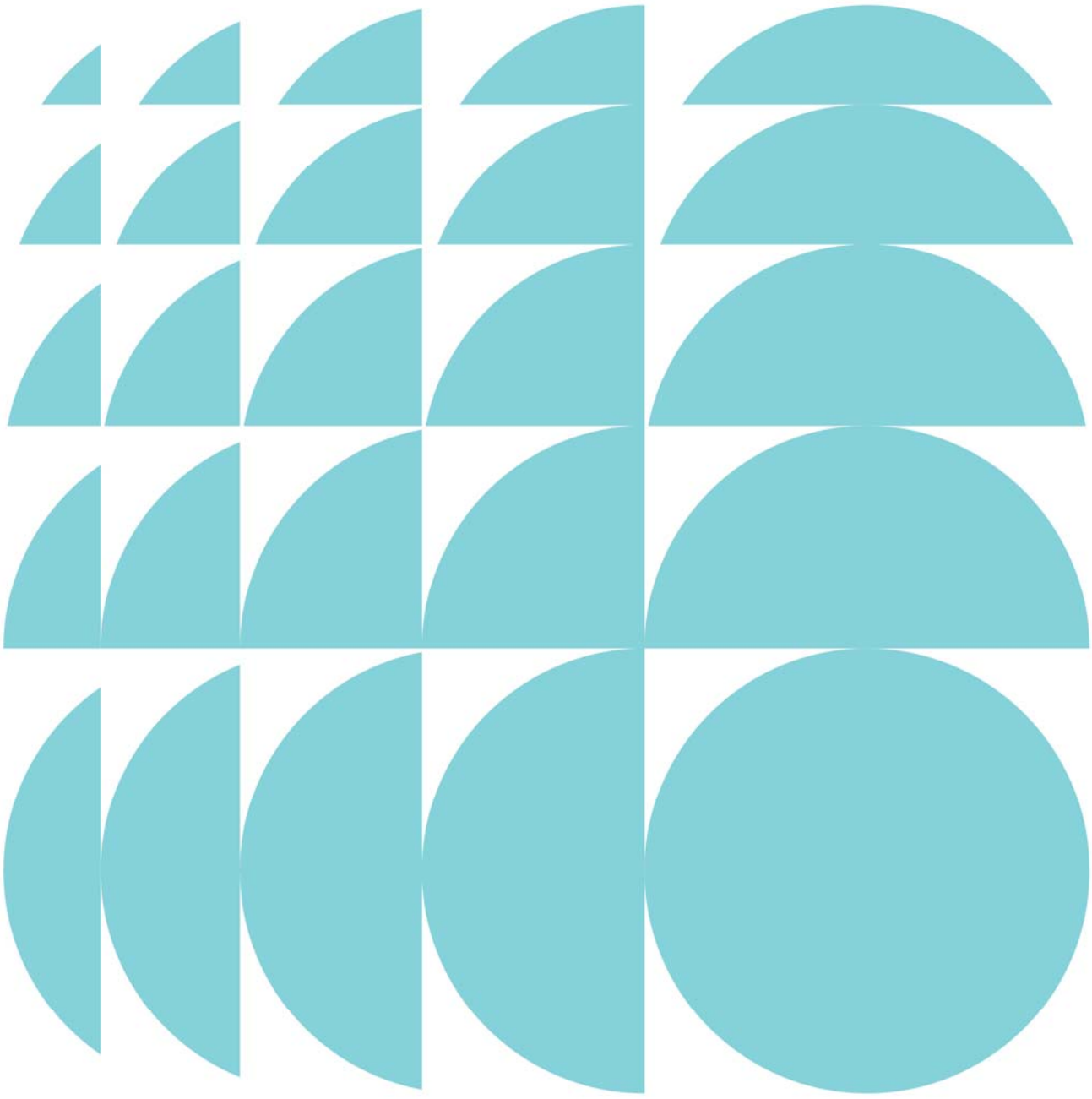
ETHOS URBAN

Response to Submissions Report

Sancrox Quarry Expansion (SSD 7293)
Sancrox Road, Sancrox

Submitted to Department of Planning, Industry & Environment
On behalf of Hanson Construction Materials Pty Ltd

20 May 2021 | 2190085



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Executive Summary

Purpose of this Report

This Response to Submissions Report (RTS) is submitted to the Department of Planning, Industry and Environment (DPIE) as part of a State Significant Development Application under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It relates to a proposal for the extension of the existing Sancrox Quarry, which is being assessed as State Significant Development SSD7293.

