

PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN

Great Eastern Highway (H005) & Coolgardie-Esperance Highway (H010)
Shoulder Sealing

Section A – Great-Eastern Highway SLK 471.000 to 482.352

Section B – Great-Eastern Highway SLK 491.257 to 510.975

Section C – Coolgardie-Esperance Highway SLK 68.251 to 72.000

Section D – Coolgardie-Esperance Highway SLK 82.500 to 101.393

Section E – Great-Eastern Highway SLK 528.060 to 540.000



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1 INTRODUCTION

Main Roads Goldfields-Esperance Region (MRWA) is proposing to carry out shoulder widening and sealing works on various sections of both Great Eastern Highway (GEH) (H005) and Coolgardie-Esperance Highway (CEH) (H010). The proposed sections include:

- Section A – Great-Eastern Highway SLK 471.000 to 482.352
- Section B – Great-Eastern Highway SLK 491.257 to 510.975
- Section C – Coolgardie-Esperance Highway SLK 68.251 to 72.000
- Section D – Coolgardie-Esperance Highway SLK 82.500 to 101.393
- Section E – Great-Eastern Highway SLK 528.060 to 540.000

In accordance with Main Roads corporate environmental assessment and approvals process, a Low Impact Environmental Screening Checklist has been completed for the project. As identified by the checklist (see Appendix B), the clearing of native vegetation outside of the road's current maintenance zone will be required for the project. A Preliminary Environmental Impact Assessment (PEIA) is therefore required and this report intends to fulfil this requirement. This report also intends to fulfil the requirements of Main Roads State-wide Project Purpose Clearing Permit (CPS 818/4) which is proposed for use for the project.

Clearing of native vegetation will be required for both the shoulder widening works (up to 2m either side of the road), as well as for the sourcing of road building materials. It is proposed that materials will be bought in for CEH, but sourced from extensions to pre-existing pits at approximate SLKs 484, 502, 505 and 537 for GEH. For proposed clearing boundaries please see Figures 7, 11, 12 and 16 in Appendix A.

2 PROJECT LOCATION

The project is located within the Shire of Coolgardie. A map showing the location of the general project area is provided in Appendix A as Figure 1.

3 ASSESSMENT METHODOLOGY

3.1 Preliminary Desktop Study

A preliminary assessment of the project area and its potential constraints was undertaken by reviewing a number of government agency managed databases (see Appendix C), and consulting where necessary. The following sections provide a summary of the specific methodology used for each potential environmental aspect associated with the project.

3.1.1 Threatened Flora, Fauna and Communities

The Species and Communities Branch of the Department of Environment and Conservation (DEC) was contacted for a search of their databases containing known populations of threatened flora and fauna.

The presence of Threatened and Priority Ecological Communities (TECs & PECs) was determined by examining Main Roads Geographic Information System (GIS) data (TEC & PEC data is supplied to Main Roads by DEC every 6 months).

3.1.2 ESAs and Conservation Reserves

DEC's Native Vegetation Map Viewer (<http://www.dec.wa.gov.au/land/native-vegetation-conservation/data/native-vegetation-map-viewer.html>) and/or Main Roads GIS data was used to determine the location of any ESAs.

The location of any Conservation Reserves was determined by examining Main Roads GIS data and consulting with the local DEC office where necessary.

3.1.3 Vegetation Type, Extent and Status

Vegetation types and associations were determined by examining the Shared Land Information Platform (SLIP) Natural Resource Management (NRM) database (<http://spatial.agric.wa.gov.au/slip/>). Vegetation extent and status data was sourced from the Main Roads file "Native Vegetation in Western Australia - Extent, Type and Status" located on the Main Roads Environment Intranet site (http://intranet/online/branches/environment/word/car_reserve_analysis_2007.xls).

Note: This data is provided to Main Roads via a license agreement with the DEC.

3.1.4 Air Quality

The need for a local air quality assessment was determined using the criteria outlined in the MRWA environmental guideline, Air Quality (http://intranet/online/branches/environment/word/guide_air_quality.doc).

3.1.5 Heritage

Where necessary, non-indigenous heritage was examined by searching the Australian Heritage Places Inventory (<http://www.heritage.gov.au>), Heritage Council of Western Australia database (<http://register.heritage.wa.gov.au/>) or the local Shire's Municipal Heritage Inventory.

3.1.6 Aboriginal Heritage

A Search of the Department of Indigenous Affairs' (DIA) database (<http://www.dia.wa.gov.au/Heritage--Culture/Heritage-management/Register-of-Aboriginal-sites/>) was undertaken to determine whether the project area contains any Aboriginal Heritage sites.

3.1.7 Wetlands

The location of wetlands within the project area was determined by examining the DEC's Geographic Data Atlas mapping tool (<http://maps.dec.wa.gov.au/idelve/doedataext/>) and/or DEC's Wetland Base (<http://www.dec.wa.gov.au/management-and-protection/wetlands/wetland-base/view-wetlandbase-online.html>).

3.1.8 Sensitive Water Resources

The Department of Water's (DoW) Geographic Data Atlas was examined (<http://portal.water.wa.gov.au/portal/page/portal/MapsDataAtlases/GeographicDataAtlas>) to determine whether the project area supported, or was adjacent to, any significant lakes, rivers, wetlands or proclaimed areas (including public drinking water source areas).

3.1.9 Contaminated Sites

The presence of contaminated sites in the project area was determined by examining DEC's contaminated sites database where necessary (<http://www.dec.wa.gov.au/pollution-prevention/contaminated-sites/contaminated-sites-act/database.html>), and evaluating the surrounding land use history.

3.1.10 Acid Sulphate Soils

The Western Australian Planning Commission's (WAPC) acid sulphate soils maps were examined where necessary (<http://www.wapc.wa.gov.au/Publications/213.aspx>) to determine the level of risk the project area is exposed to.

3.1.11 Weeds

Where relevant, consultation was undertaken with the Department of Agriculture and Food (DAFWA) to determine whether there are any known populations of declared plants or significant weeds in or adjacent to the project area.

3.1.12 Dieback

Dieback was only considered a potential issue for the project if both the mean annual rainfall of the area is >400mm and if the project area resides below the 26th parallel. Consultation with the DEC was carried out as necessary.

3.2 Statutory Referral Decisions

The decision whether to refer the project to the Commonwealth's Department of Environment, Water, Heritage and the Arts (DEWHA) was based upon whether the project would impact upon matters of national environmental significance (refer to Appendix C - DEWHA's EPBC Act Protected Matters Database search). These matters of national environmental significance are assessed for impact in Section 5.

The decision whether to refer the project to the WA Environmental Protection Authority (EPA) was based upon whether the project would be a "significant proposal" as defined by the Environmental Protection Act 1986. As a result, all potential environmental aspects relating to the project have been examined for their level of significance (see Sections 5 & 6).

3.3 Site Investigation

A site visit to the proposed material pits at SLK 484 and 502 was carried out by Simon Weighell (GEnv), Barry McAuliffe (TOM) and Michael Moody (TOM) on the 09/04/09 to examine the general features of the area. Site photos were taken and are included in Appendix D.

4 EXISTING ENVIRONMENT

Information relating to the existing environment of the area has been summarised in Tables 1 and 2 below. This information has been compiled through both desktop assessments and site visits.

Table 1. General information for the project area.

| Factor | Comments |
|-----------------------------|--|
| Climate[#] | <i>Closest Meteorological Station: Coolgardie</i> <i>Avg. Annual rainfall: 271.0mm</i> <i>Avg. Max Temp ranges: 16.1°C (Jul) to 33.3°C (Jan)</i> <i>Avg. Min Temp ranges: 5.2°C (Jul) to 17.0°C (Jan)</i> |
| Surrounding Land Use | Pastoral Lease, National Park, Conservation Park, Vacant Crown Land |
| Weed prevalence | Low |

[#] Source: Bureau of Meteorology (2009)

Table 2. Vegetation association information for the project area.

| Factor | Value | | | |
|----------------------------------|---|------------------------------------|--|------------------------------|
| Veg Association | 8: Medium woodland; salmon gum & gimlet | | | |
| Scale | Association | IBRA Region (Coolgardie) | IBRA Sub-region (Eastern Goldfields) | Shire (Coolgardie) |
| Current Extent (ha)* | 329,614.63 | 276,599.03 | 226,086.11 | 160,584.41 |
| % Pre-European Extent Remaining* | 47.45 | 98.70 | 100.00 | 100.00 |

| | | | | |
|----------------------------------|--|------------------------------------|---|------------------------------|
| Veg Association | 9: Medium woodland; coral gum (<i>Eucalyptus torquata</i>) & goldfields blackbutt (<i>E. le soufii</i>). | | | |
| Scale | Association | IBRA Region (Coolgardie) | IBRA Sub-region (Eastern Goldfields) | Shire (Coolgardie) |
| Current Extent (ha)* | 239,895.38 | 239,834.52 | 236,759.38 | 167,654.63 |
| % Pre-European Extent Remaining* | 99.74 | 99.75 | 99.74 | 100.00 |

| | | | | |
|----------------------------------|--------------------------------|------------------------------------|---|------------------------------|
| Veg Association | 128: Bare areas; rock outcrops | | | |
| Scale | Association | IBRA Region (Coolgardie) | IBRA Sub-region (Southern Cross) | Shire (Coolgardie) |
| Current Extent (ha)* | 283,214.37 | 185,796.20 | 155,494.85 | 96,233.05 |
| % Pre-European Extent Remaining* | 85.35 | 99.63 | 99.55 | 100.00 |

| | | | | |
|----------------------------------|--|------------------------------------|---|------------------------------|
| Veg Association | 435: Shrublands; <i>Acacia neurophylla</i> , <i>A. beauverdiana</i> & <i>A. resinomarginea</i> thicket | | | |
| Scale | Association | IBRA Region (Coolgardie) | IBRA Sub-region (Southern Cross) | Shire (Coolgardie) |
| Current Extent (ha)* | 757,765.29 | 730,228.48 | 724,110.91 | 365,871.14 |
| % Pre-European Extent Remaining* | 76.19 | 98.92 | 98.91 | 100.00 |

| | | | | |
|----------------------------------|---|------------------------------------|---|------------------------------|
| Veg Association | 511: Medium woodland; salmon gum & morrel | | | |
| Scale | Association | IBRA Region (Coolgardie) | IBRA Sub-region (Southern Cross) | Shire (Coolgardie) |
| Current Extent (ha)* | 494,147.99 | 435,793.47 | 435,793.50 | 160,926.82 |
| % Pre-European Extent Remaining* | 70.55 | 93.84 | 93.84 | 100.00 |

| | | | | |
|----------------------------------|--|------------------------------------|---|------------------------------|
| Veg Association | 522: Medium woodland; redwood (<i>Eucalyptus transcontinentalis</i>) & merri (E. floetoniae) | | | |
| Scale | Association | IBRA Region (Coolgardie) | IBRA Sub-region (Southern Cross) | Shire (Coolgardie) |
| Current Extent (ha)* | 709,715.02 | 688,406.66 | 480,231.67 | 313,708.83 |
| % Pre-European Extent Remaining* | 100.00 | 100.00 | 100.00 | 100.00 |

| | | | | |
|----------------------------------|--|--|---|--|
| Veg Association | 522: Medium woodland; redwood (<i>Eucalyptus transcontinentalis</i>) & merri (E. floetoniae) | | | |
| Scale | | | IBRA Sub-region (Eastern Goldfields) | |
| Current Extent (ha)* | | | 208,644.62 | |
| % Pre-European Extent Remaining* | | | 100.00 | |

| | | | | |
|----------------------------------|----------------------------------|------------------------------------|---|------------------------------|
| Veg Association | 936: Medium woodland; salmon gum | | | |
| Scale | Association | IBRA Region (Coolgardie) | IBRA Sub-region (Eastern Goldfields) | Shire (Coolgardie) |
| Current Extent (ha)* | 675,635.84 | 586,792.22 | 310,909.25 | 359,123.84 |
| % Pre-European Extent Remaining* | 96.69 | 100.00 | 100.00 | 100.00 |

| | | | | |
|----------------------------------|---|------------------------------------|---|------------------------------|
| Veg Association | 1413: Shrublands; acacia, casuarina & melaleuca thicket | | | |
| Scale | Association | IBRA Region (Coolgardie) | IBRA Sub-region (Southern Cross) | Shire (Coolgardie) |
| Current Extent (ha)* | 1,247,101.22 | 1,041,678.03 | 933,703.37 | 334,487.86 |
| % Pre-European Extent Remaining* | 74.24 | 98.16 | 97.95 | 100.00 |

| | | | | |
|----------------------------------|---|--|---|--|
| Veg Association | 1413: Shrublands; acacia, casuarina & melaleuca thicket | | | |
| Scale | | | IBRA Sub-region (Eastern Goldfields) | |
| Current Extent (ha)* | | | 107,974.67 | |
| % Pre-European Extent Remaining* | | | 100.00 | |

| | | | | |
|----------------------------------|---|------------------------------------|---|------------------------------|
| Veg Association | 2009: Medium woodland; redwood & goldfields blackbutt | | | |
| Scale | Association | IBRA Region (Coolgardie) | IBRA Sub-region (Eastern Goldfields) | Shire (Coolgardie) |
| Current Extent (ha)* | 7,058.46 | 7,058.46 | 6,239.06 | 7,058.46 |
| % Pre-European Extent Remaining* | 100.00 | 100.00 | 100.00 | 100.00 |

* Source: DEC (2007) – see Section 3.1.3

5 ASSESSMENT OF ASPECTS AND IMPACTS

The following table provides a summary of potential environmental aspects associated with the project and their subsequent assessment for environmental impact. Environmental constraints mapping is provided in Appendix A (Figures 2-21).

Table 4: Aspects and Impacts

| Aspect | Evaluation of Potential Impacts |
|-------------|---|
| Air quality | Not considered relevant to the proposed works. |
| Dust | Likely to be a minor issue during earth works. No major sensitive receivers adjacent to the project area. No significant impact expected. |
| Fauna | Several threatened species (including nationally protected species) and/or their habitat have been identified as potentially occurring within the project area (see Appendix C). Given however the vast areas of bushland remaining within close proximity to the project area, and the mobile nature of the species in question, no significant impacts to native fauna and/or its habitat are expected. |

Table 4: Aspects and Impacts

| Aspect | Evaluation of Potential Impacts |
|--|---|
| Vegetation – clearing | <ul style="list-style-type: none"> Up to 198.56ha of native vegetation may need to be cleared for the proposed works. Clearing for the project is broken up as follows: <ul style="list-style-type: none"> - 4.95ha for Section A - 8.29ha for Section B - 1.90ha for Section C - 7.96ha for Section D - 5.18ha for Section E - 54.08ha for pit @ SLK 484 - 49.41ha for pit @ SLK 502 - 19.87ha for pit @ SLK 505 - 46.92ha for pit @ SLK 537 <p><u>Note:</u> Proposed clearing boundaries for each of the material pits are mapped out in Figures 7, 11, 12 and 16 of Appendix A. Clearing boundaries for each road section are limited to a 2m wide section either side of the road, plus a 500m long buffer at each end of each section.</p> <ul style="list-style-type: none"> The condition of the vegetation in the area ranges from completely degraded to very good (using the Keighery scale (Keighery, 1994)). The vegetation associations of the project area (see Table 2) are not currently underrepresented (defined as <30% of pre-European extent remaining) at any of the four regional scales (State, IBRA region, IBRA sub-region and Shire). No significant impacts to the status of these associations are therefore expected given the relatively small amount of clearing involved. The native vegetation to be cleared does not occur within an ESA. <u>Note:</u> Although an ESA intersects Section A at approximately 480 SLK, it is proposed that this area, including a buffer zone, will be marked out prior to works commencing in order to ensure that it is avoided (see Figure 20 for the proposed avoidance area). |
| Significant Flora / Ecological Communities | <p>According to various database searches, there are no TECs, PECs or Declared Rare Flora (DRF) located within or immediately adjacent to the proposed clearing areas. Several Priority Flora (PF) species have been identified within close proximity to some of the proposed clearing areas, but these areas are predominantly for the shoulder sealing component of the works. Given that these areas will only require clearing of up to 2m wide from the edge of the maintenance zone, it is considered highly unlikely that the survival of any of these populations will be jeopardised. Impacts to priority flora located within the proposed material pit areas are to be minimised as far as is practically possible.</p> <p>No nationally protected (DEWHA) flora species are likely to be impacted by the proposed works given that their naturally occurring distributions are considered highly unlikely to overlap the proposed project areas.</p> |
| Vegetation – weeds | <p>The project area is considered to have a low prevalence of weeds with no known populations of declared weeds identified within the project area. Standard weed hygiene measures will still need to be applied in order to ensure that any risk of future weed spread is minimised.</p> |
| Vegetation – dieback | <p>Dieback is not considered a potential issue for the project since the project area receives less than 400mm of average annual rainfall (see Table 1).</p> |

Table 4: Aspects and Impacts

| Aspect | Evaluation of Potential Impacts |
|-------------------------------|---|
| Reserves / Conservation areas | Several portions of the proposed clearing areas are located immediately adjacent to (but not within) some significant conservation areas (e.g. Goldfields Woodlands National Park). These areas are highly unlikely to be significantly impacted by the proposed works given that there is still a high level of connectivity between remnant vegetation in the surrounding area, and that various rehabilitation/revegetation measures have been proposed for the larger clearing areas. |
| Heritage (non-indigenous) | No items of significance were identified during the site visit. Not considered relevant to the proposed works. |
| Aboriginal heritage | <p>A search of DIA's database revealed that there are 25 known sites of Aboriginal heritage significance within the general vicinity of the proposed project areas. Of these, only 3 are considered to have the potential to be impacted by the proposed works. They are Sites 20832 (SX04 – Natural feature, water source), 20833 (SX05 – Mythological – Natural feature, water source) and 20608 (Jarjuru Tjukurpa – Mythological – Plant resource, natural feature). In order to avoid any impacts to these sites, avoidance areas have been proposed (see Figures 20 & 21) where works will be confined to the existing maintenance zone. As a result, an application pursuant to S.18 of the <i>Aboriginal Heritage Act, 1972 (WA)</i> is not required in regards to this project.</p> <p><u>Note:</u> Although the boundaries of site 18700 (Dordie Rockhole – Historical – Camp, water source) overlap a portion of the proposed project area, no preventive measures are required for the site as it is actually located a considerable distance from the road (as reported by R. & E. O'Connor Pty. Ltd., 2009).</p> <p>The proposed work areas do not appear likely to contain any unidentified Aboriginal Heritage sites of significance as they are all either highly disturbed or lacking in significant natural features which may have figured prominently in past Aboriginal occupation of the area (e.g. breakaways, water holes, rock shelters etc.).</p> |
| Surface water/drainage | The works are considered highly unlikely to significantly disturb or interrupt any present drainage or surface run-off patterns. Drainage in the area has already been somewhat altered by past road and pit extraction works. The works do not intersect any significant natural watercourses. |
| Wetlands | Various Government Agency database searches did not reveal any significant wetlands within the immediate vicinity of the project area. As a result, no significant impacts are expected. |
| Groundwater | No significant changes to the current groundwater level or quality are expected given that water requirements for the project are considered minimal. Water for the project is to be sourced by the contractor carrying out the works (the contractor will therefore be responsible for all associated approvals). |
| Noise and vibration | No major sensitive receivers exist nearby the project area. The works are not expected to significantly contribute to noise levels at the nearest receivers. |
| Visual amenity | Not considered relevant to the proposed works. |
| Hazardous substances | Not considered relevant to the proposed works. |
| Contamination | Given the relatively superficial nature of the required earthworks, there appears to be a low risk of any significant contamination issues. No significant impacts expected. |
| Salinity | Not considered relevant to the proposed works. |
| Acid Sulphate Soils | Not considered relevant to the proposed works. |

Table 4: Aspects and Impacts

| Aspect | Evaluation of Potential Impacts |
|---|---|
| Environmentally Significant Landforms | Not considered relevant to the proposed works. |
| Statutory Land Use Planning / Adjacent Land Use | Expansion of the existing road reserve is not required. No significant impacts to surrounding land uses are expected. |

6 CLEARING OF NATIVE VEGETATION

Native vegetation for this project will be cleared using Main Roads State-wide Project Purpose Clearing Permit (CPS 818/4). Native vegetation describes all indigenous aquatic and terrestrial vegetation (living or dead). The term does not include vegetation that was intentionally sown, planted or propagated unless it was required under a statutory condition.

