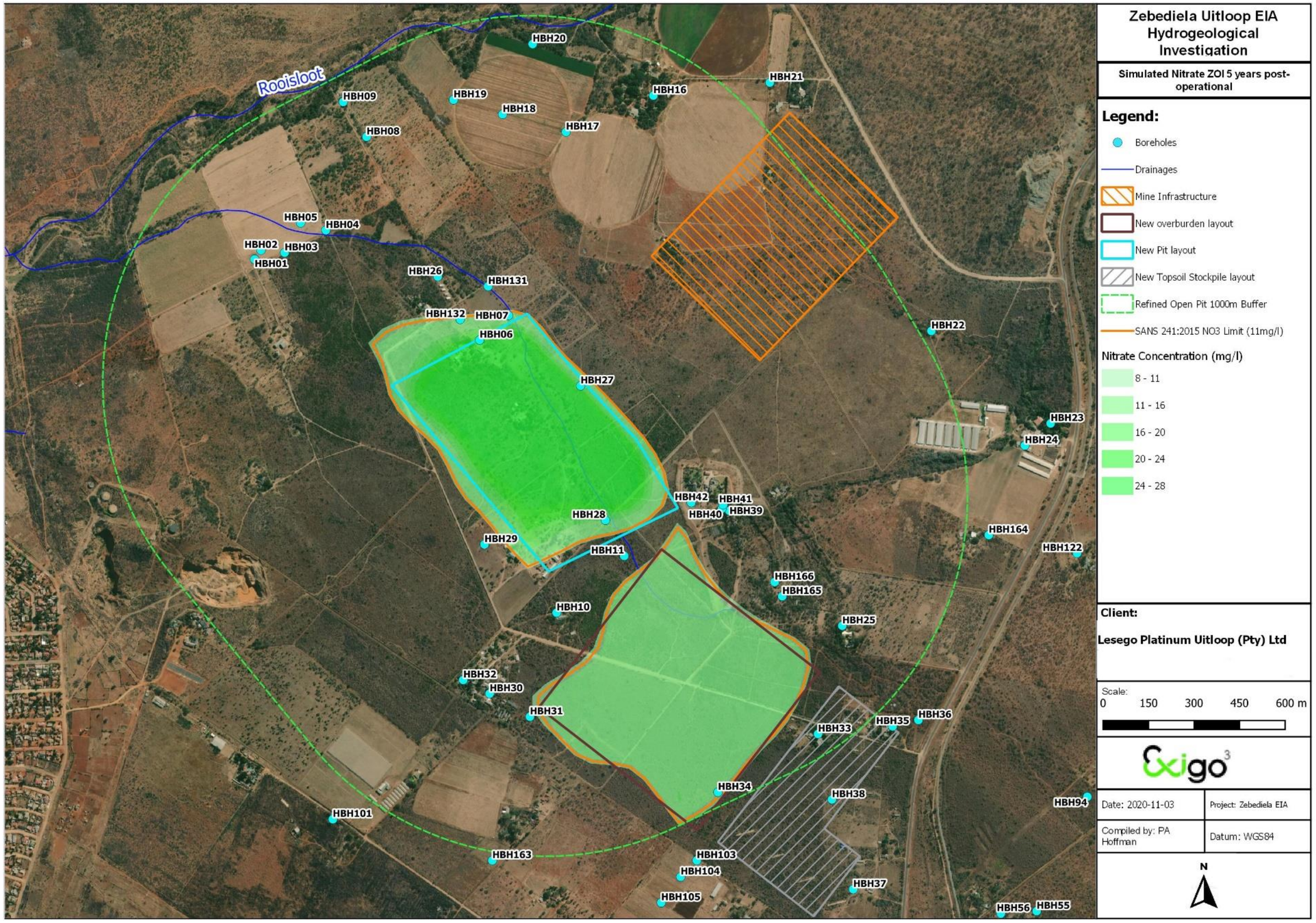


**Figure 118: Simulated nitrate ZOI 5 years post-operational**

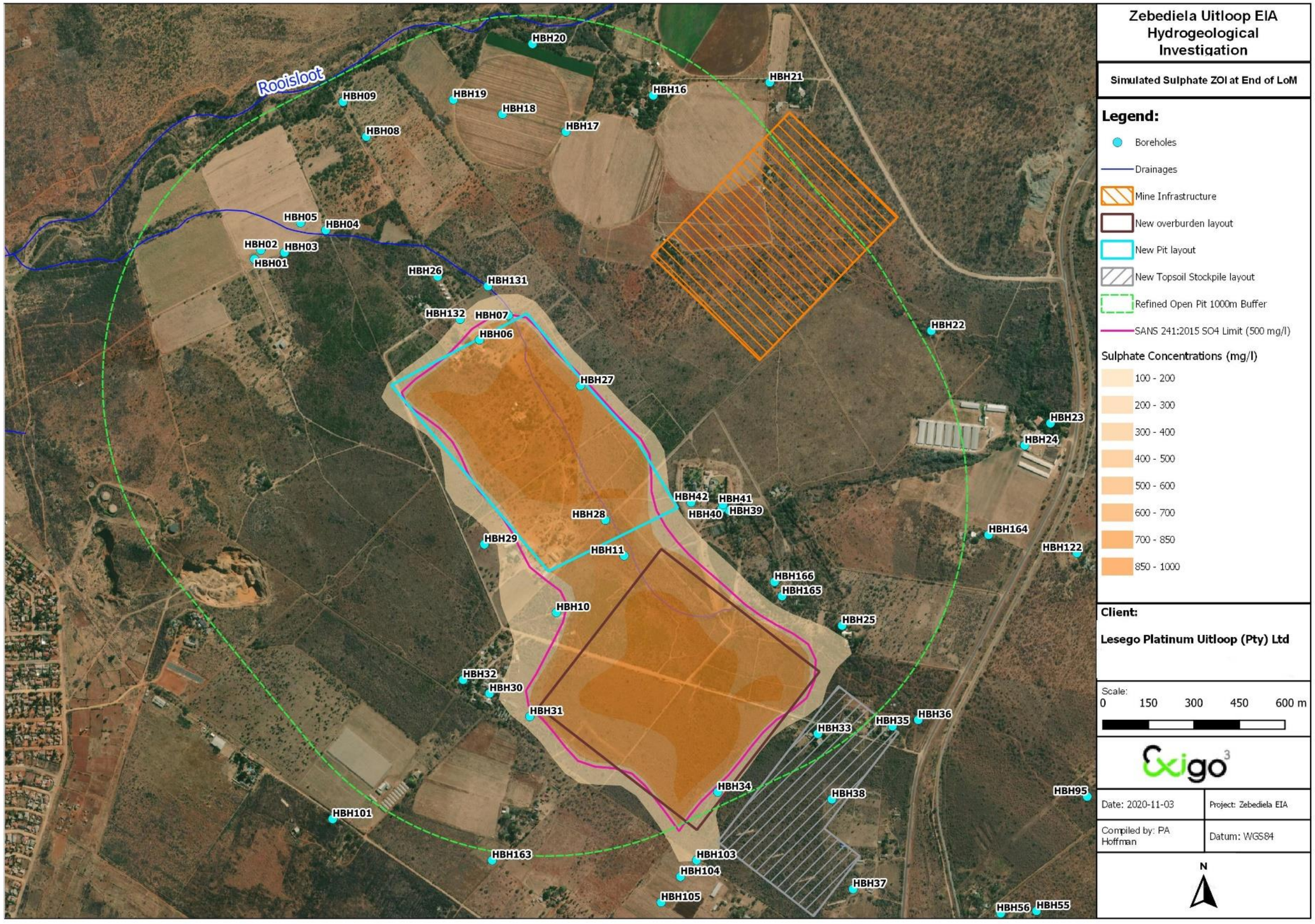