The proposed Sancrox Quarry extension is identified as a State Significant Development as it is a type of Extractive Industry identified in Clause 7 of Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011*.

The Environmental Impact Statement (EIS) for the proposal was publicly exhibited between 3 October 2019 until 11 December 2019, during which time submissions were received from members of the public and government agencies. This RTS provides a response to the issues raised in submissions, either through providing additional assessment or information, or in some cases via an amendment of the proposal.

Overview of the Originally Exhibited Project

The Sancrox Quarry proposal as originally described in the exhibited EIS is to extend the life of the quarry through expanding and increasing the annual extraction limit of hard rock. The hard rock reserve to be quarried is a mixture of various igneous and sedimentary rock formations. The proponent, Hanson Construction Materials Pty Ltd (Hanson), has identified rock formations suited to local and regional construction markets and therefore the project will contribute to satisfying an identified demand for aggregates as a construction material.

The Sancrox Quarry is to facilitate the extraction and distribution of high-quality construction materials for the use primarily in civil infrastructure construction and road projects. The key development parameters of the development proposal for which approval were sought as described in the EIS include:

- Extraction and on-site processing of up to 750,000 tonnes per annum of rock (tpa);
- Construction and operation of a concrete batching plant with an output of 20,000 tpa,
- Construction and operation of a concrete recycling facility to process 20,000 tpa; and
- Construction and operation of an asphalt production plant with an output of 50,000 tpa.
- Employment of up to 25 staff on a full-time basis
- Hours of operation:
    - Quarry operations (including production and maintenance) 24 hours a day, 7 days a week
    - Truck movements and equipment loading 24 hours a day, 7 days a week
    - Blasting operations from 8am – 5pm Monday to Friday.

Overview of Submissions

The EIS was exhibited from Thursday 31 October to 27 November 2019, with a total of 272 submissions. Submissions were received from the following government agencies:

- Heritage Council
- Department of Industry and Environment – Division of Resources and Geoscience
- Environment Protection Authority
- Port Macquarie-Hastings Council
- Department of Planning, Industry and Environment – Diversion of Biodiversity and conservation

A total of 264 submissions were received from individuals, landowners and special interest groups. 259 of these submissions have been classified as objections to the proposal. The main issues identified within these submissions included:

- Traffic and Transport;
- Hours of operation;
- Biodiversity;
- Vibration;
- Water management;
- Air quality; and
- Socio-economic impacts.

Proposed Amendments to the Proposal

As part of the review and response to submissions process, Hanson has reviewed the design and layout of the proposed future quarry. This has resulted in a change to the design and delivery of quarry works over the life of the quarry, as follows:

- Reduction of annual production limit from 750,000tpa to 530,000tpa.
- Whilst the proposed pit expansion is required to be located adjacent and contiguous with the existing pit and associated infrastructure (which are located on the eastern side of the site), the western boundary of the quarry has been rationalised (i.e. straightened) and pulled to the east, reducing the extent of the quarry pit in the south-western section. The pit is still proposed to be excavated to a depth of -40m AHD as previously proposed.
- A total development footprint of 57.55 ha, comprising the proposed pit expansion area and the proposed infrastructure and processing area, requiring the clearing of 39.02 hectares of native vegetation.
- The proposed hours of operation will change to being 5am until 10pm. Hanson will prioritise morning and normal daytime hours operations, with evening hours (i.e. 6pm – 10pm) to be added in response to market demand as required. In addition, Hanson is seeking consent to operate 10pm to 5am 20 nights per year to meet the occasional customer demand (which is generally associated with major infrastructure projects that require construction works to be carried out during the night time).
- Installation of an earth bund on the southern property boundary, approximately 20 metres high and 450 metres long, to provide noise and visual screening.
- The proposed staging will change to being undertaken through four stages.