6.1 Avoiding, Minimising and Reducing the Impact of Clearing

The following measures have been taken or proposed in an effort to avoid, minimise and reduce the impact of clearing associated with the project:

- Materials for the project are being sourced from pre-existing material pit areas meaning that any clearing for access tracks etc. will be minimal in comparison to the establishment of a new pit.
- Cleared vegetation is to be stockpiled and respread over temporarily cleared areas in order to encourage natural regrowth.

6.2 Assessment against the DEC's Ten Clearing Principles

In assessing whether the project is likely to have a significant impact on the environment, the project has been assessed against the DEC's 10 clearing principles (Note: this assessment is also a requirement of CPS 818/4). The assessment has indicated that the project is not likely to be at variance with any of the 10 clearing principles.

| | |
|----------------------|--|
| Principle (a) | Native vegetation should not be cleared if it comprises a high level of biological diversity. |
| Assessment | The proposed clearing area can not be considered to have a high level of biological diversity given that extensive areas of native vegetation in a good or better condition exist immediately adjacent to the project area. |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |
| Principle (b) | Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia. |
| Assessment | Given the large areas of native vegetation remaining adjacent to the project area, and the mobile nature of the species in question (i.e. those identified as potentially occurring within the project area – see Appendix C), no significant impacts to native fauna or its habitat are expected. |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |
| Principle (c) | Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora. |
| Assessment | No rare flora was identified within or immediately adjacent to the project area during a desktop assessment of the area. |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |

| | |
|----------------------|---|
| Principle (d) | Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community. |
| Assessment | No TECs were identified within or immediately adjacent to the project area during a desktop assessment of the area. |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |
| Principle (e) | Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared. |
| Assessment | The native vegetation within the project area can not be considered significant as a remnant as greater than 30% of the vegetation associations in the area currently remain at all four of the regional scales (refer Table 2). |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |
| Principle (f) | Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland. |
| Assessment | No environmentally significant watercourses or wetlands are located within or in close proximity to any of the proposed clearing areas. |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |
| Principle (g) | Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation. |
| Assessment | Given the relatively small amount of clearing involved (in the context of the intact surrounding environment), and the rehabilitation measures proposed, the clearing is considered highly unlikely to cause appreciable land degradation. |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |
| Principle (h) | Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area. |
| Assessment | The proposed clearing areas are not located within any current conservation areas. Although they may be immediately adjacent to conservation areas, the proposed clearing areas can not be considered significant as a “stepping stone” for native fauna, as the connectivity between remnant vegetation in the surrounding area is virtually unobstructed. |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |
| Principle (i) | Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water. |
| Assessment | No significant change to the hydrology of the area is expected given the relatively minor nature of the works. Therefore, no significant deterioration in the quality of surface or underground water is expected. |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |
| Principle (j) | Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding. |
| Assessment | No significant change to the hydrology of the area is expected given the relatively minor nature of the works. The clearing is therefore highly unlikely to cause or exacerbate the incidence of flooding in the area. |
| Conclusion | <i>The proposal is not likely to be at variance to this principle.</i> |

6.3 Project Specific Requirements Relating to CPS 818/4

Given that temporary clearing is required for the project, a revegetation plan is required as outlined by CPS 818/4. Since the project is located in a pastoral area (as defined by the EPA’s Position Statement No. 2 – “*Environmental Protection of Native Vegetation in Western Australia*”), the generic revegetation plan for pastoral areas can be and is proposed to be used for this project. This revegetation plan has already been approved by DEC and therefore does not require submission to the CEO of DEC prior to clearing as outlined by

CPS 818/4. The plan is attached to this report as Appendix E and is to be provided to the contractor carrying out the works prior to clearing.

No offsets or management strategies will be required given that there is no variance with any of the 10 clearing principles for the project.

In regards to the maximum annual clearing limit of 200ha for the Goldfields-Esperance Region, clearing for this project will be limited to an amount less than that identified if necessary in order to avoid breaching this condition.

7 STAKEHOLDER CONSULTATION

Given the minor nature of the works involved, no stakeholder consultation was considered necessary for the project.

8 ENVIRONMENTAL MANAGEMENT PLAN

An Environmental Management Plan (EMP) has been developed for the project (see Appendix F) taking into account the assessments carried out above. The main aim of this EMP is to provide a management plan to assist in minimising the environmental impacts of the activities associated with the proposed works, and to identify who is responsible for the implementation of any subsequent management strategies. This EMP is predominantly for the Main Roads Project Manager's reference and provides basic requirements for any Contractor produced EMP (subject to any conditions outlined in the actual Contract).

The EMP will only address site-specific issues that were identified during the PEIA. The areas that require special management will be addressed in terms of:

- the timing of various management actions;
- the topic (e.g. vegetation);
- the objectives for each area;
- the actions that are necessary to minimise the impact;
- the responsible party for implementing the action; and
- whether the action arose from external advice or is a Main Roads requirement.

9 MONITORING

After clearing, the project area is to be inspected every 12 months for the first two years in order to ensure that excessive weed spread or establishment has not occurred. This is consistent with the pre-approved Revegetation Plan for the project found in Appendix E. Further inspections may be carried out if necessary.

10 AUDITING

Any audits against the EMP are not considered required (although they may still be carried out) given that the project is small in scale with minimal environmental risk involved. On-ground checking will be carried out by the Main Roads Goldfields-Esperance Environment Officer.

11 CONCLUSIONS

Given the small scale of the project, the low significance of its impacts to the surrounding environment, and the environmental management measures proposed, the project does not require referral to the EPA.

Furthermore, the project does not require referral to the DEWHA as no items of national environmental significance are likely to be impacted by the proposed works.

12 REFERENCES

Bureau of Meteorology (BoM), (2009) "Climate Data Online", Commonwealth of Australia (accessed online at <http://www.bom.gov.au/climate/averages/> on 14/04/09).

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R. & E. O'Connor Pty. Ltd. for GHD Pty. Ltd., (2009) *Report on an Aboriginal Heritage Survey of Proposed Roadworks at Emu Rocks North, Emu Rocks South Stage 2, Emu Rocks South Stage 3 and Miitel Deviation*, pp 16-17.