**Figure 119: Simulated unmitigated sulphate ZOI during LoM**

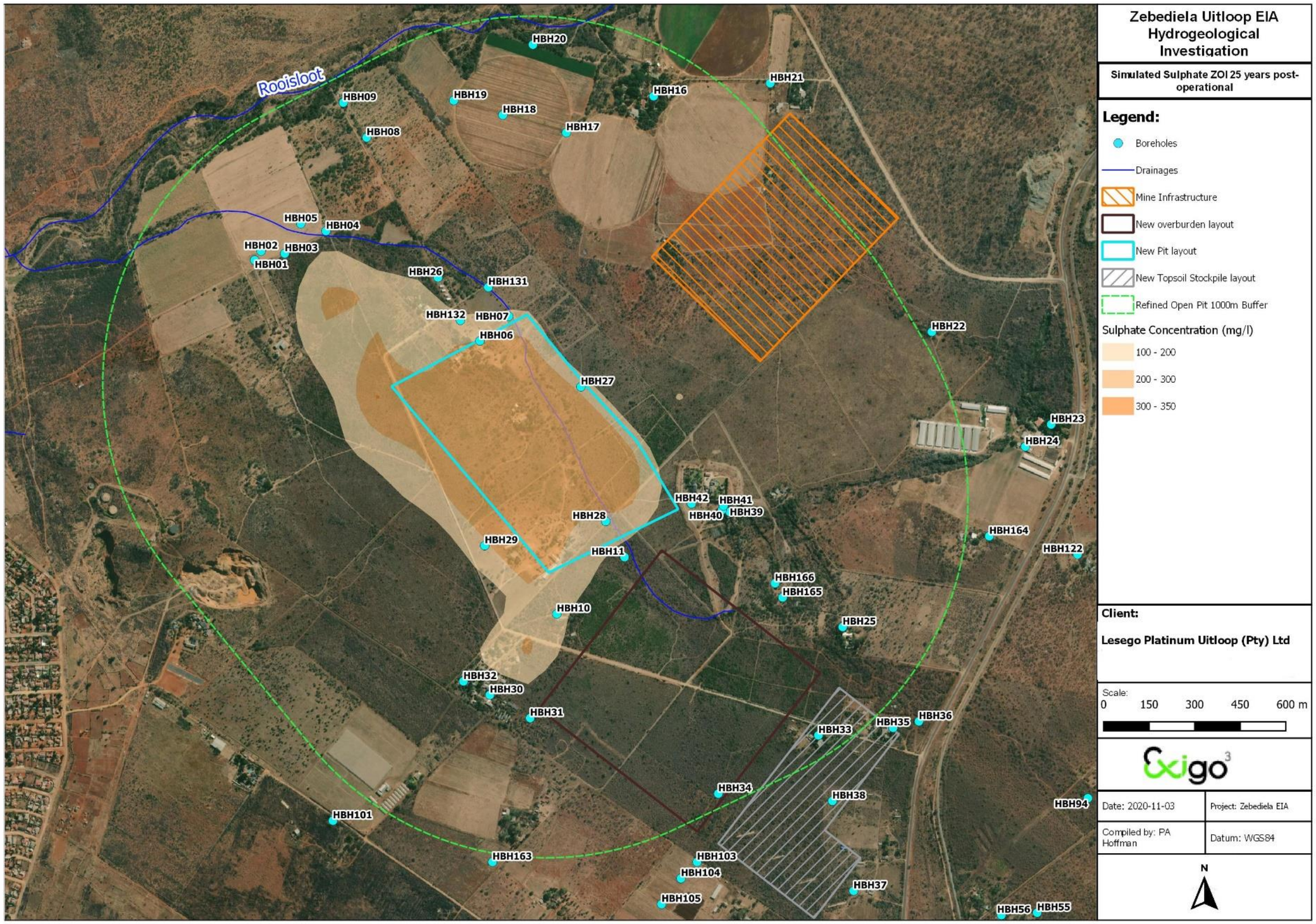