Additional Environmental Assessment

The amendments made to the quarry layout and design have been the subject of revised impact assessments, which have also responded to issues raised in submissions. The amendments result in a significant reduction in the environmental impact of the proposed development.

Conclusion and Justification

The Proposal, identified as a State Significant Development, has been subject to an EIS and, subsequently to this RTS. The potential environmental, social and economic impacts, both direct and cumulative, have been identified and thoroughly assessed as part of the EIS, and re-assessed where relevant as part of this RTS. No significant adverse environmental, social or economic impacts have been identified by the proposal in preparing the EIS, and potential impacts have been reduced through the amended proposal as described in the RTS.

Any potential environmental and cultural impacts identified during the public exhibition of the EIS have been addressed by design refinements as set out in this RTS. Any residual impacts will be mitigated through the implementation of measures for the construction and operation of the proposal.

The potential impacts of the development are acceptable and are able to be managed as outlined within the safeguard and mitigation measures contained within the EIS and its appended technical reports, and this RTS.

1.0 Introduction

A State Significant Development Application (SSDA) and accompanying Environmental Impact Statement (EIS) was lodged October 2019 and was publicly exhibited for a period of 42 days inclusive between Thursday 31 October and 11 December 2019 in accordance with Section 83 of the *Environmental Planning and Assessment Regulation 2000*. Hanson Construction Materials Pty Ltd (the applicant) is seeking approval for an increase of the annual extraction limit and expansion to the existing boundary of the currently operating hard rock quarry, known as Sancrox Quarry, on Sancrox Road, Sancrox. The proposed development includes the development of a concrete batching plant, recycling facility and asphalt production plant. The proposal is being assessed as State Significant Development SSD7293.

A Secretary's Environmental Assessment Requirement (SEARs) were originally on 19 October 2015 and the SEARs were reissued on 18 September 2017. The exhibited EIS was prepared in accordance with the reissued SEARS and with the Department's guidelines for SSD applications lodged under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The submissions received from the EIS exhibition form the subject of this report, known as the Response to Submissions Report (RTS).

1.1 Purpose of the Report

The purpose of this RTS is to respond to submissions raised by both community and government stakeholders during the exhibition of the EIS. This RTS has been prepared to satisfy the provisions of Section 89G of the EP&A Act and Section 85A of the *Environmental Planning and Assessment Regulation 2000*. Each of the submissions received has been collated, analysed and relevant issues have been extracted and addressed.

This RTS also provides a description of design amendments made to the proposed development which have been undertaken to address submissions received and also to reduce the overall environmental impact of the proposal. In addition to this amendment description, this RTS provides further environmental assessment to accommodate the change to the proposal and serves as an addendum to the environmental assessment reporting provided within the EIS.

1.2 Background to the Project

1.2.1 Approval pathway

The EP&A Act establishes the assessment framework for development in NSW. Pursuant to Part 4 of the EP&A Act development consent is required for the proposed facility.

The proposed development is defined as an extractive industry and is permissible with consent at the site.

The SRD SEPP identifies development that is declared to be State Significant. Clause 8 of the SRD SEPP states that any development of a type specified in schedule 1 or 2 of the SRD SEPP is declared to be State Significant Development pursuant to Section 89C of the EP&A Act.

Clause 7 of Schedule 1 of the Policy relates to extractive industries. The proposal is for the purposes of extractive industry that will exceed the threshold as it would extract more than 500,000 tonnes of extractive material per year and access greater than 5 million tonnes of reserves.

As such, the proposed development is declared to be State Significant Development. The relevant consent authority for State Significant Development (SSD) where there has been more than 50 submissions by way of objections is the Independent Planning Commission. The Department of Planning, Industry and Environment will assess the SSD Development Application, and ultimately make a recommendation of determination to the Independent Planning Commission.