Appendix A

Mapping

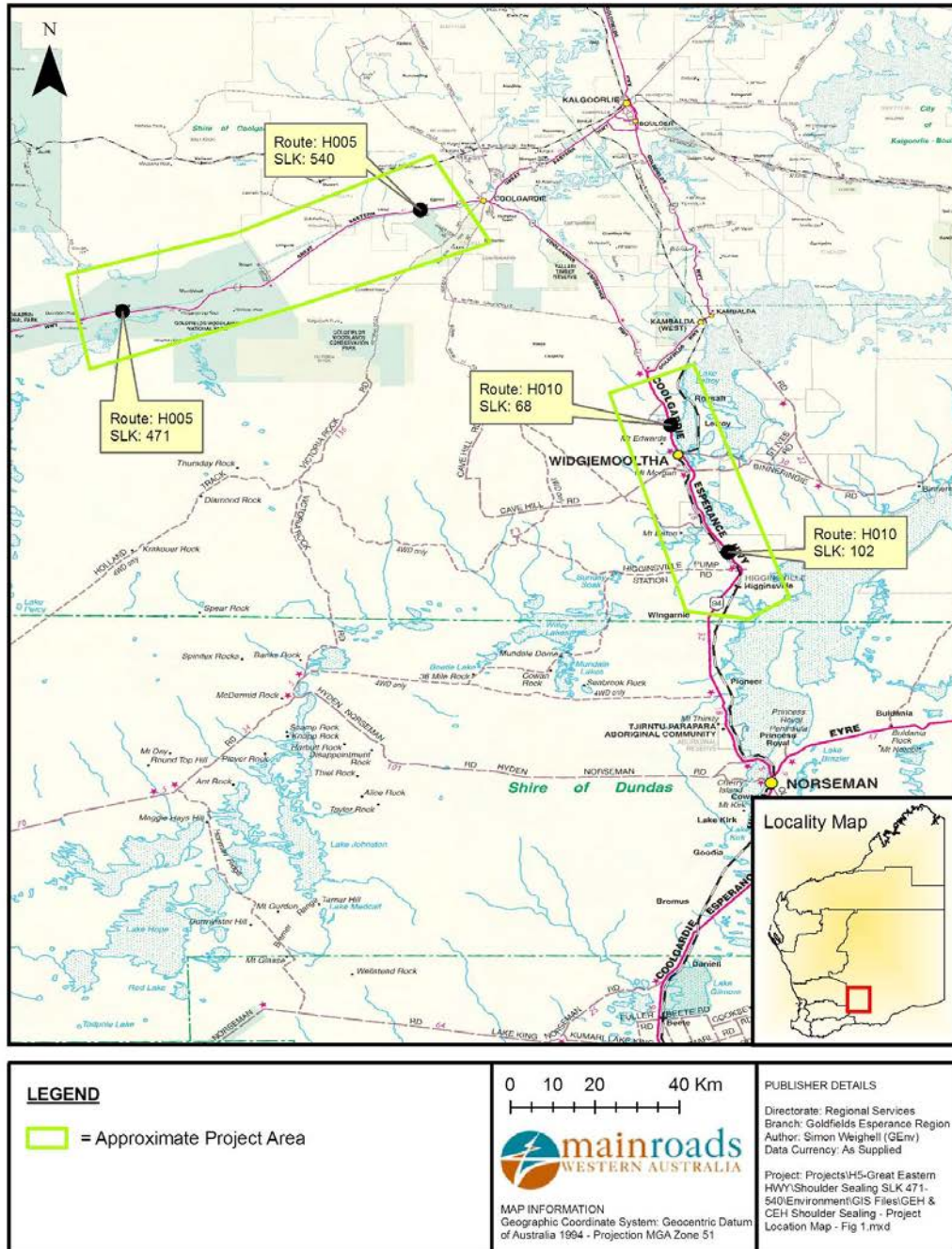


Figure 1. GEH & CEH Shoulder Sealing - Project Location Map

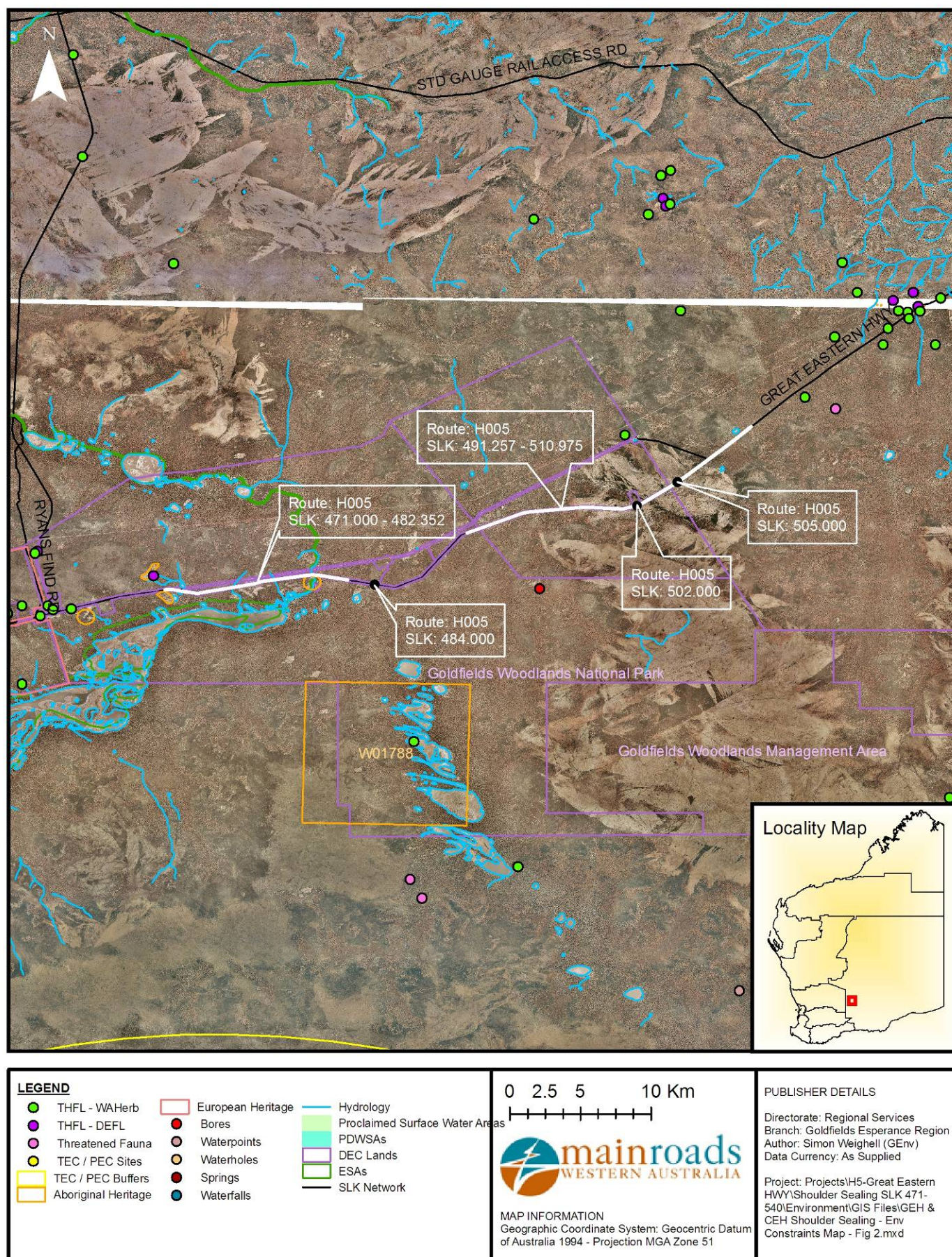


Figure 2. GEH & CEH Shoulder Sealing - Env Constraints Map A

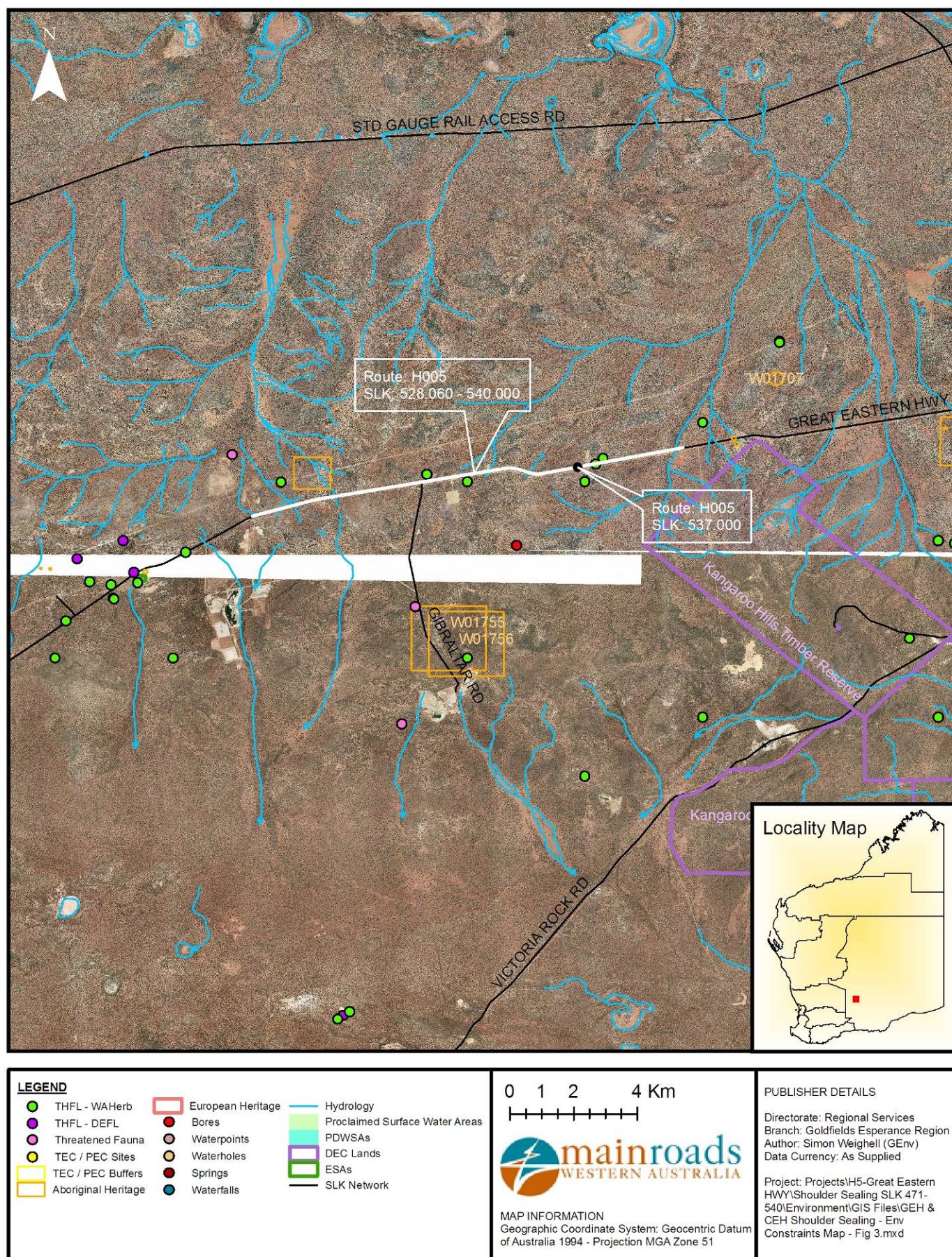


Figure 3. GEH & CEH Shoulder Sealing - Env Constraints Map B

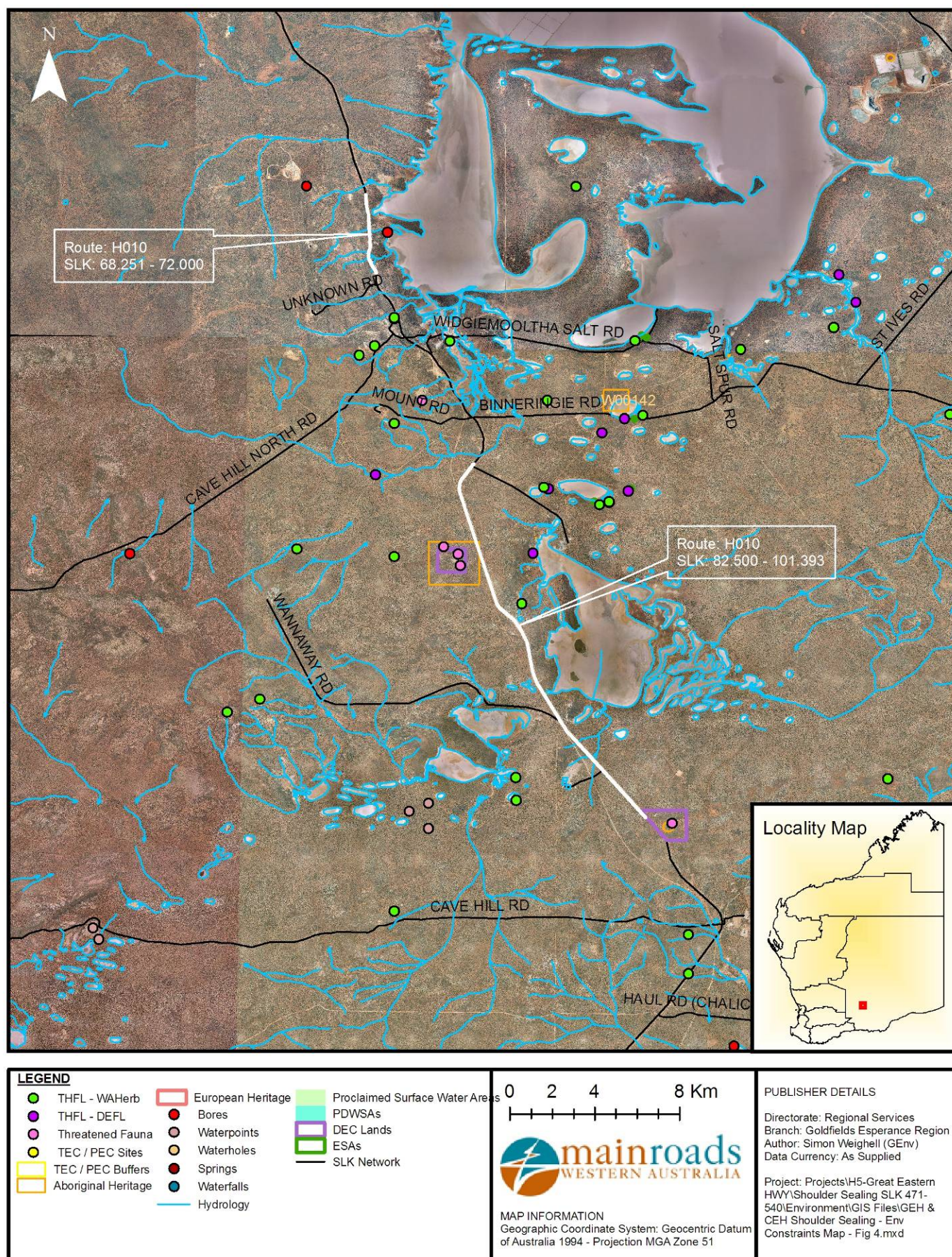


Figure 4. GEH & CEH Shoulder Sealing - Env Constraints Map C

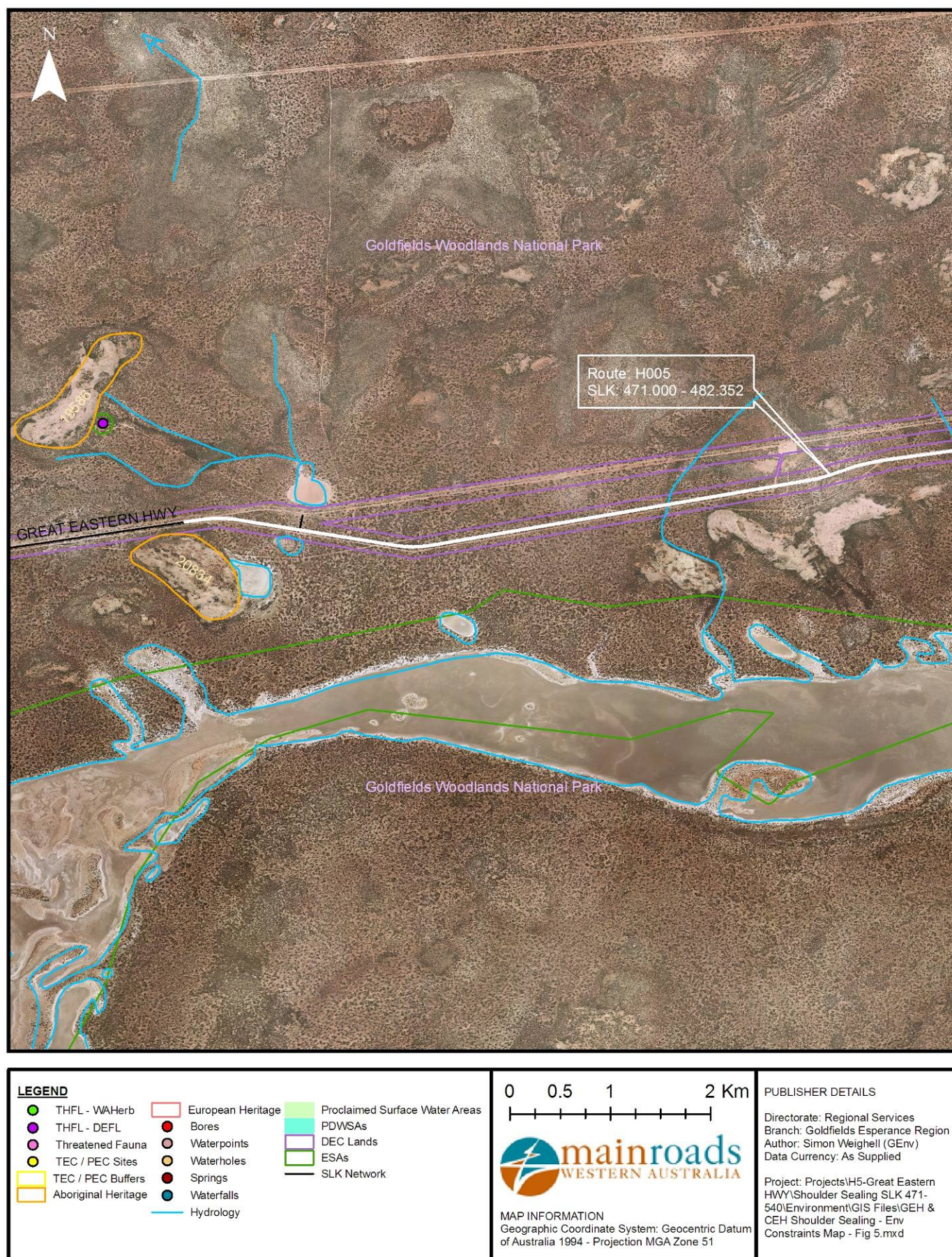


Figure 5. GEH Shoulder Sealing SLK 471.000 - 482.352 - Env Constraints Map A

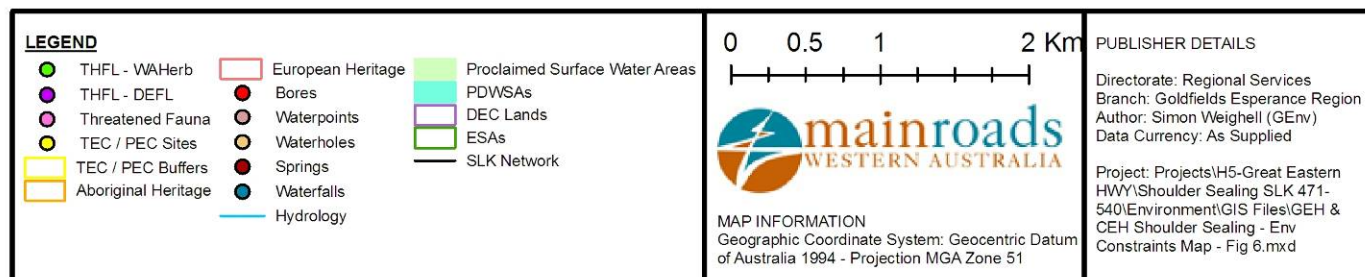
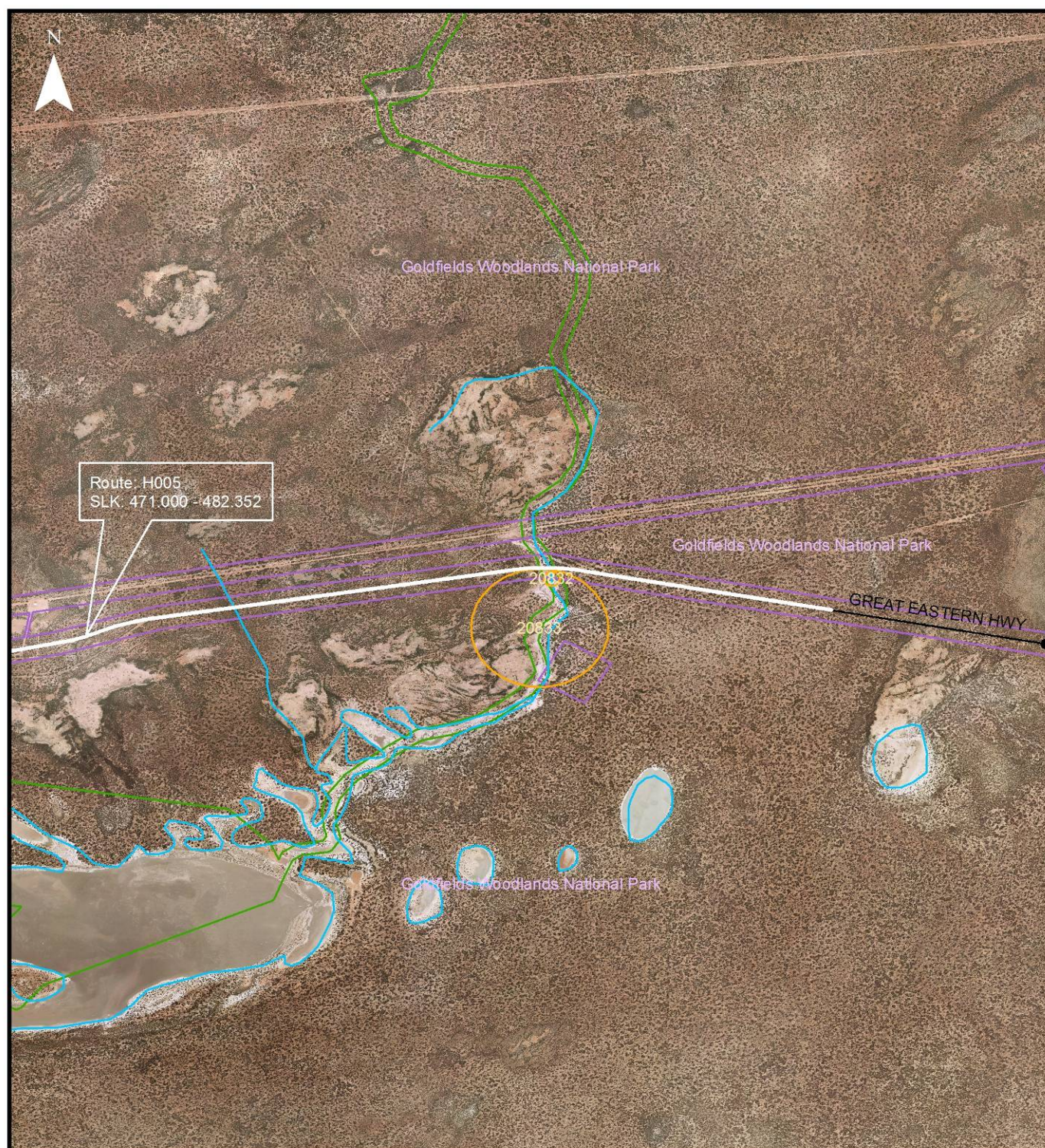


Figure 6. GEH Shoulder Sealing SLK 471.000 - 482.352 - Env Constraints Map B

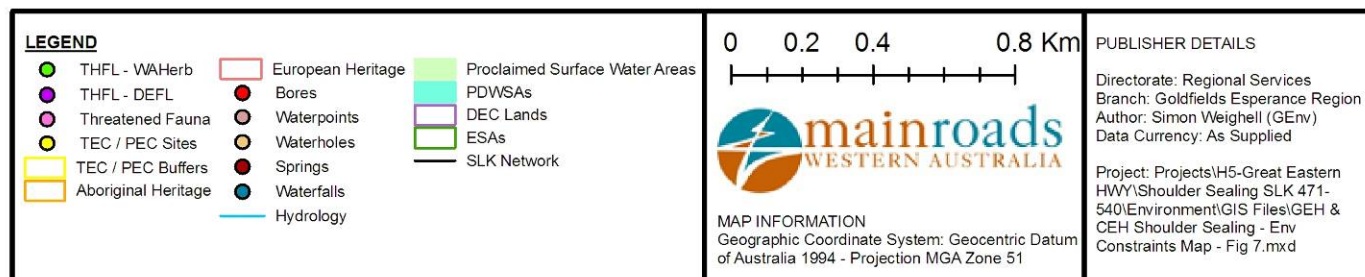
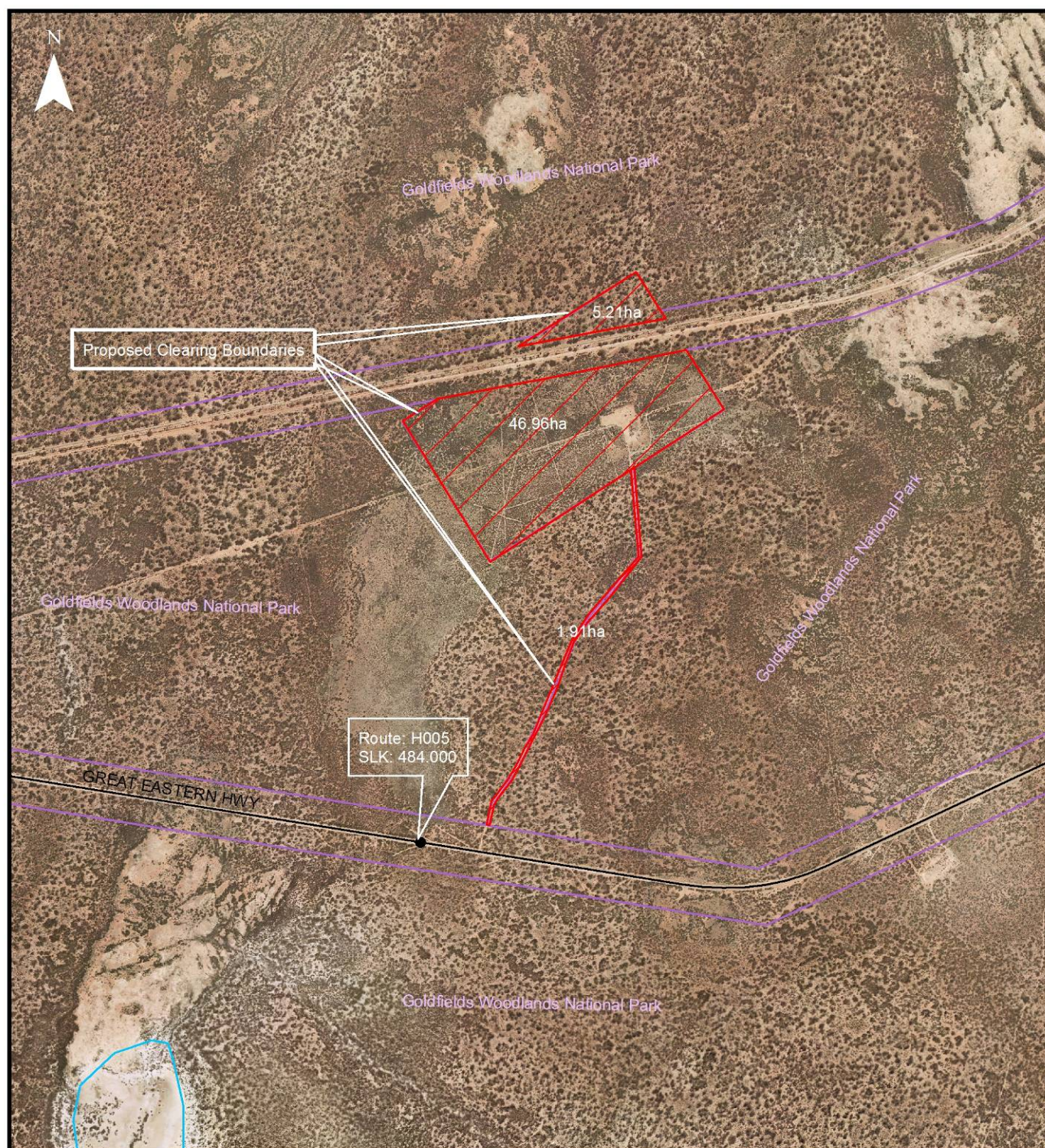