**Figure 120: Simulated unmitigated sulphate ZOI 25 years post-operational**

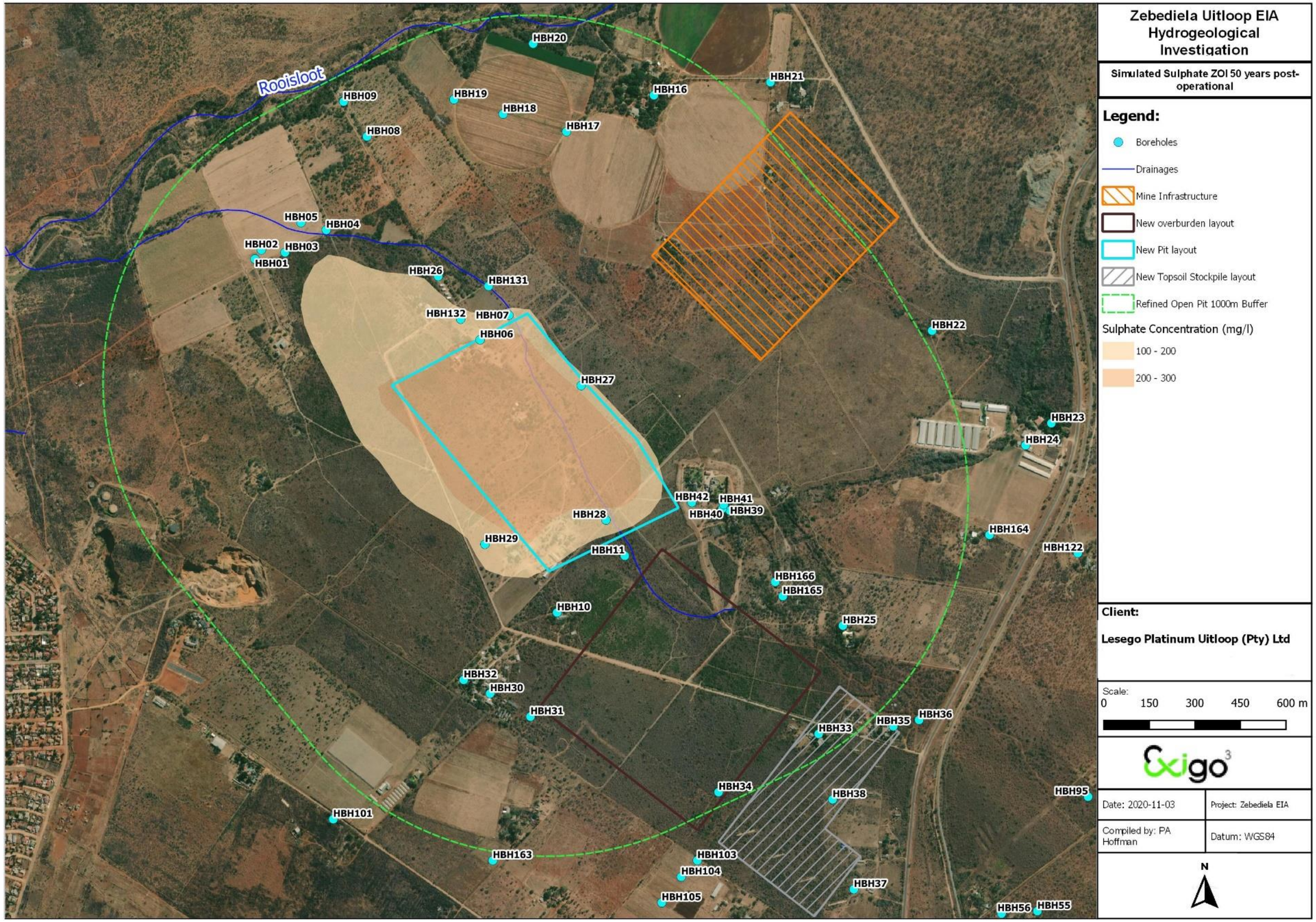


**Figure 121: Simulated unmitigated sulphate ZOI 50 years post-operational**

## 79. APPENDIX 13: ENGINEERING SWMP AND WASTE MANAGEMENT FACILITY DESIGN