1.3 Overview of the Original Proposal

The Sancrox Quarry proposal is to extend the life of the existing Sancrox Quarry, by expanding and increasing the annual extraction limit of the hard rock reserve, which comprises a mixture of various igneous and sedimentary rock formations. The Sancrox Quarry is to facilitate the extraction and distribution of high-quality construction materials for the use primarily in civil infrastructure construction and road projects. The key development parameters of the development proposal for which approval was originally sought as described in the EIS include:

- Extraction and on-site processing of up to 750,000 tonnes per annum of rock (tpa);
- Construction and operation of a concrete batching plant with an output of 20,000 tpa,
- Construction and operation of a concrete recycling facility to process 20,000 tpa; and
- Construction and operation of an asphalt production plant with an output of 50,000 tpa.
- Employment of up to 25 staff on a full-time basis
- Hours of operation:
    - Quarry operations (including production and maintenance) 24 hours a day, 7 days a week
    - Truck movements and equipment loading 24 hours a day, 7 days a week
    - Blasting operations from 8am – 5pm Monday to Friday.

Concurrent to the proposed activities is the closing and purchasing of a section of Crown owned land to facilitate the development of the biodiversity offset area to the north of the proposed quarry expansion area.

1.4 Amendments to the proposal

As part of the review and response to submissions process, Hanson has reviewed the design and layout of the proposed quarry. This has resulted in a change to the design and delivery of quarry works over the life of the quarry, as follows:

- Reduction of annual production limit from 750,000tpa to 530,000tpa.
- Whilst the proposed pit expansion is required to be located adjacent and contiguous with the existing pit and associated infrastructure (which are located on the eastern side of the site), the western boundary of the quarry has been rationalised (i.e. straightened) and pulled to the east, reducing the extent of the quarry pit in the south-western section. The pit is still proposed to be excavated to a depth of 40m AHD as previously approved for the existing quarry pit.
- A total development footprint of approximately 57.55 ha, comprising the proposed pit expansion area and the proposed infrastructure and processing area, requiring the clearing of 39.02 hectares of native vegetation.
- The proposed hours of operation will change to being 5am until 10pm. Hanson will prioritise morning and normal daytime hours operations, with evening hours (i.e. 6pm – 10pm) to be added in response to market demand as required. In addition, Hanson is seeking consent to operate 10pm to 5am 20 nights per year to meet the occasional customer demand (which is generally associated with major infrastructure projects that require construction works to be carried out during the night time).
- Installation of an earth bund on the southern property boundary, approximately 20 metres high and 450 metres long, to provide noise and visual screening.
- The proposed staging will change to being undertaken through four stages.

1.5 Site Location and Context

The Sancrox Quarry is located approximately 8km west of Port Macquarie, within the Local Government Area of Port Macquarie-Hastings on the Mid North Coast of NSW. The site is approximately 379km north of Sydney and is considered a major economic resource for regional and state development. The site's location is shown at **Figure 1**.

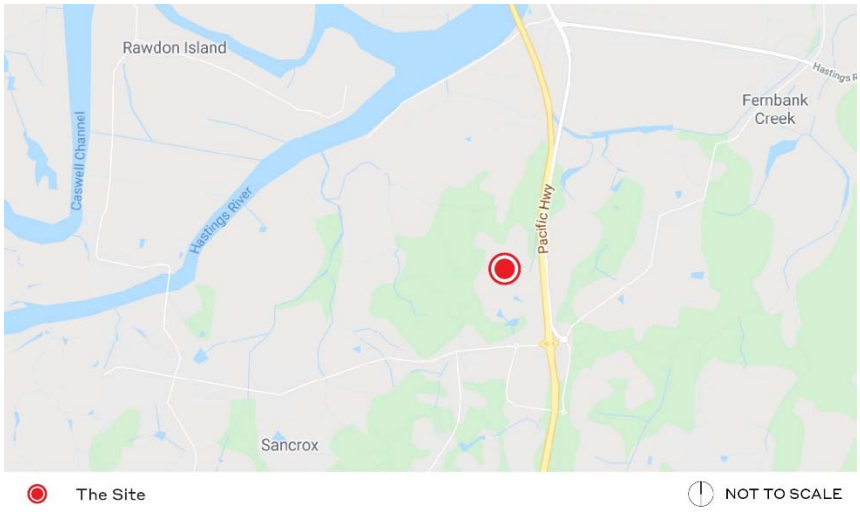

Figure 1 Locality map

Source: Google Maps and Ethos Urban

1.6 The site and land ownership

Sancrox Quarry has been owned and operated by Hanson since 1998. Hanson currently has ownership of approximately 145ha of the site, of which approximately 12ha is currently used in the extraction, processing and storage of high quality aggregate materials. The existing Sancrox Quarry site comprises of Lot 1 in DP 704890, Lot 1 in DP 720807, and Lot 353 in DP 754434 as shown in **Figure 2**.