Figure 7. Clearing Boundaries for Pit @ SLK 484 GEH

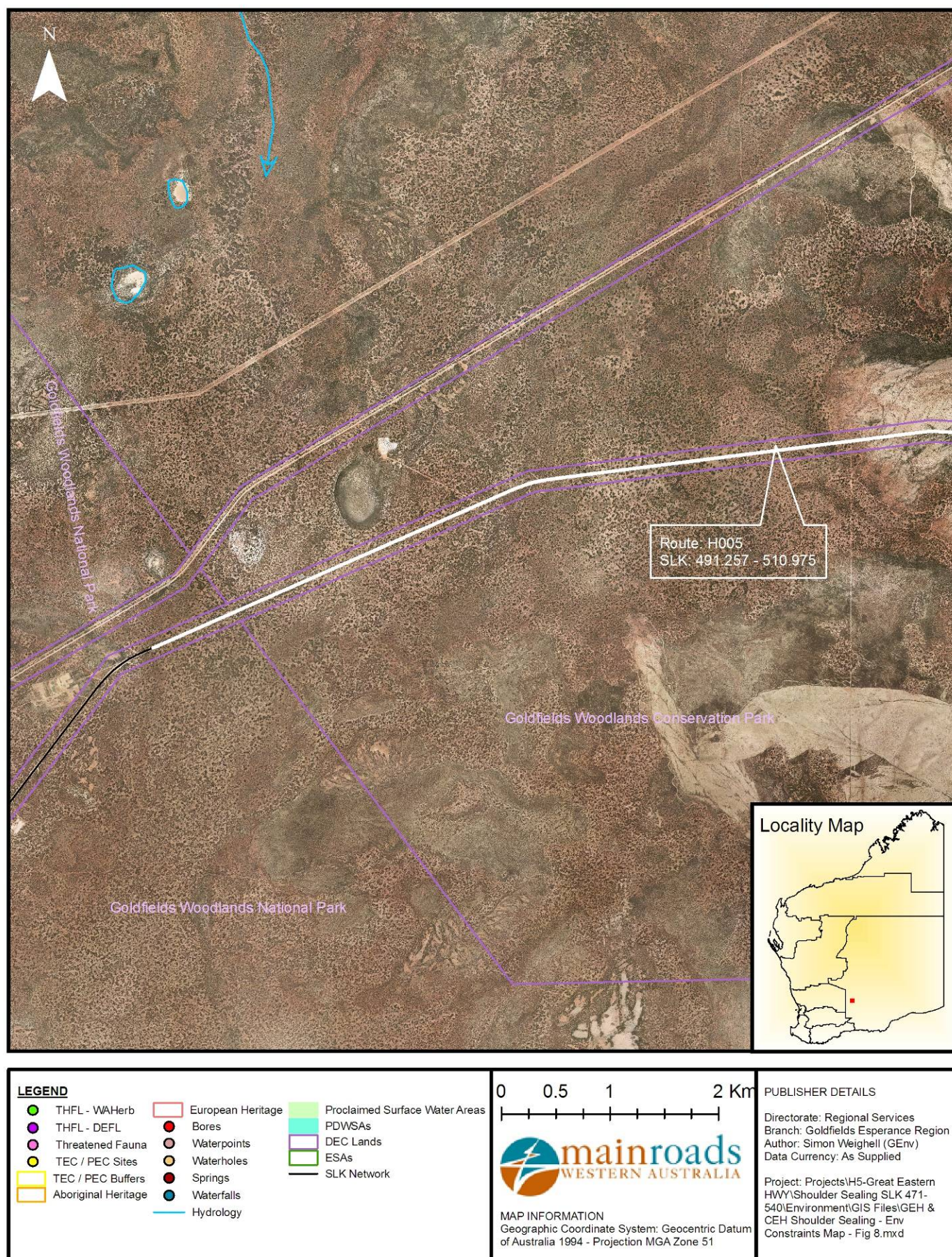


Figure 8. GEH Shoulder Sealing SLK 491.257 - 510.975 - Env Constraints Map A

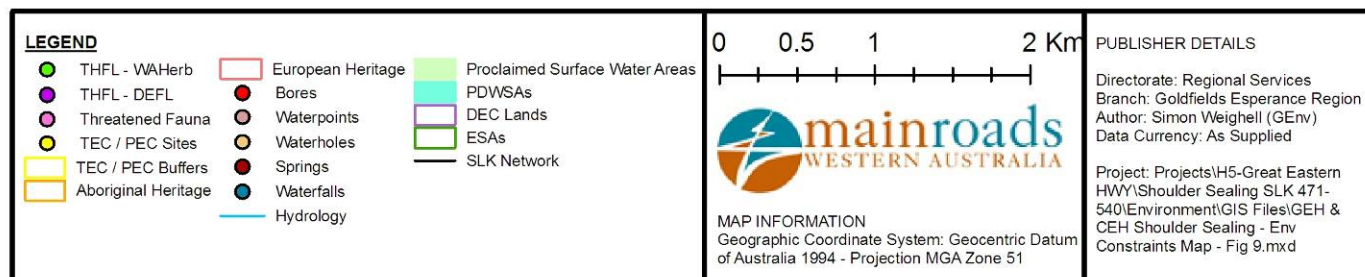
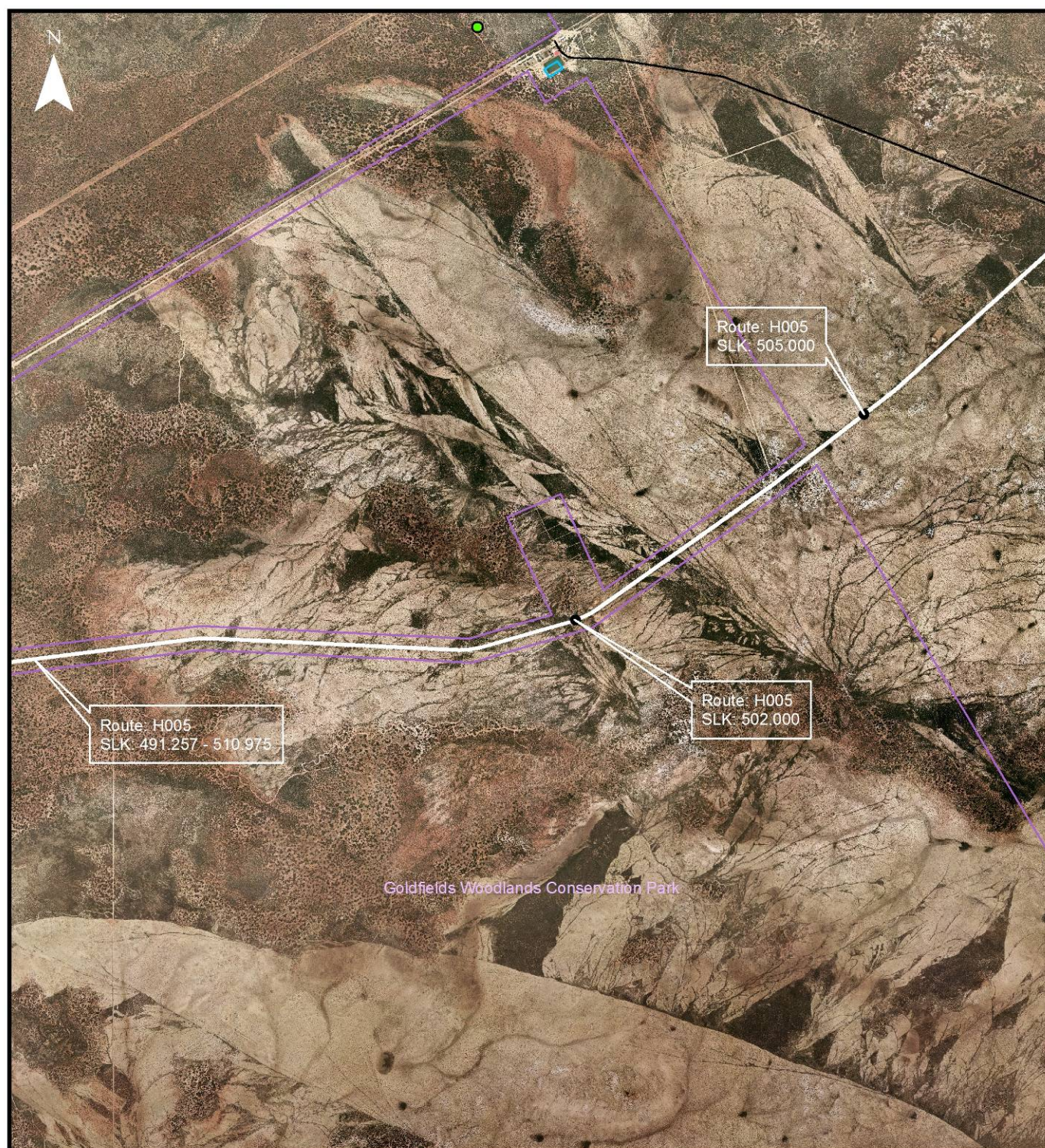


Figure 9. GEH Shoulder Sealing SLK 491.257 - 510.975 - Env Constraints Map B

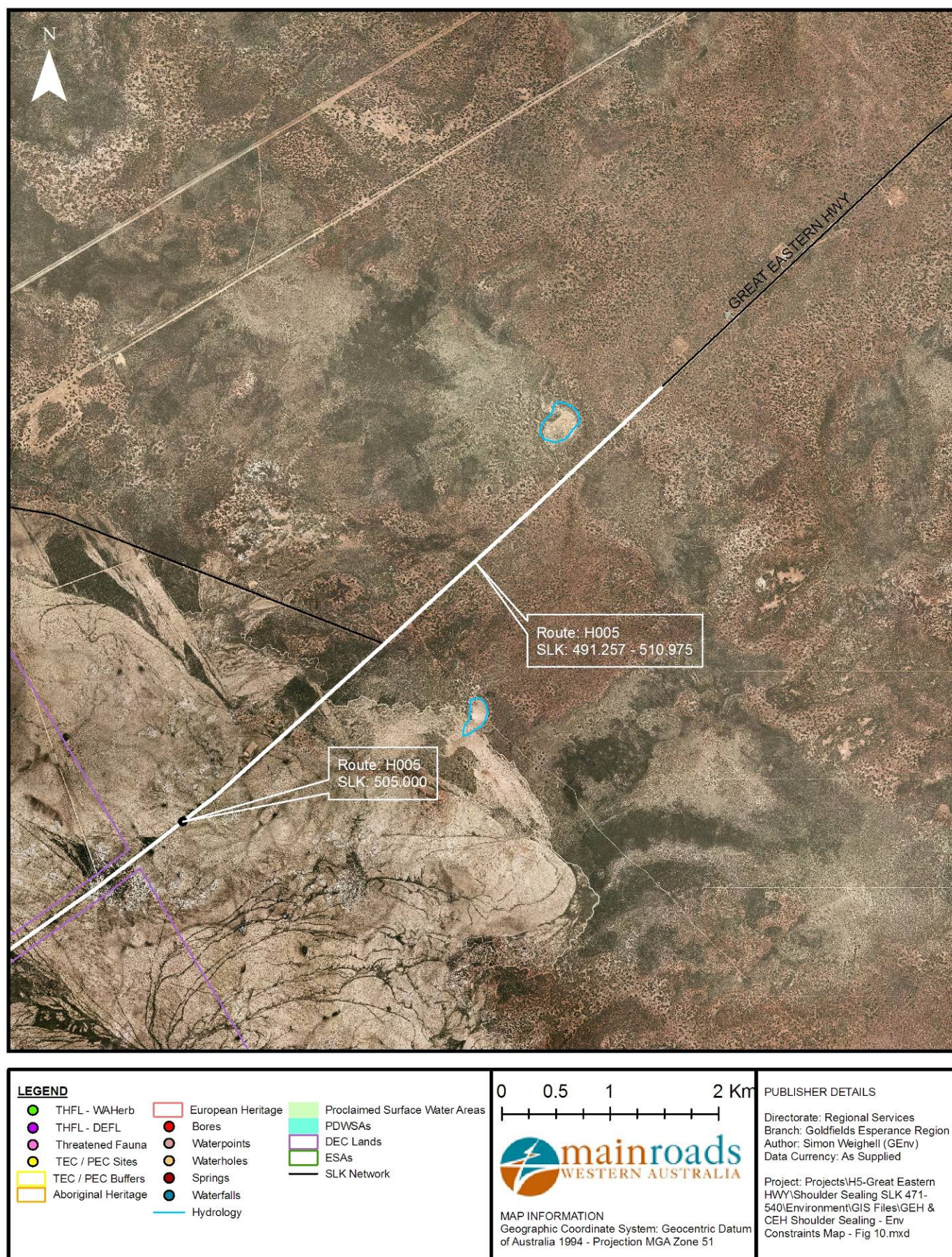


Figure 10. GEH Shoulder Sealing SLK 491.257 - 510.975 - Env Constraints Map C

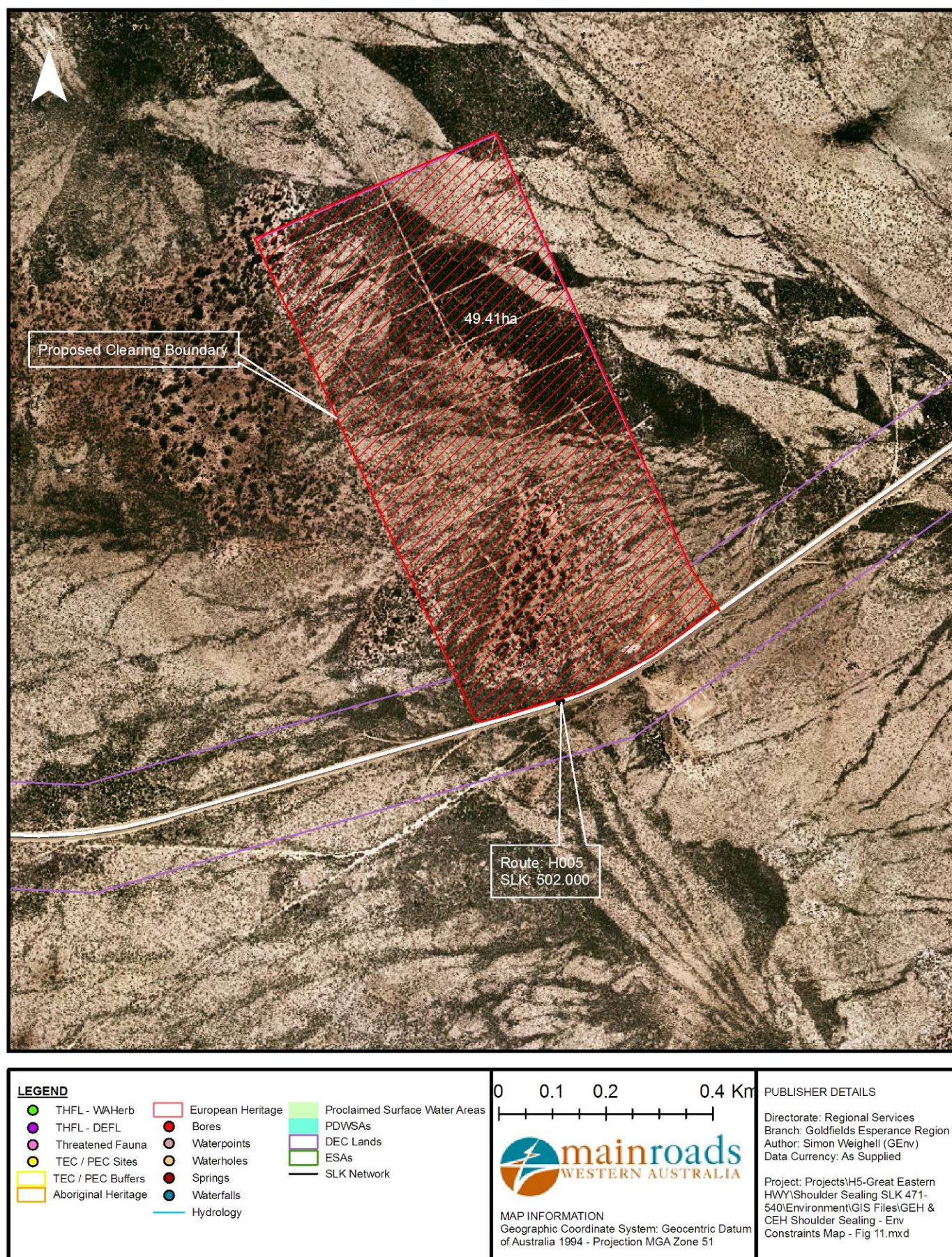


Figure 11. Clearing Boundaries for Pit @ SLK 502 GEH

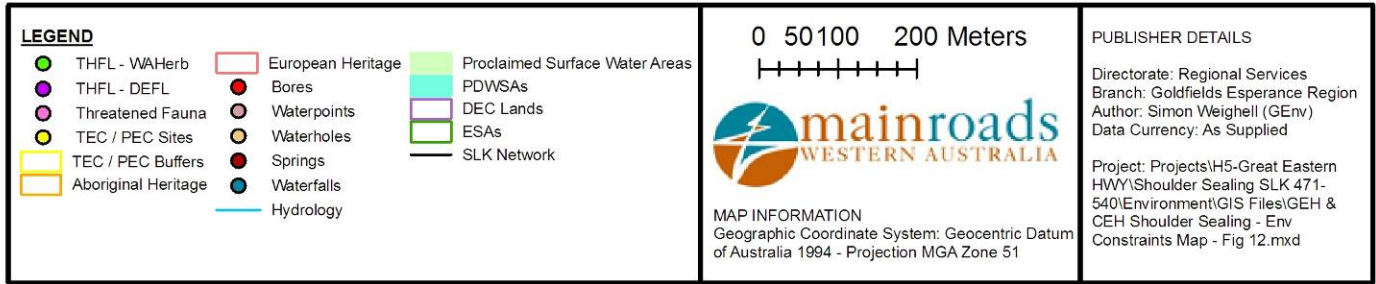
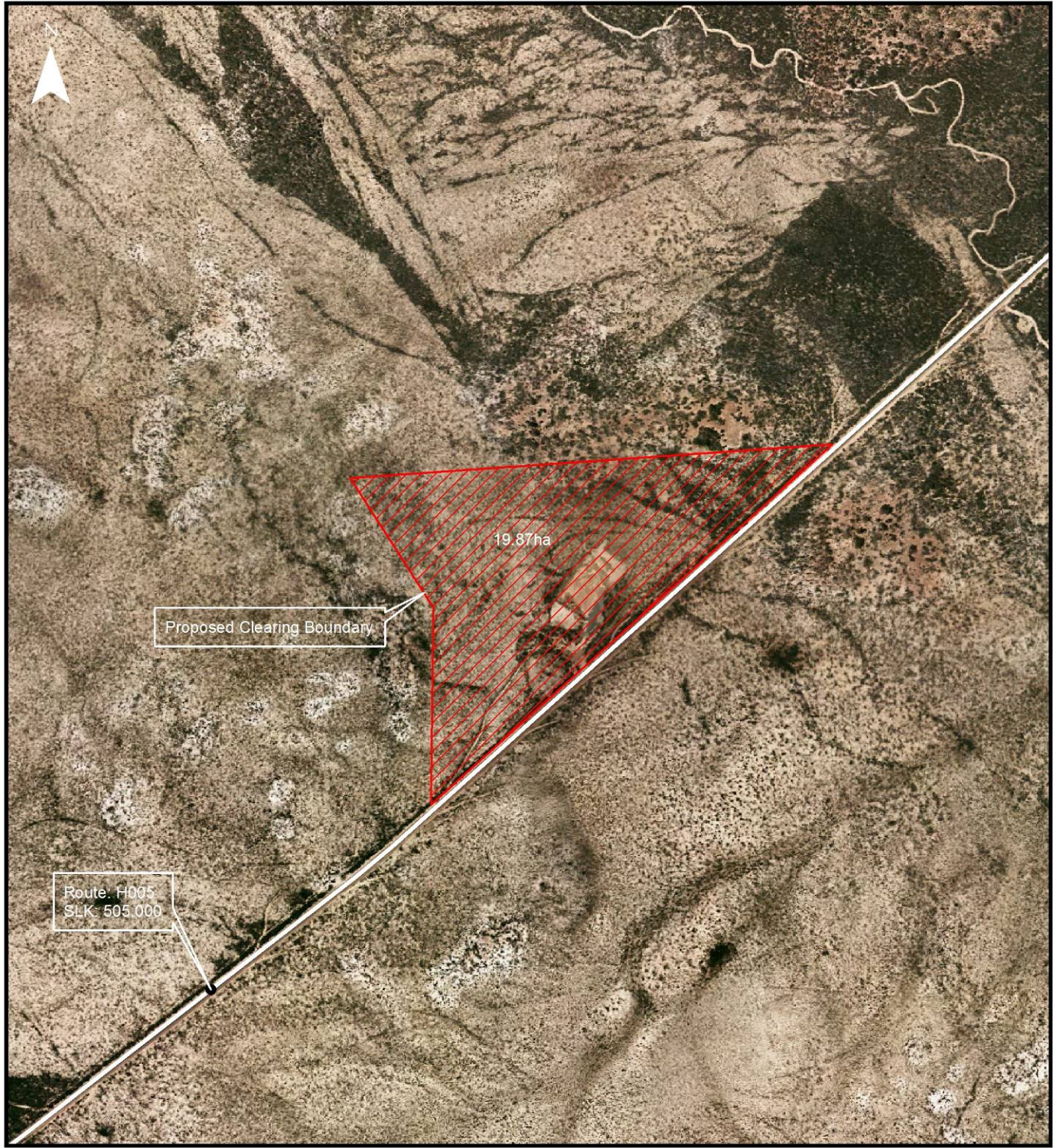


Figure 12. Clearing Boundaries for Pit @ SLK 505 GEH

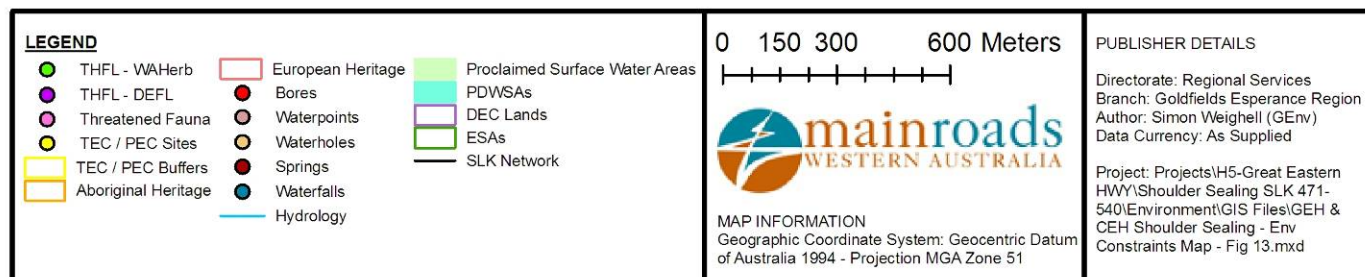
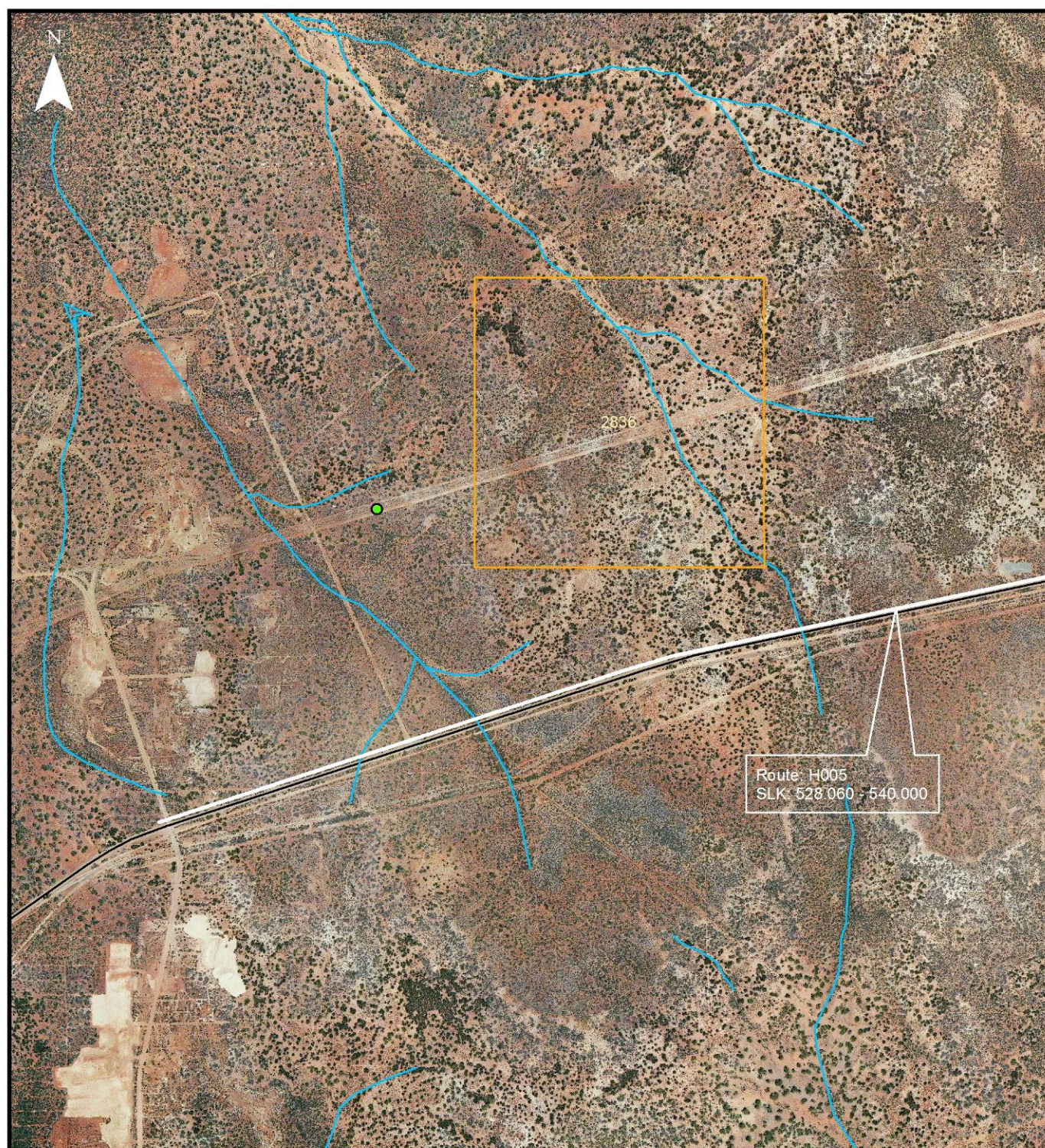


Figure 13. GEH Shoulder Sealing SLK 528.060 - 540.000 - Env Constraints Map A

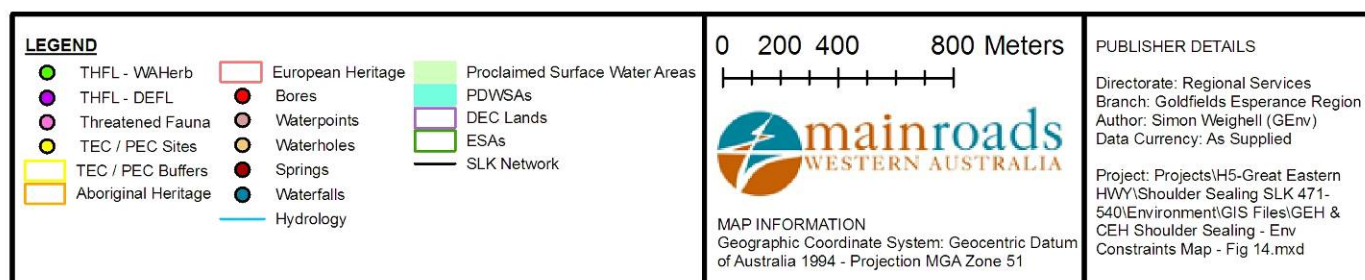


Figure 14. GEH Shoulder Sealing SLK 528.060 - 540.000 - Env Constraints Map B

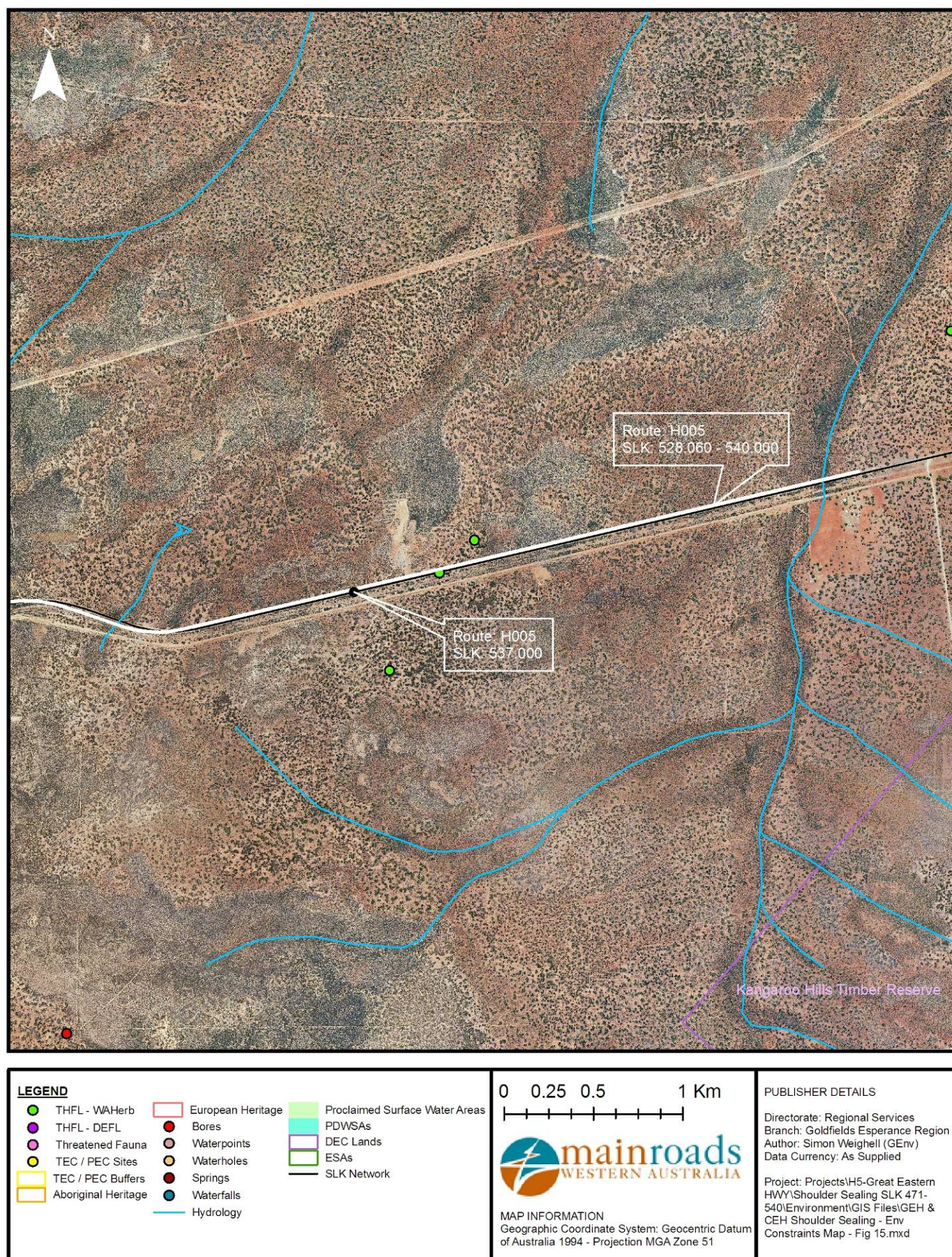


Figure 15. GEH Shoulder Sealing SLK 528.060 - 540.000 - Env Constraints Map C

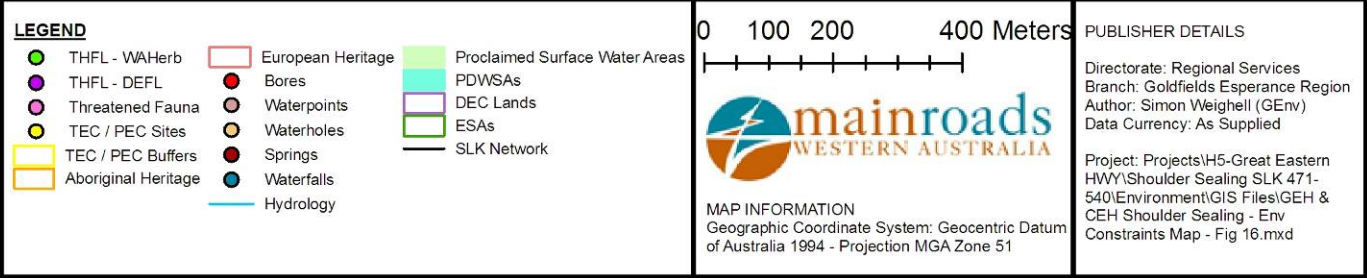
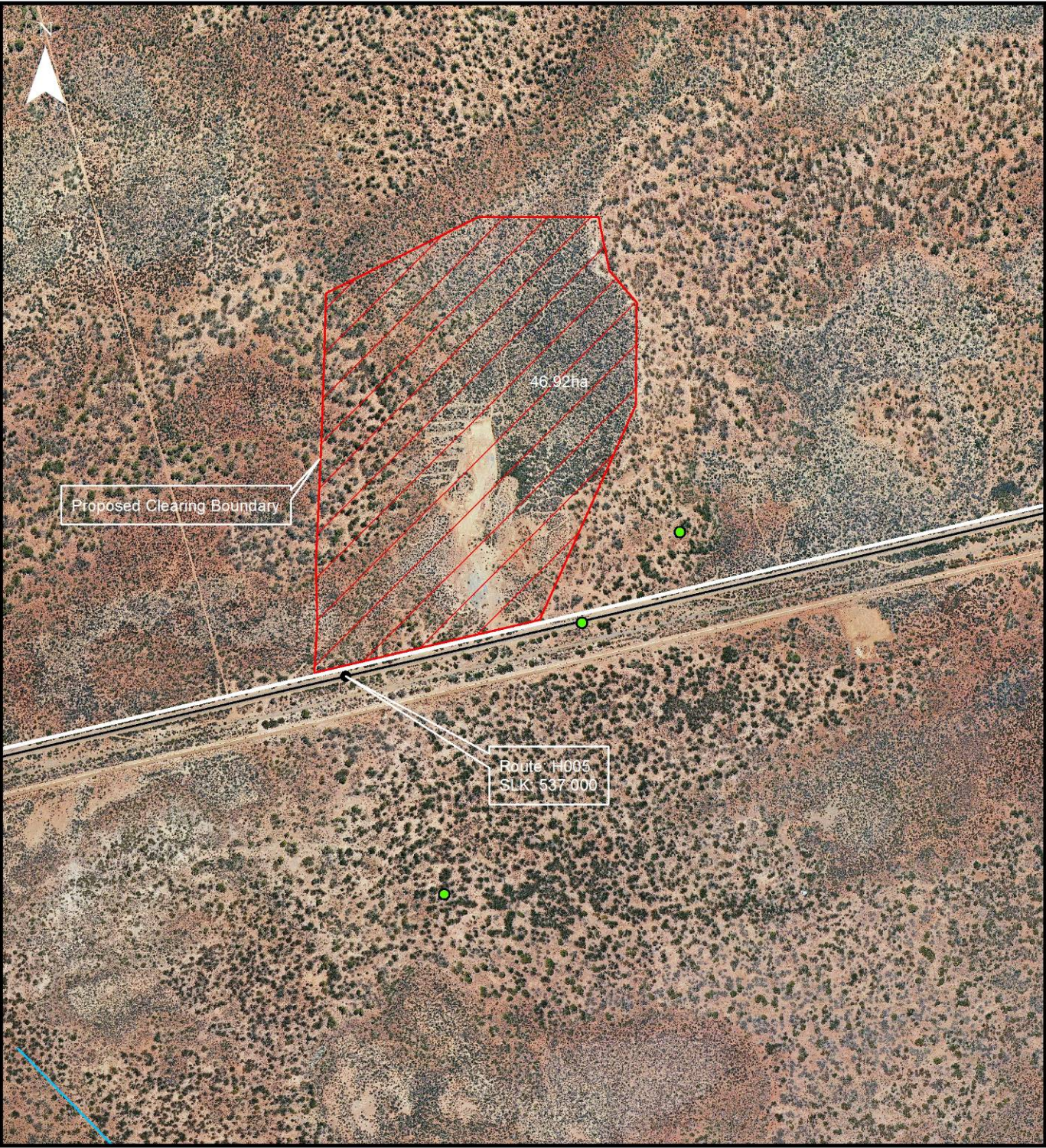


Figure 16. Clearing Boundaries for Pit @ SLK 537 GEH

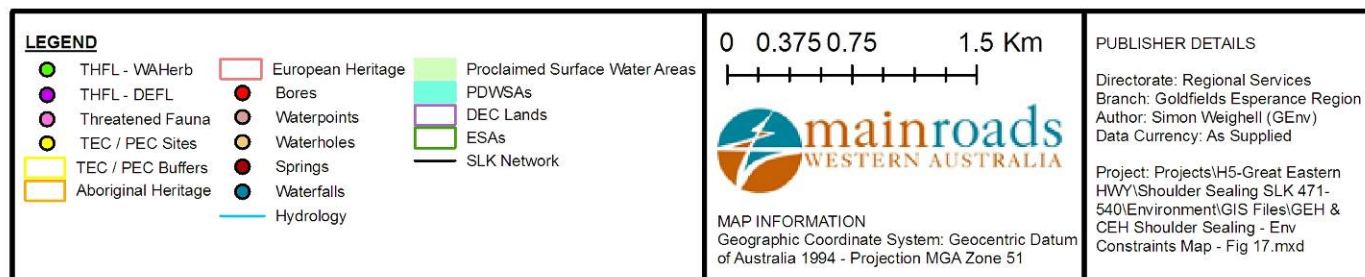


Figure 17. CEH Shoulder Sealing SLK 68.251 - 72.000 - Env Constraints Map

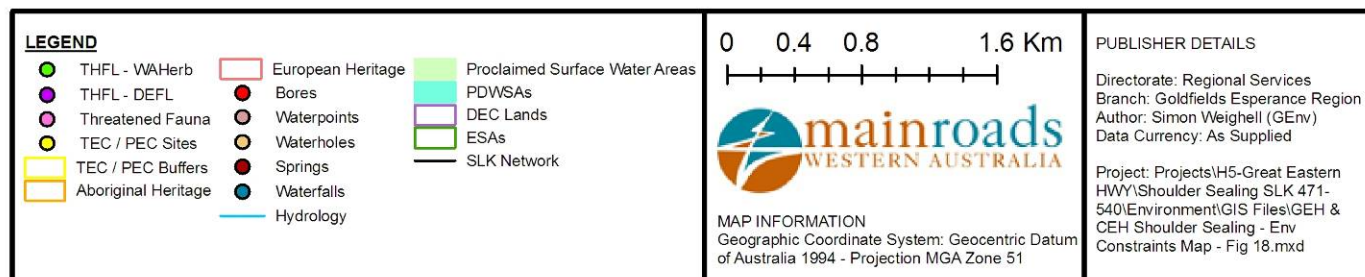
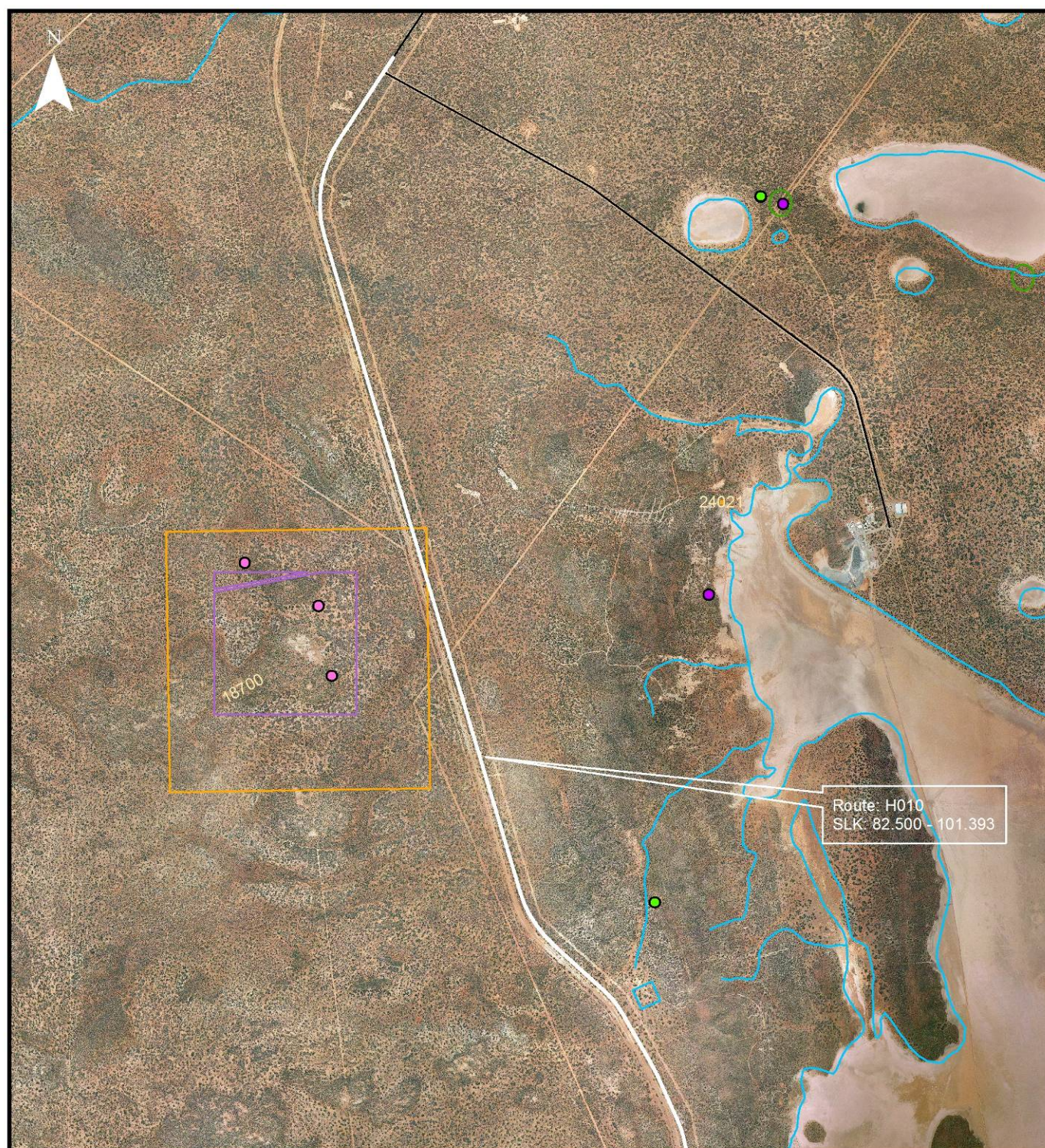