It is proposed to expand the site through the addition of Lot 2 in DP 574308, which is located west of the existing quarry site. Hanson additionally holds a Crown lands enclosure permit (permit number 49229) for a sliver of Crown land that includes a Crown road reserve, and which traverses Lot 2 in DP 574308. In order to eliminate property fragmentation over the site, Hanson is proposing the closure and purchase of this Crown owned land under the *Land Acquisition (Just Terms Compensation Act) 1991*. Acquisition of this land by Hanson will provide flexibility to expand operations in accordance with best site geology, site morphology, site topography, resource availability and extraction ease.

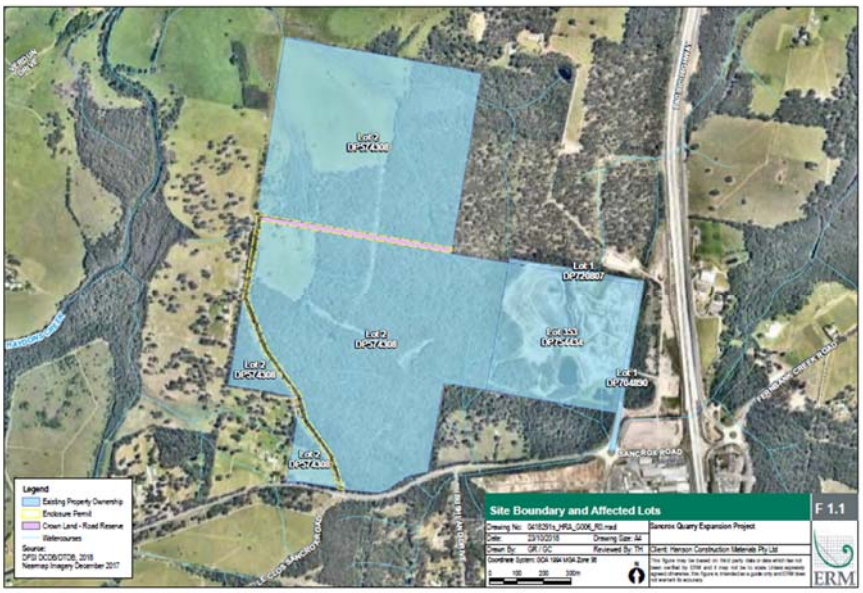

Figure 2 The site

Source: ERM

1.7 Existing Quarry Activities at the Site

The site is currently occupied by the existing quarry pit which is approximately 6.5ha of the total site area. The site also comprises a rock crushing plant of approximately 0.6ha, an administrative area of approximately 0.5ha, three dams occupying approximately 1.8ha and aggregate stockpile areas of approximately 2.2ha. Site management facilities including building, main access road, staff amenities block, site office, workshop, and materials storage shed are also located on the site. All site buildings and infrastructure is currently located near the eastern boundary of the site.

The remaining parts of the site are predominantly native bushland, with some areas near the western boundary that have been previously cleared for agricultural uses.

The quarry currently operates to the approvals as outlined in **Table 1**, an Environmental Management Plan and Environmental Protection Licence (EPL) (EPL 5298) issued by the Environment Protection Authority (EPA) under the *Protection of the Environment Operations Act 1997*. The current Sancrox Quarry operations are approved in accordance with three concurrent development consents under the EP&A Act, and which have been modified at various stages of the quarry development.

The current approval is for extraction of up to 185,000 tonnes per annum (tpa) with a temporary increase of 450,000 tpa via a modification that was approved by Council in March 2014. This temporary increase expired in March 2019, with extraction decreasing back to the original approval limit of 185,000 tpa since that time.