Figure 18. CEH Shoulder Sealing SLK 82.500 - 101.393 - Env Constraints Map A

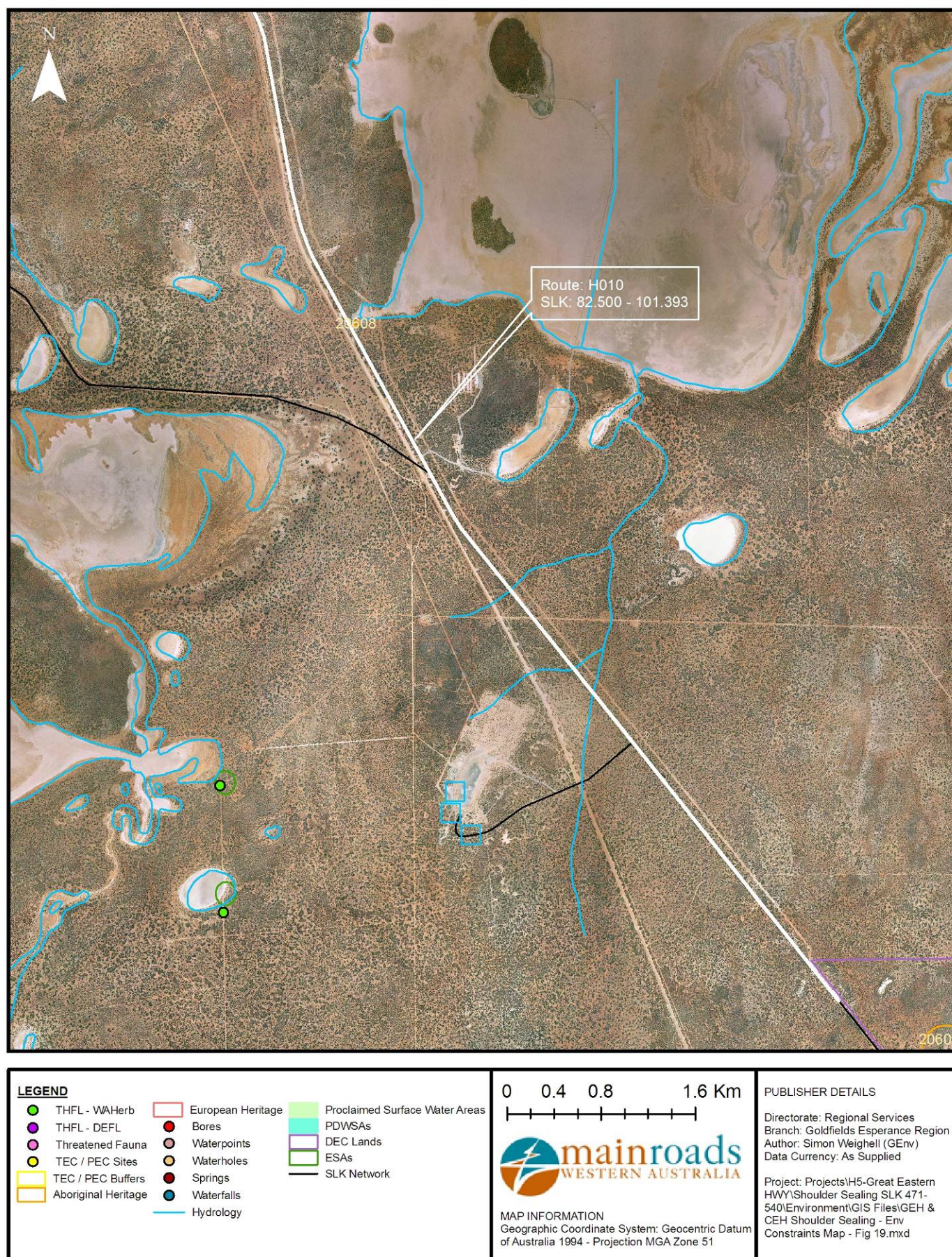


Figure 19. CEH Shoulder Sealing SLK 82.500 - 101.393 - Env Constraints Map B

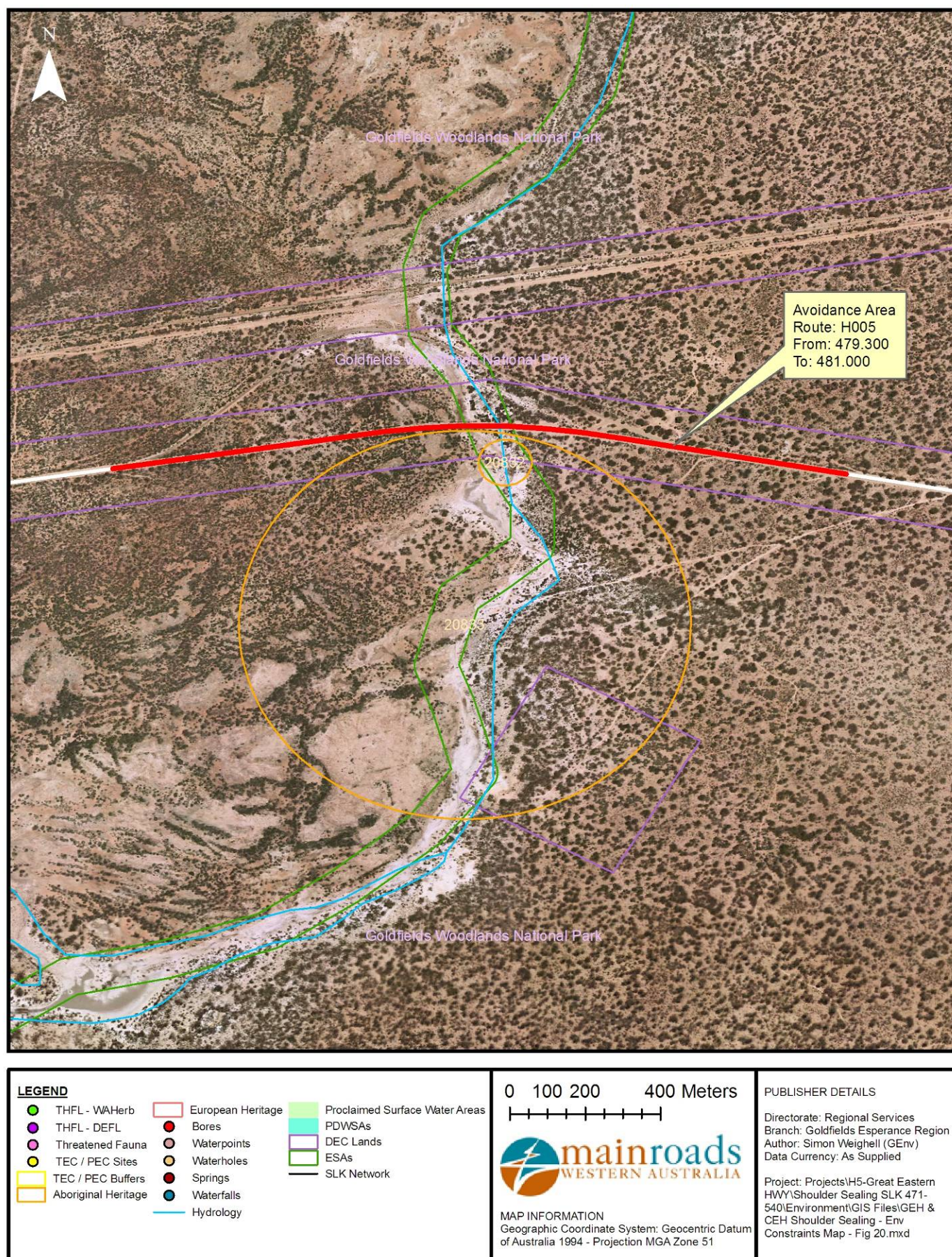


Figure 20. Avoidance Area for GEH Shoulder Sealing Section A (SLK 471.000 - 482.352).

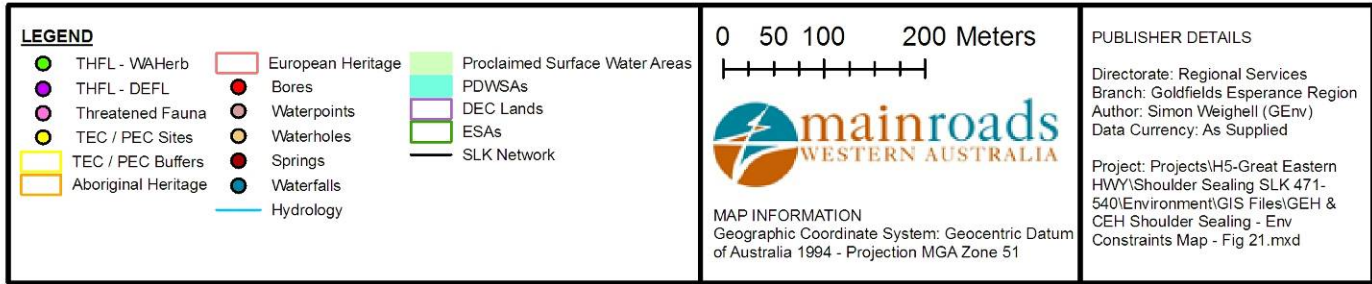


Figure 21. Avoidance Area for CEH Shoulder Sealing Section D (SLK 82.500 - 101.393).

Appendix B

Low Impact Screening Checklist

009 # 114828

Form No. 6707/001/01

Checklist - Low Impact Screening Checklist

The Low Impact Screening Checklist is part of the environmental assessment and approval process, refer to in Figure 2 in the Main Roads environmental guideline Environment Assessment and Approvals. It should be noted that the checklist does not address Aboriginal heritage issues. Please refer to Main Roads guideline *Aboriginal Heritage* for the heritage assessment process.

All projects are to be screened to identify those that are Low Impact.

Projects that have "No" to all items are classed as Low Impact and should be implemented using standard contract clauses in the Tender Document Process.

Projects that have "Yes" to any item will require further environmental assessment and will be implemented using an Environmental Management Plan.

Tick "Yes" or "No" for every item.

Project Name: MTW 05-0158, GREAT EASTERN HIGHWAY, A...COOLGARDIE ESPERANCE HIGHWAY SHOULDER SEALING - GOLDFIELDS ESPERANCE REGION.

| ITEM NO. | ITEM | Y | N |
|----------|---|-------------------------------------|-------------------------------------|
| 1 | New road or road reserve to be created or expansion of existing road reserve. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2 | Works require clearing of native vegetation outside the maintenance zone. | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3 | Works require clearing of native vegetation that is older than 10 years old within the maintenance zone. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4 | Works to occur outside normal working hours. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5 | Passes over, adjoins or drains directly into a wetland or sensitive watercourse. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6 | Local natural drainage regime / hydrology will be changed. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7 | Dewatering, or a new water bore required. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8 | Known potential source of hazardous materials within or adjoining project area. e.g. Acid Sulphate Soils, existing petrol station, industrial site or waste disposal site (landfill) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9 | Buildings will require demolition. | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Completed By: Signature [Signature] Date 16.04.2009
Name Shariful Islam Title Graduate Engineer

To be reviewed by a Main Roads Environment Officer: Signature S. Weighell Date 16/4/09
Name SIMON WEIGHELL Title G ENV

Comments: PEIA required

MAIN ROADS Western Australia
Form 6707/001/01 Screening Checklist Rev 3.doc
30/05/07

Appendix C

Government Agency Database Searches

DEC's Threatened Fauna database search results:

| Threatened and Priority Fauna Database | | | | | Page 1 of 5 |
|--|-----------|------|---|-------------------|-------------------|
| 30.5072°S 119.2437°E / 32.2582°S 122.1933°E Great Eastern Hwy & Coolgardie-Esperance Hwy | | | | | |
| * Date | Certainty | Seen | Location Name | Method | |
| Schedule 1 - Fauna that is rare or is likely to become extinct | | | | | |
| <i>Dasyurus geoffroii</i> | | | Chuditch | | 5 records |
| This carnivorous marsupial occupies large home ranges, is highly mobile and appears able to utilise bush remnants and corridors. | | | | | |
| 1974 | 1 | 1 | Kambalda East | Caught or trapped | |
| 1989 | 1 | 1 | Ghooli | Dead | |
| 1989 | 1 | 1 | SOUTHERN CROSS | | |
| 1994 | 2 | 1 | KARALEE | Night sighting | |
| 1994 | 2 | 1 | Karalee | Night sighting | |
| <i>Myrmecobius fasciatus</i> | | | Numbat, Walpurti | | 2 records |
| This diurnal marsupial feeds almost exclusively on termites and is very vulnerable to predation by foxes and cats. It occurs in a variety of habitats including woodland and shrubland where it shelters in hollow logs, tree hollows and burrows. | | | | | |
| 1961 | 1 | 1 | Norseman | | |
| 2001 | 1 | 1 | Norseman | Day sighting | |
| <i>Phascogale tapoatafa</i> ssp. (WAM M434) | | | Brush-tailed Phascogale, Wambenger | | 1 records |
| This arboreal marsupial occurs in forest and woodland where suitable tree hollows are available. Populations fluctuate dramatically in response to invertebrate prey abundance. | | | | | |
| 2005 | 3 | 1 | Widgiamooltha | Night sighting | |
| <i>Leipoa ocellata</i> | | | Malleefowl | | 17 records |
| This species was once widely distributed across southern Australia. It prefers woodland or shrubland with an abundant litter layer that provides essential material for the construction of its nest mound. | | | | | |
| 1908 | 1 | 2 | Kalgoorlie | Day sighting | |
| 1938 | 1 | | Norseman | | |
| 1984 | 1 | 2 | Jaurdi | Day sighting | |
| 1985 | 1 | 2 | Jaurdi | Day sighting | |
| 1985 | 1 | 2 | Jaurdie Hills | | |
| 1994 | 1 | 0 | Bullabulling | Definite signs | |
| 1995 | 2 | 1 | Londonderry | Day sighting | |
| 2000 | 1 | 1 | Mount Burges | Day sighting | |
| 2000 | 1 | 1 | Lake Deborah | Day sighting | |
| 2003 | 1 | 1 | Jaurdi | | |
| 2006 | 1 | 1 | Bullabulling | Day sighting | |
| 2007 | 1 | 2 | Bullabulling | Day sighting | |
| 2007 | 1 | 0 | Victoria Rock | Definite signs | |
| 2007 | 1 | 1 | Madoonia Downs | | |
| 2007 | 1 | 1 | Southern Cross/Marvel Loch | Day sighting | |
| 2008 | 1 | 2 | Bullabulling | Day sighting | |
| 2008 | 1 | 1 | Marvel Loch | Day sighting | |
| <i>Calyptrorhynchus latirostris</i> | | | Carnaby's Black-Cockatoo | | 2 records |
| This species moves around seasonally in flocks to feeding areas in proteaceous scrubs and heaths and eucalypt woodlands as well as pine plantations. Breeding occurs in winter/spring, mainly in the eastern forests and wheatbelt where they can find mature hollow-bearing trees to nest in. | | | | | |

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Environment and Conservation

30.5072°S 119.2437°E / 32.2582°S 122.1933°E Great Eastern Hwy & Coolgardie-Esperance Hwy

| * Date | Certainty | Seen | Location Name | Method |
|--------|-----------|------|---------------|--------|
| 1905 | 1 | | Norseman | |
| 1938 | 1 | | Norseman | |

Platycercus icterotis xanthogenys Western Rosella (inland ssp) 4 records

This subspecies of the Western Rosella occurs in eucalypt and casuarina woodlands and scrubs, especially of Salmon Gum and tall mallee.

| | | | | |
|------|---|---|---------------------|--------------|
| 1981 | 1 | | Victoria Rock | Day sighting |
| 1989 | 1 | | Crown Reserve 17804 | Day sighting |
| 2007 | 1 | 2 | Norseman | Day sighting |
| 2007 | 1 | 3 | Norseman | Day sighting |

Aganippe castellum Tree-stem Trapdoor Spider 1 records

This species lives in summer dry bogs prone to irregular flooding and builds a characteristic burrow entrance against a tree stem.

| | | | | |
|------|---|---|----------------|-------------------|
| 1937 | 1 | 1 | Southern Cross | Caught or trapped |
|------|---|---|----------------|-------------------|

Ogyris subterrestris petrina Arid Bronze Azure Butterfly 17 records

This species of butterfly is only known from a small area north east of Lake Douglas. Little is known of its biology but it is associated with an ant, *Camponotus terribilis*.

| | | | | |
|------|---|----|--------------|-------------------|
| 1911 | 1 | 1 | Kalgoorlie | Caught or trapped |
| 1982 | 1 | 2 | Lake Douglas | Caught or trapped |
| 1985 | 1 | 1 | Lake Douglas | Caught or trapped |
| 1986 | 1 | 15 | Lake Douglas | Caught or trapped |
| 1986 | 1 | 4 | Lake Douglas | Caught or trapped |
| 1987 | 1 | 1 | Lake Douglas | Caught or trapped |
| 1987 | 1 | 8 | Lake Douglas | Caught or trapped |
| 1987 | 1 | 2 | Lake Douglas | Caught or trapped |
| 1989 | 1 | 1 | Lake Douglas | Caught or trapped |
| 1989 | 1 | 2 | Lake Douglas | Caught or trapped |
| 1989 | 1 | 2 | Lake Douglas | Caught or trapped |
| 1989 | 1 | 3 | Lake Douglas | Caught or trapped |
| 1989 | 1 | 6 | Lake Douglas | Caught or trapped |
| 1991 | 1 | 1 | Lake Douglas | Caught or trapped |
| 1991 | 1 | 4 | Lake Douglas | Caught or trapped |
| 1991 | 1 | 1 | Lake Douglas | Caught or trapped |
| 1991 | 1 | 1 | Lake Douglas | Caught or trapped |

Schedule 4 - Other specially protected fauna***Falco peregrinus*** Peregrine Falcon 4 records

This species is uncommon and prefers areas with rocky ledges, cliffs, watercourses, open woodland or margins with cleared land.

| | | | | |
|------|---|---|------------------------|--------------|
| 1994 | 1 | 1 | Jaurdi | Day sighting |
| 1994 | 1 | 1 | Jaurdi | |
| 1998 | 1 | 1 | Kambalda/Widgiemooltha | Day sighting |
| 2003 | 1 | 1 | Jaurdi | |

30.5072°S 119.2437°E / 32.2582°S 122.1933°E Great Eastern Hwy & Coolgardie-Esperance Hwy

| * Date | Certainty | Seen | Location Name | Method |
|--------|-----------|------|---------------|--------|
|--------|-----------|------|---------------|--------|

Cacatua leadbeateri Major Mitchell's Cockatoo 6 records

This species is sporadically distributed through arid and semi-arid Australia and may occur in sparsely timbered grasslands and shrublands and rocky outcrops.

| | | | | |
|------|---|----|-------------------------|--------------|
| 1980 | 1 | 7 | Boorabbin National Park | Day sighting |
| 1983 | 1 | 4 | Koorawalyoo | Day sighting |
| 1983 | 1 | 8 | Koorawalyoo | Day sighting |
| 2000 | 1 | 23 | Brontia | Day sighting |
| 2000 | 1 | 12 | Lake Deborah | Day sighting |
| 2000 | 1 | 2 | Mt Jackson | Day sighting |

Morelia spilota imbricata Carpet Python 2 records

This species occurs in a variety of habitats including forest and heathland. It is often arboreal and preys on birds, other reptiles and small to medium size mammals. This species is listed under both Schedule 4 and Priority 4.

| | | | | |
|------|---|---|---------------------|--------------|
| 1989 | 1 | | Crown Reserve 17804 | Day sighting |
| 2008 | 1 | 1 | Mount Holland | Day sighting |

Priority One: Taxa with few, poorly known populations on threatened lands

Branchinella denticulata 1 records

This species of crustacean is known only from Gidgi Lake north of Kalgoorlie. Little is known of its biology.

| | | | | |
|------|---|--|------------|-------------------|
| 1937 | 1 | | Gidgi Lake | Caught or trapped |
|------|---|--|------------|-------------------|

Daphnia jollyi 1 records

This species of aquatic invertebrate has been found in rock pools on granites.

| | | | | |
|------|---|--|------------------|-------------------|
| 1992 | 1 | | Strawberry Rocks | Caught or trapped |
|------|---|--|------------------|-------------------|

Jalmenus aridus (butterfly) 4 records

This species of butterfly is only known from the vicinity of Lake Douglas. Larvae are known to feed on the foliage of *Acacia tetragonophylla*, and are tended by *Froggattalla kirbyi* ants.

| | | | | |
|------|---|---|--------------|-------------------|
| 1985 | 1 | 1 | Lake Douglas | Caught or trapped |
| 1986 | 1 | 1 | Lake Douglas | Caught or trapped |
| 1986 | 1 | 1 | Lake Douglas | Caught or trapped |
| 1989 | 1 | 1 | Lake Douglas | Caught or trapped |

Priority Three: Taxa with several, poorly known populations, some on conservation lands

Paroplocephalus atriceps Lake Cronin Snake 1 records

| | | | | |
|------|---|---|-------------|------|
| 2007 | 1 | 1 | Jilbedji NR | Dead |
|------|---|---|-------------|------|

Priority Four: Taxa in need of monitoring

Macropus irma Western Brush Wallaby 1 records

This species occurs in areas of forest and woodland supporting a dense shrub layer.

| | | | | |
|------|---|---|-------------|--------------|
| 1999 | 2 | 2 | Jilbedji NR | Day sighting |
|------|---|---|-------------|--------------|

Nyctophilus timoriensis (central form) Central Long-eared Bat 3 records

This species of bat roosts in tree hollows and under loose bark but little else is known about this species.

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| * Date | Certainty | Seen | Location Name | Method |
|---|-----------|------|--|-------------------|
| 1981 | 1 | 1 | Woolgongia | |
| 1981 | 1 | 1 | Jilbedgi NR | |
| 2007 | 1 | 2 | ex Jaundi | Caught or trapped |
| <hr/> | | | | |
| <i>Ardeotis australis</i> | | | Australian Bustard | 1 records |
| This species is uncommon and may occur in open or lightly wooded grasslands. | | | | |
| 1978 | 1 | 1 | Mount Burges | Day sighting |
| <hr/> | | | | |
| <i>Charadrius rubricollis</i> | | | Hooded Plover | 3 records |
| This species frequents the margins and shallows of salt lakes, also along coastal beaches, where it forages for invertebrates along the water's edge. | | | | |
| 1992 | 1 | | Arrow Lake | |
| 1999 | 1 | 2 | Victoria Rock | Day sighting |
| 2001 | 1 | 2 | Lake Yindargooda | Day sighting |
| <hr/> | | | | |
| <i>Amytornis textilis textilis</i> | | | Thick-billed Grass-wren (western ssp) | 1 records |
| This species inhabits shrubland, preferring the denser vegetation along drainage depressions. | | | | |
| 1908 | 2 | 1 | Kalgoorlie | Day sighting |
| <hr/> | | | | |
| <i>Falcunculus frontatus leucogaster</i> | | | Crested Shrike-tit (south-western ssp) | 1 records |
| This species is an uncommon inhabitant of woodlands. | | | | |
| 1905 | 1 | | Norseman | |
| <hr/> | | | | |
| <i>Hylacola cauta whitlocki</i> | | | Shy Heathwren (western ssp) | 4 records |
| This species is an uncommon resident in mallee undergrowth. | | | | |
| 1904 | 1 | | Kurrawang Nature Reserve | Caught or trapped |
| 1981 | 2 | | Victoria Rock | Day sighting |
| 1998 | 1 | | Norseman area | |
| 2007 | 0 | 1 | Marvel Loch | Day sighting |
| <hr/> | | | | |
| <i>Oreocera gutturalis gutturalis</i> | | | Crested Bellbird (southern) | 12 records |
| This sedentary and solitary species inhabits the drier mallee woodlands and heaths of the southern parts of the State. | | | | |
| 1904 | 1 | | Kurrawang Nature Reserve | Caught or trapped |
| 1980 | 1 | 0 | Binaronca Nature Reserve | Heard |
| 1981 | 1 | | Victoria Rock | Day sighting |
| 1989 | 1 | | Crown Reserve 3211 | Day sighting |
| 1989 | 1 | | Crown Reserve 3211 | Day sighting |
| 1989 | 1 | | Crown Reserve 3211 | Day sighting |
| 1989 | 1 | | Kurrawang Nature Reserve | Day sighting |
| 1989 | 1 | | Kurrawang Nature Reserve | Day sighting |
| 1989 | 1 | | Kurrawang Nature Reserve | Day sighting |
| 1996 | 1 | | Kurrawang Nature Reserve | |
| 2003 | 1 | | Jaundi | |
| 2007 | 1 | 1 | Marvel Loch | Day sighting |



30.5072°S 119.2437°E / 32.2582°S 122.1933°E Great Eastern Hwy & Coolgardie-Esperance Hwy


| * Date | Certainty | Seen | Location Name | Method |
|---|-----------|------|--|------------------|
| <i>Pomatostomus superciliosus ashbyi</i> | | | White-browed Babbler (western wheatbe | 7 records |
| This species of bird lives in eucalypt forests and woodlands, and forages on or near the ground for insects and seeds. | | | | |
| 1989 | 1 | | Crown Reserve 17804 | Day sighting |
| 1989 | 1 | | Crown Reserve 7038 | Day sighting |
| 1996 | 1 | | Kurrawang Nature Reserve | |
| 2007 | 1 | 3 | Marvel Loch | Day sighting |
| 2007 | 1 | 2 | Marvel Loch | Day sighting |
| 2007 | 1 | 4 | Marvel Loch | Day sighting |
| 2007 | 1 | 1 | Marvel Loch | Day sighting |
| <i>Morelia spilota imbricata</i> | | | Carpet Python | 2 records |
| This species occurs in a variety of habitats including forest and heathland. It is often arboreal and preys on birds, other reptiles and small to medium size mammals. This species is listed under both Schedule 4 and Priority 4. | | | | |
| 1989 | 1 | | Crown Reserve 17804 | Day sighting |
| 2008 | 1 | 1 | Mount Holland | Day sighting |

- * Information relating to any records provided for listed species:-
 Date: date of recorded observation
 Certainty (of correct species identification): 1=Very certain; 2=Moderately certain; and 3=Not sure.
 Seen: Number of individuals observed.
 Location Name: Name of reserve or nearest locality where observation was made
 Method: Method or type of observation

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Great Eastern Highway Aboriginal Heritage Inquiry System results for the project area:



Government of Western Australia
Department of Indigenous Affairs

Aboriginal Heritage Inquiry System

Register of Aboriginal Sites



THE ABORIGINAL HERITAGE INQUIRY SYSTEM

Search Criteria

18 sites in a search box. The box is formed by these diagonally opposed corner points:

| MGA Zone 51 | |
|-------------|---------|
| Northing | Easting |
| 6541436 | 247412 |
| 6577220 | 319345 |

Disclaimer

Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist. Consultation with Aboriginal communities is on-going to identify additional sites. The AHA protects all Aboriginal sites in Western Australia whether or not they are registered.

Copyright

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Legend

| Restriction | Access | Coordinate Accuracy |
|---------------------------|---------------------|--|
| N No restriction | C Closed | Accuracy is shown as a code in brackets following the site coordinates. |
| M Male access only | O Open | [Reliable] The spatial information recorded in the site file is deemed to be reliable, due to methods of capture. |
| F Female access | V Vulnerable | [Unreliable] The spatial information recorded in the site file is deemed to be unreliable due to errors of spatial data capture and/or quality of spatial information reported. |

Status

| | | | Site Assessment Group (SAG) |
|-----------------------------------|-----------|---|--|
| L Lodged | IR | Insufficient Information (as assessed by Site Assessment Group) | Sites lodged with the Department are assessed under the direction of the Registrar of Aboriginal Sites. These are not to be considered the final assessment. |
| I Insufficient information | PR | Permanent register (as assessed by Site Assessment Group) | |
| P Permanent register | SR | Stored data (as assessed by Site Assessment Group) | Final assessment will be determined by the Aboriginal Cultural Material Committee (ACMC). |
| S Stored data | | | |

Spatial Accuracy

Index coordinates are indicative locations and may not necessarily represent the centre of sites, especially for sites with an access code "closed" or "vulnerable". Map coordinates (Lat/Long) and (Easting/Northing) are based on the GDA 94 datum. The Easting / Northing map grid can be across one or more zones. The zone is indicated for each Easting on the map, i.e. '5000000:250' means Easting=5000000, Zone=50.

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Aboriginal Heritage Inquiry System

Register of Aboriginal Sites



| Site ID | Status | Access | Restriction | Site Name | Site Type | Additional Info | Informants | Coordinates | Site No. |
|---------|--------|--------|-------------|-----------------------------|----------------------------------|---|---|---|----------|
| 1419 | P | C | N | Gibraltar Rockholes. | Mythological | Water Source | *Registered Informant names available from DIA. | Not available for closed sites | W01755 |
| 1420 | P | C | N | Gibraltar Stone Arrangement | Mythological, Man-Made Structure | | *Registered Informant names available from DIA. | Not available for closed sites | W01758 |
| 1477 | P | O | N | Tjutjukumpu. | Mythological | Water Source | *Registered Informant names available from DIA. | 314137mE 8573857mN Zone 51 [Reliable] | W01707 |
| 2031 | P | O | N | Gnarlbine Road | Artefacts / Scatter | | | 304637mE 8550857mN Zone 51 [Unreliable] | W01173 |
| 2320 | P | O | N | Gnarlbine Soak. | | Water Source | | 305242mE 8552428mN Zone 51 [Reliable] | W00913 |
| 2836 | I | O | N | Coolgardie | Artefacts / Scatter | | | 301636mE 8570857mN Zone 51 [Unreliable] | W00377 |
| 3150 | P | C | M | Tjulai. | Ceremonial, Artefacts / Scatter | Camp, Rockshelter | | Not available for closed sites | W00140 |
| 19586 | L | O | N | Boondi Rock | Historical | Camp, Hunting Place, Named Place | *Registered Informant names available from DIA. | 250472mE 8547723mN Zone 51 [Reliable] | |
| 20136 | L | O | N | Bullabulling 1 | Quarry, Artefacts / Scatter | | *Registered Informant names available from DIA. | 294607mE 8567524mN Zone 51 [Reliable] | |
| 20137 | L | O | N | Bullabulling 2 | Artefacts / Scatter | | *Registered Informant names available from DIA. | 294351mE 8567537mN Zone 51 [Unreliable] | |
| 20829 | L | O | N | Sx01 | | Natural Feature, [Other: Granite Outcrop & Claypan] | *Registered Informant names available from DIA. | 313017mE 8571966mN Zone 51 [Unreliable] | |

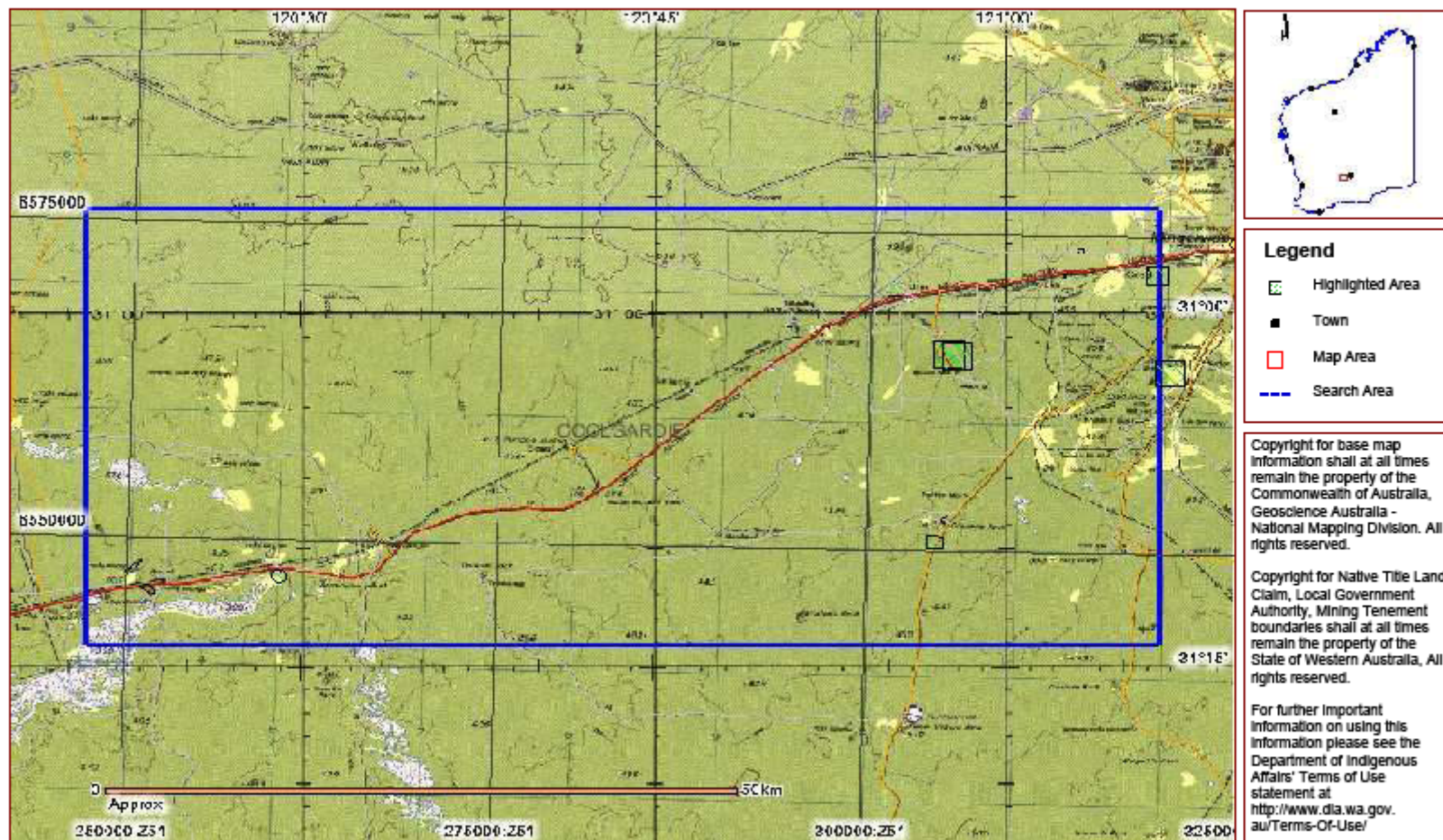


Aboriginal Heritage Inquiry System


Register of Aboriginal Sites



| Site ID | Status | Access | Restriction | Site Name | Site Type | Additional Info | Informants | Coordinates | Site No. |
|---------|--------|--------|-------------|--------------------------------|--|---|---|---|----------|
| 20830 | L | O | N | Sx02 | | Natural Feature, Water Source | *Registered Informant names available from DIA. | 313099mE 6571789mN Zone 51 [Reliable] | |
| 20831 | L | O | N | Sx03 - Bulla Bulling Monodnoch | Mythological, Historical | Camp, Water Source | *Registered Informant names available from DIA. | 297178mE 6567489mN Zone 51 [Unreliable] | |
| 20832 | L | O | N | Sx04 | | Natural Feature, Water Source | *Registered Informant names available from DIA. | 280415mE 6547616mN Zone 51 [Unreliable] | |
| 20833 | L | O | N | Sx05 | Mythological | Natural Feature, Water Source | *Registered Informant names available from DIA. | 260333mE 6547183mN Zone 51 [Reliable] | |
| 20834 | L | O | N | Sx06 | | Natural Feature | *Registered Informant names available from DIA. | 251428mE 6545895mN Zone 51 [Reliable] | |
| 24289 | L | O | N | Karoni Burial | Skeletal material/Burial, Historical | Meeting Place, Plant Resource, Camp, Hunting Place | *Registered Informant names available from DIA. | 318734mE 6572368mN Zone 51 [Unreliable] | |
| 24290 | L | O | N | Coolgardie Reserve | Artefacts / Scatter, Historical | Meeting Place, Plant Resource, Camp, Hunting Place | *Registered Informant names available from DIA. | 319369mE 6571972mN Zone 51 [Unreliable] | |




Coolgardie-Esperance Highway Aboriginal Heritage Inquiry System results for the project area:



Government of Western Australia
Department of Indigenous Affairs

Aboriginal Heritage Inquiry System

Register of Aboriginal Sites



THE ABORIGINAL HERITAGE INQUIRY SYSTEM

Search Criteria

7 sites in a search box. The box is formed by these diagonally opposed corner points:

| MGA Zone 51 | |
|-------------|---------|
| Northing | Easting |
| 6483494 | 355311 |
| 6534214 | 380936 |

Disclaimer

Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist. Consultation with Aboriginal communities is on-going to identify additional sites. The AHA protects all Aboriginal sites in Western Australia whether or not they are registered.

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Legend

| Restriction | Access | Coordinate Accuracy |
|---------------------------|---------------------|--|
| N No restriction | C Closed | Accuracy is shown as a code in brackets following the site coordinates. |
| M Male access only | O Open | [Reliable] The spatial information recorded in the site file is deemed to be reliable, due to methods of capture. |
| F Female access | V Vulnerable | [Unreliable] The spatial information recorded in the site file is deemed to be unreliable due to errors of spatial data capture and/or quality of spatial information reported. |

Status

| Code | Description | Assessment Group |
|-----------------------------------|---|---|
| L Lodged | IR Insufficient Information (as assessed by Site Assessment Group) | Site Assessment Group (SAG) Sites lodged with the Department are assessed under the direction of the Registrar of Aboriginal Sites. These are not to be considered the final assessment. Final assessment will be determined by the Aboriginal Cultural Material Committee (ACMC). |
| I Insufficient Information | PR Permanent register (as assessed by Site Assessment Group) | |
| P Permanent register | SR Stored data (as assessed by Site Assessment Group) | |
| S Stored data | | |

Spatial Accuracy

Index coordinates are indicative locations and may not necessarily represent the centre of sites, especially for sites with an access code "closed" or "vulnerable". Map coordinates (Lat/Long) and (Easting/Northing) are based on the GDA 94 datum. The Easting / Northing map grid can be across one or more zones. The zone is indicated for each Easting on the map, i.e. '5000000:250' means Easting=5000000, Zone=50.

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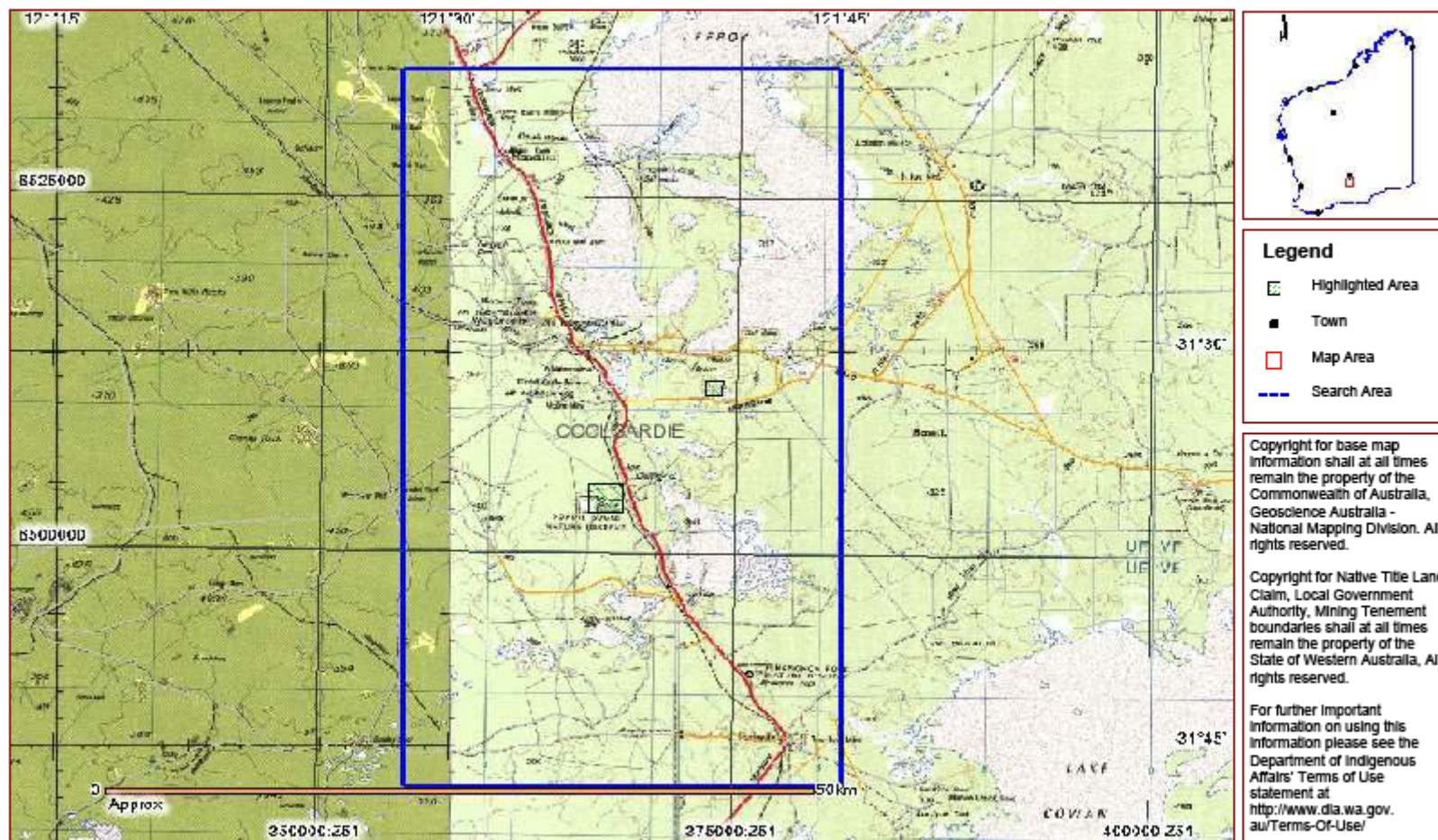


Aboriginal Heritage Inquiry System

Register of Aboriginal Sites



| Site ID | Status | Access | Restriction | Site Name | Site Type | Additional Info | Informants | Coordinates | Site No. |
|---------|--------|--------|-------------|----------------------------|---------------------|---|---|---|----------|
| 3152 | S | O | N | Mt Morgan | Artefacts / Scatter | Water Source | | 373837mE 6511857mN Zone 51 [Unreliable] | W00142 |
| 18700 | I | C | N | Dordie Rockhole | Historical | Camp, Water Source | *Registered Informant names available from DIA. | Not available for closed sites | |
| 20808 | L | O | N | Jarjuru Tjukurpa | Mythological | Plant Resource, Natural Feature, [Other: Increase site] | *Registered Informant names available from DIA. | 370975mE 6497786mN Zone 51 [Reliable] | |
| 20809 | L | O | N | Yundarnie Rocks | Artefacts / Scatter | Camp | *Registered Informant names available from DIA. | 378000mE 6491801mN Zone 51 [Reliable] | |
| 22940 | L | O | N | Tsf4 East 1 | Artefacts / Scatter | | | 378167mE 6513820mN Zone 51 [Unreliable] | |
| 22941 | L | O | N | Tsf4 East 2 | Artefacts / Scatter | | | 378167mE 6513820mN Zone 51 [Unreliable] | |
| 24021 | L | O | N | Dordie North Isolated Find | Artefacts / Scatter | | *Registered Informant names available from DIA. | 370480mE 6505145mN Zone 51 [Reliable] | |



DEWHA's EPBC Act Protected Matters Report for the project area:



Australian Government

Department of the Environment, Water, Heritage and the Arts

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Protected Matters Search Tool

You are here: [Environment Home](#) > [EPBC Act](#) > [Search](#)

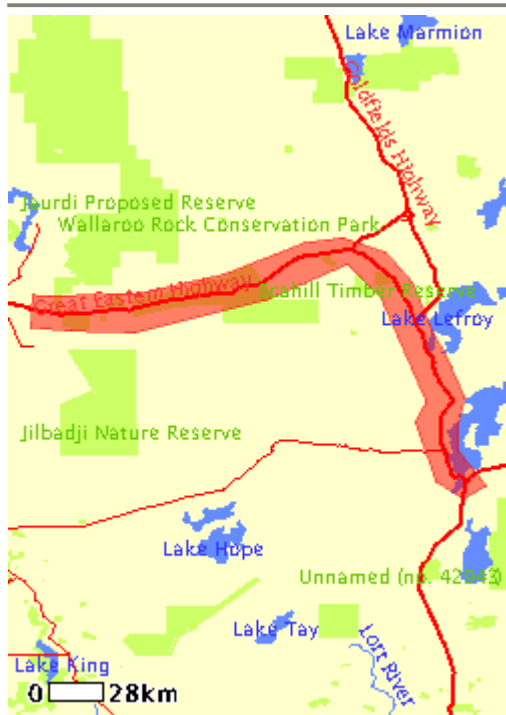
EPBC Act Protected Matters Report

4 May 2009 16:10

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Information on the coverage of this report and qualifications on data supporting this report are contained in the [caveat](#) at the end of the report.

You may wish to print this report for reference before moving to other pages or websites.

The Australian Natural Resources Atlas at <http://www.environment.gov.au/atlas> may provide further environmental information relevant to your selected area. Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>



This map may contain data which are
© Commonwealth of Australia
(Geoscience Australia)
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Search Type: Area

Buffer: 0 km

Coordinates: -31.1984,119.5879, -31.1852,120.0576, -31.0843,120.5053, -30.9174,120.9312, -30.8911,121.1331, -30.9701,121.3614, -31.1282,121.5018, -31.3476,121.5896, -31.5715,121.7038, -31.7339,121.7740, -31.8656,121.7433, -32.0105,121.7389, -32.1993,121.8881, -32.2695,121.7696, -32.1773,121.6247, -31.8656,121.5150, -31.7559,121.5721, -31.2028,121.3306, -31.0316,121.1550, -31.2203,120.7248, -31.3915,120.0356, -31.3828,119.6976, -31.3652,119.4869, -31.1940,119.4957



Report Contents: [Summary](#)
[Details](#)

- [Matters of NES](#)
- [Other matters protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)
[Acknowledgments](#)

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>.

| | |
|---|------|
| World Heritage Properties: | None |
| National Heritage Places: | None |
| Wetlands of International Significance: (Ramsar Sites) | None |
| Commonwealth Marine Areas: | None |
| Threatened Ecological Communities: | None |
| <u>Threatened Species:</u> | 7 |
| <u>Migratory Species:</u> | 7 |

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on

Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage/index.html>.

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov.au/epbc/permits/index.html>.

| | |
|--------------------------------------|------|
| <u>Commonwealth Lands:</u> | 1 |
| Commonwealth Heritage Places: | None |
| <u>Places on the RNE:</u> | 43 |
| <u>Listed Marine Species:</u> | 4 |
| Whales and Other Cetaceans: | None |
| Critical Habitats: | None |
| Commonwealth Reserves: | None |
| Extra Information | |

This part of the report provides information that may also be relevant to the area you have nominated.

| | |
|---|------|
| <u>State and Territory Reserves:</u> | 10 |
| Other Commonwealth Reserves: | None |
| Regional Forest Agreements: | None |

Details

Matters of National Environmental Significance

| Threatened Species [Dataset Information] | Status | Type of Presence |
|--|------------|--|
| Birds | | |
| <i>Acanthiza iredalei iredalei</i> Slender-billed Thornbill (western) | Vulnerable | Species or species habitat likely to occur within area |
| <i>Leipoa ocellata</i> | Vulnerable | Species or species habitat likely |

Malleefowl to occur within area

Plants

| | | |
|---|------------|--|
| <i>Daviesia microcarpa</i> Norseman Pea | Endangered | Species or species habitat likely to occur within area |
| <i>Eucalyptus platydisca</i> Jimberlana Mallee | Vulnerable | Species or species habitat likely to occur within area |
| <i>Gastrolobium graniticum</i> Granite Poison | Endangered | Species or species habitat likely to occur within area |
| <i>Pityrodia scabra</i> Wyalkatchem Foxglove | Endangered | Species or species habitat likely to occur within area |
| <i>Roycea pycnophylloides</i> Saltmat | Endangered | Species or species habitat likely to occur within area |

Migratory Species [[Dataset Information](#)]

Status Type of Presence

Migratory Terrestrial Species

Birds

| | | |
|--|-----------|--|
| <i>Leipoa ocellata</i> Malleefowl | Migratory | Species or species habitat likely to occur within area |
| <i>Merops ornatus</i> Rainbow Bee-eater | Migratory | Species or species habitat may occur within area |

Migratory Wetland Species

Birds

| | | |
|---|-----------|--|
| <i>Ardea alba</i> Great Egret, White Egret | Migratory | Species or species habitat may occur within area |
| <i>Ardea ibis</i> Cattle Egret | Migratory | Species or species habitat may occur within area |

Migratory Marine Birds

| | | |
|---|-----------|--|
| <i>Apus pacificus</i> Fork-tailed Swift | Migratory | Species or species habitat may occur within area |
| <i>Ardea alba</i> Great Egret, White Egret | Migratory | Species or species habitat may occur within area |
| <i>Ardea ibis</i> Cattle Egret | Migratory | Species or species habitat may occur within area |

Other Matters Protected by the EPBC Act

Listed Marine Species [[Dataset Information](#)]

Status Type of Presence

Birds

| | | |
|---|------------------------------|--|
| <i>Apus pacificus</i> Fork-tailed Swift | Listed - overfly marine area | Species or species habitat may occur within area |
| <i>Ardea alba</i> Great Egret, White Egret | Listed - overfly marine area | Species or species habitat may occur within area |
| <i>Ardea ibis</i> Cattle Egret | Listed - overfly | Species or species habitat may occur within area |

| | | |
|--|----------------|--|
| <i>Merops ornatus</i> Rainbow Bee-eater | marine area | Listed - Species or species habitat may overfly occur within area marine area |
|--|----------------|--|

Commonwealth Lands [[Dataset Information](#)]

Unknown

Places on the RNE [[Dataset Information](#)]

Note that not all Indigenous sites may be listed.

Historic

[Bayleys Obelisk WA](#)

[Convent School Building \(former\) WA](#)

[Coolgardie Hospital \(former\) WA](#)

[Coolgardie Post Office and Associated Buildings WA](#)

[Coolgardie Primary School WA](#)

[Coolgardie Railway Station \(former\) WA](#)

[Coolgardie Town Hall and Road Board Office \(former\) WA](#)

[Cremorne Hotel \(former\) WA](#)

[Denver City Hotel WA](#)

[Exhibition Building Site and Ruins WA](#)

[Fly Flat WA](#)

[House WA](#)

[House WA](#)

[House WA](#)

[House WA](#)

[House WA](#)

[House WA](#)

[Ivorys Corner \(former\) WA](#)

[Marvel Bar Hotel \(former\) WA](#)

[Mercy Gregory Monument WA](#)

[Mines Water Supply Managers House \(former\) WA](#)

[Mines Water Supply Office \(former\) and Trees WA](#)

[Morans Stores WA](#)

[No 8 Pumping Station including Contents WA](#)

[Original Cemetery WA](#)

[Park WA](#)

[Pavilion WA](#)

[Peter Pan WA](#)

[Pioneers Cemetery WA](#)

[Railway Goods Shed \(former\) WA](#)
[Railway Hotel \(former\) WA](#)
[Row of Four Shops WA](#)
[St Antonys Convent of Mercy \(former\) WA](#)
[St Marys Roman Catholic Church WA](#)
[State Battery WA](#)
[Station Masters House WA](#)
[Stone Paved Rights of Way WA](#)
[Town of Coolgardie WA](#)
[Two Railway Houses and Trees WA](#)
[Warden Finnertys House \(former\) and Trees WA](#)
[Wardens Court Building WA](#)

Natural

[Boorabbin National Park WA](#)
[Yellowdine Proposed Reserve WA](#)

Extra Information

State and Territory Reserves [[Dataset Information](#)]

Biljahnrie Rock Nature Reserve, WA
Binaronca Nature Reserve, WA
Boorabbin National Park, WA
Condarnin Rock Nature Reserve, WA
Goldfields Woodlands Conservation Park, WA
Goldfields Woodlands National Park, WA
Kangaroo Hills Miscellaneous Conservation Reserve, WA
Scahill Miscellaneous Conservation Reserve, WA
Yallari Miscellaneous Conservation Reserve, WA
Yellowdine Nature Reserve, WA

Caveat

The information presented in this report has been provided by a range of data sources as [acknowledged](#) at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the *Environment Protection and Biodiversity Conservation Act 1999*. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence

that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under "type of presence". For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the [migratory](#) and [marine](#) provisions of the Act have been mapped.

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as [extinct or considered as vagrants](#)
- some species and ecological communities that have only recently been listed
- [some terrestrial species](#) that overfly the Commonwealth marine area
- migratory species that are very [widespread, vagrant, or only occur in small numbers](#).

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites;
- seals which have only been mapped for breeding sites near the Australian continent.

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgments

This database has been compiled from a range of data sources. The Department acknowledges the following custodians who have contributed valuable data and advice:

- [New South Wales National Parks and Wildlife Service](#)
- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Water and Environment, Tasmania](#)
- [Department of Environment and Heritage, South Australia Planning SA](#)
- [Parks and Wildlife Commission of the Northern Territory](#)
- [Environmental Protection Agency, Queensland](#)
- [Birds Australia](#)

- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Atherton and Canberra](#)
- [University of New England](#)
- Other groups and individuals

[ANUCLiM Version 1.8, Centre for Resource and Environmental Studies, Australian National University](#) was used extensively for the production of draft maps of species distribution. Environment Australia is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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[Department of the Environment, Water, Heritage and the Arts](#)

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Appendix D

Site Photos

Photos of Pit @ 502.100 SLK taken on 09/04/09:







Photos of Pit @ 484.250 SLK taken on 09/04/09:

















Appendix E

Revegetation Plan for Pastoral Areas

Main Roads WA – Revegetation Plan for Pastoral Areas

Condition 14(e), CPS 818

| | | | |
|--|---|-----------------|-----------------------------|
| Date: | 18/05/09. | Project: | GEH & CEH Shoulder Sealing. |
| Manager: | Main Roads WA. | | |
| Location and size of clearing: | Those areas not exceeding that which has been identified in the project related PEIA. | | |
| Location and size of revegetation: | Those areas cleared for searching and extracting road building materials (e.g. borrow pits, etc.), and other project related <u>temporary</u> clearing. | | |
| Clearing description: | Machine clearing. | | |
| Revegetation description: | Replacement of topsoil material regeneration. | | |
| Reason for revegetation: | Revegetation of temporary cleared areas, in accordance with condition 14 of clearing permit CPS 818. | | |
| Revegetation / rehabilitation requirements: | | | |
| Site preparation: | <p>All vegetation will be cleared from the works area and non-weed infested vegetation is stockpiled. Stockpiled vegetation will be placed in a manner that will prevent damage to adjacent vegetation by machinery. Weed infested vegetation will be disposed of at an appropriate site and not used for revegetation purposes. Burning of the cleared vegetation will not be permitted.</p> <p>Topsoil will be stripped to a maximum depth of 100mm, and will be stored in a weed free (as far as possible) area, as close as possible to the area to be rehabilitated. Topsoil will be placed in windrows of less than 1.5m in height and reinstated as soon as practicable to maintain viability of in-situ seeds.</p> | | |
| Weed control: | <p>Appropriate weed control will be carried out when weeds are present, both prior to topsoil stripping and where weeds become established on or between the stockpiled materials. Weed control will take place prior to the respreading of topsoil to ensure weeds are killed and not transported to other areas.</p> <p>Control measures include the removal of weeds to an approved dumpsite, or treatment of weeds such as by using herbicides mixed in accordance with manufacturer's instructions and applied by a licensed operator. Where practicable, weeds will be removed prior to or when they are in flower, and prior to seeding.</p> <p>All machinery will be cleared of soil build up and vegetative material before entering and leaving the site to help minimise the transportation of weeds and their seeds.</p> <p>Exposed areas such as bare batters and borrow pits shall be promptly rehabilitated to reduce the potential for weed establishment. Where works are adjacent to good quality</p> | | |

Main Roads WA – Revegetation Plan for Pastoral Areas

Condition 14(e), CPS 818

vegetation, where weeds from within the project area are likely to spread to and result in environmental harm to the adjacent area, those weeds will be controlled annually until 12 Dec 2010.

***Regeneration /
direct seeding
/ planting at an
optimal time:***

The following rehabilitation works are undertaken on areas of disturbed earth requiring rehabilitation:

- Topsoil is uniformly respread to a typical depth of 100mm over the project area. In project areas where topsoil has not been removed and/or is not available, other substrate, such as gravel, may be substituted as a growth medium.
- Project areas will be ripped to a minimum depth of 200mm deep with rip lines approximately 300mm apart. Where slopes are present, rip lines shall follow natural contours.

The following rehabilitation works are undertaken at borrow / gravel pits:

- Overburden and then topsoil will be uniformly and evenly spread over the disturbed areas of the pit. Depending on the slope of drainage lines within the pit, small swales from the topsoil will be formed to reduce erosion velocities and encourage the deposition of seeds.
- The whole of the existing pit floor, including drainage lines, will be ripped to a depth of 300-500mm deep with rip lines between 500-800mm apart (if the material in the pit is able to be ripped).
- All stockpiled vegetation will be spread along the contour and the pit floor to help promote seed deposition and to reduce erosion velocities.

***Vegetation
establishment
period:***

The vegetation establishment period is for at least twelve months following the completion of the works. During this period, maintenance and monitoring will be undertaken (see below).

***Ongoing
maintenance
and
monitoring:***

After revegetation works, revegetated areas will be inspected annually for a minimum of two years to monitor and control weeds and to measure the effectiveness of revegetation works.

When unwanted weed foliage cover exceeds 25% after the initial two year period, further actions will be implemented to monitor and control these weeds. The additional monitoring and weed control will be conducted annually until 12 Dec 2010 or until the unwanted weed foliage cover falls below 25%, whichever is sooner.

***Monitoring
commitments:***

Post revegetation site inspections will be carried out annually for a minimum of two years to monitor unwanted weeds and measure the effectiveness of revegetation works. Monitoring of sites where unwanted weed foliage cover exceeds 25% after the initial two year period will continue annually until 12 Dec 2010 or until the unwanted weed foliage cover falls below 25%, whichever is sooner.

***Management
commitments:***

Undertake annual weed control of unwanted weeds annually until 12 Dec 2010 or until the unwanted weed foliage cover falls below 25%, whichever is sooner.

***Agencies
consulted and
submissions
received:***

Nil.

Appendix F

Environmental Management Plan

| ENVIRONMENTAL MANAGEMENT PLAN | | | | | |
|---------------------------------|---|--|--|------------------------------|------------|
| Timing | Topic | Objective | Action | Responsible Party | Advice |
| All phases of construction | Vegetation Clearing - Record-keeping | All projects should maintain the required records relating to clearing native vegetation under CPS 818/4. | Record: - a copy of the PEIA & EMP, - a map showing the location where the clearing occurred, recorded in an ESRI Shapefile, - the size of the area cleared (in hectares), - the dates on which the clearing was done. - the dates on which the revegetation was done. | Project Manager | DEC |
| All phases of construction | Revegetation | Ensure that temporarily cleared areas are revegetated to an acceptable standard. | Carry out revegetation works in accordance with the approved revegetation plan. | Contractor / Project Manager | DEC |
| Pre-Construction | Induction / Start-up meeting | Create awareness in all construction personnel of the environmental aspects associated with the project. | All construction staff to be informed of the environmental aspects associated with the project prior to any works being undertaken. | Contractor / Project Manager | Main Roads |
| Pre-Construction & Construction | Vegetation & Aboriginal Heritage - Clearing | Ensure that the overall objectives of the works are compatible with maintaining the biological integrity of the surrounding environment, and minimising the loss of vegetation and the level of degradation. Ensure that Aboriginal heritage values are maintained. | Clearly mark no go areas and any trees or shrubs to be kept. Cleared vegetation that is not infested with dieback or weeds is to be mulched and returned to the soil profile where possible. Cleared vegetation is not to be burnt and any dieback or weed infested material is to be disposed of at an approved site. | Contractor / Project Manager | Main Roads |

| ENVIRONMENTAL MANAGEMENT PLAN | | | | | |
|-------------------------------|---------------------------|---|--|------------------------------|------------------|
| Timing | Topic | Objective | Action | Responsible Party | Advice |
| Construction | Weed & Dieback Management | Ensure the dieback status of the project area does not change as a result of the works; and, ensure that the risk of weed spread or establishment is minimised as far as is practically possible. | Contractor is to ensure that all equipment brought on to site is free of soil and vegetative material. Equipment is to be cleaned (washed down or brushed) prior to traversing areas of changing dieback status (except when entering dieback infested areas). | Contractor | Main Roads / DEC |
| Construction | Noise, Vibration and Dust | Ensure that the construction of the proposal does not become a nuisance to the public. | Any complaints regarding dust, noise or vibration will be attended to as soon as possible. | Contractor / Project Manager | Main Roads |
| Construction | Pollution and Litter | Ensure that the works are managed to a standard that minimises pollution or the risk of pollution occurring. | The designated servicing area will be bunded to contain any spills or leaks or it will drain into a temporary sump. It will not be located in an area adjacent to drainage areas or watercourses. | Contractor | Main Roads |
| | | | Emergency cleanup procedures shall be implemented in the case of any spillage. These will include control of spilled material and removal of contaminated soil to an approved site. The contractor shall ensure appropriate equipment is available at all times and shall notify the Project Manager of a spill. | Contractor | Main Roads |
| | | | All waste oil will be collected for disposal/recycling and any empty fuel/oil containers, used filters and waste hydraulic parts are to be collected and stored in an allocated area before being removed to an approved site. | Contractor | Main Roads |
| | | | The project areas, including hardstand areas, will be kept in a tidy manner at all times. | Contractor | Main Roads |
| Construction | Fire | Ensure that the fire risk associated with the construction of the proposal is minimised. | No fires shall be lit within the project area and standard fire prevention methods (e.g. spark arresting mufflers) are to be employed by the contractor. | Contractor | Main Roads |

| ENVIRONMENTAL MANAGEMENT PLAN | | | | | |
|----------------------------------|-------------------------|---|--|------------------------------|------------|
| Timing | Topic | Objective | Action | Responsible Party | Advice |
| Construction & Post-Construction | Environmental Incidents | Ensure that any environmental incidents that occur during works do not have a significant or long term impact on the environment. | Implement corrective and preventive actions in liaison with an environmental specialist and Main Roads Manager Environment where necessary. | Contractor / Project Manager | Main Roads |
| | | Record the details of any environmental incidents to fulfil corporate requirements. | Complete and submit environmental incident report forms in accordance with the Main Roads corporate procedure <i>6707/042 Environmental Incident Reporting and Investigation</i> . | Contractor / Project Manager | Main Roads |
| Post-Construction | Rehabilitation | Leave the project area free from debris. | All waste materials from the development are to be completely removed from the site upon completion of works. Final clean-up shall be to the satisfaction of the Project Manager. | Contractor | Main Roads |