Table 1 Current Approved Activities and Hours of Operation

Hours	Day	Approved Activity
7am – 5pm	Monday – Friday	Normal operations
7am – 1pm	Saturday	Normal operations
7am – 11pm	Monday-Friday	Additional activities, including truck movements into, around and out of the Sancrox Quarry, as well as equipment loading
7am-5pm	Saturday, Sunday and Public Holidays	
11pm – 7am	Up to 20 occasions per year	Additional operations

It is highlighted that Hanson is continually seeking to improve the environmental performance of the existing Sancrox Quarry operational activities, with specific regard to the issues raised by neighbours and the general community through the Community Consultative Committee. In this context, the improvements recently or currently being implemented at the site include the following:

- Installation of new hosing on conveyers.
- New water truck has been commissioned to increase the amount of dust reduction watering being carried out.
- Installation of a new vegetated 3 metre high bund along the eastern and north-eastern edges of the site, and revegetation of the embankment between site and neighbouring property to the east, to the screen the activities from adjacent industrial development.
- Update to blasting methodology with inclusion of electronic detonation to improve geotechnical control and reduce vibration and noise/blast overpressure.
- Applying additives to diesel used on site to reduce diesel emissions.
- Increase in hard stand base in and around plant operations and processing areas, which reduces wind-blown dust from loose surfaces and vehicle tracking.

These improvements will be carried through to the proposed future upgrades, and ongoing opportunities for environmental improvements will continue to be investigated and, where appropriate, implemented throughout the life of the expanded quarry.

1.8 Surrounding development and land uses

The environment surrounding the quarry site includes remnant woodland vegetation immediately adjacent to the north, west and south. The Pacific Highway and Cassegrain Winery are located approximately 175m and 210m to the east, respectively. Sancrox Road is located approximately 230m to the south of the site, with a variety of industrial uses beyond.

1.8.1 Residential Development

The closest residence to the site is located on Sancrox Road approximately 150m to the south-west of the existing quarry pit and processing area. A number of rural residential residences are also located along Bushland Drive further to the south-west of the site, the closest being approximately 650m to the southwest. Further rural residence is located approximately 1km to the west of the existing quarry pit– although it is noted that this residence is located immediately adjacent to the western site boundary of the quarry site.

There are also properties located adjacent to, and north of, the quarry processing area that are currently occupied as rural residences, however these properties were rezoned in 2011 for industrial uses as part of the growing Sancrox Employment Precinct (see **Section 1.8.3** below)..

The *Greater Sancrox Structure Plan 2014-2034* outlines future development options including rural residential development opportunities to the west of the quarry and south of Sancrox Road (see **Section 1.8.4** below).

1.8.2 Sancrox Interchange and Pacific Highway

The road infrastructure directly adjacent to the Sancrox Quarry has recently undergone redevelopment and improvement.

The Sancrox Interchange connects to the Pacific Highway which services northern, southern and eastern movements from the quarry and was opened to the public in 2015. The Interchange was designed to cater for the existing industry and businesses in the area, as well as servicing the area which is planned for development as an industrial precinct.

The Pacific Highway in the vicinity of the quarry has also recently been upgraded, as part of the Oxley Highway to Kempsey Pacific Highway Upgrade Project. The Highway is a dual carriageway, 110km/hr Motorway class road.

1.8.3 Sancrox Employment Precinct

To the east of the quarry, on land between the quarry site and the Pacific Highway, construction has commenced on the development of an estate zoned for light industry. This estate continues to the north, and will include industrial buildings being constructed on land that adjoins the northern boundary of the quarry.

1.8.4 Fernbank Creek and Sancrox Planning Investigation Area

The site is located directly north of the site boundary for the Fernbank Creek and Sancrox Planning Investigation area as shown in **Figure 3**. Port Macquarie Council is investigating the area to cater for the long-term growth of Port Macquarie with protecting areas of high conservation value.

A Draft Structure Plan discussing the key opportunities and constraints of the area was released for public exhibition in September 2020. The discussion paper specifically identifies the Sancrox Quarry as a ‘significant regional resource’, particularly for the supply of aggregates and construction materials to the construction industry. The Draft Structure Plan details the protection of the quarry and proposed expansion as a high priority that will be undertaken during the development of the Structure Plan. This will ensure that any identified urban areas will not sterilise the quarry resource.

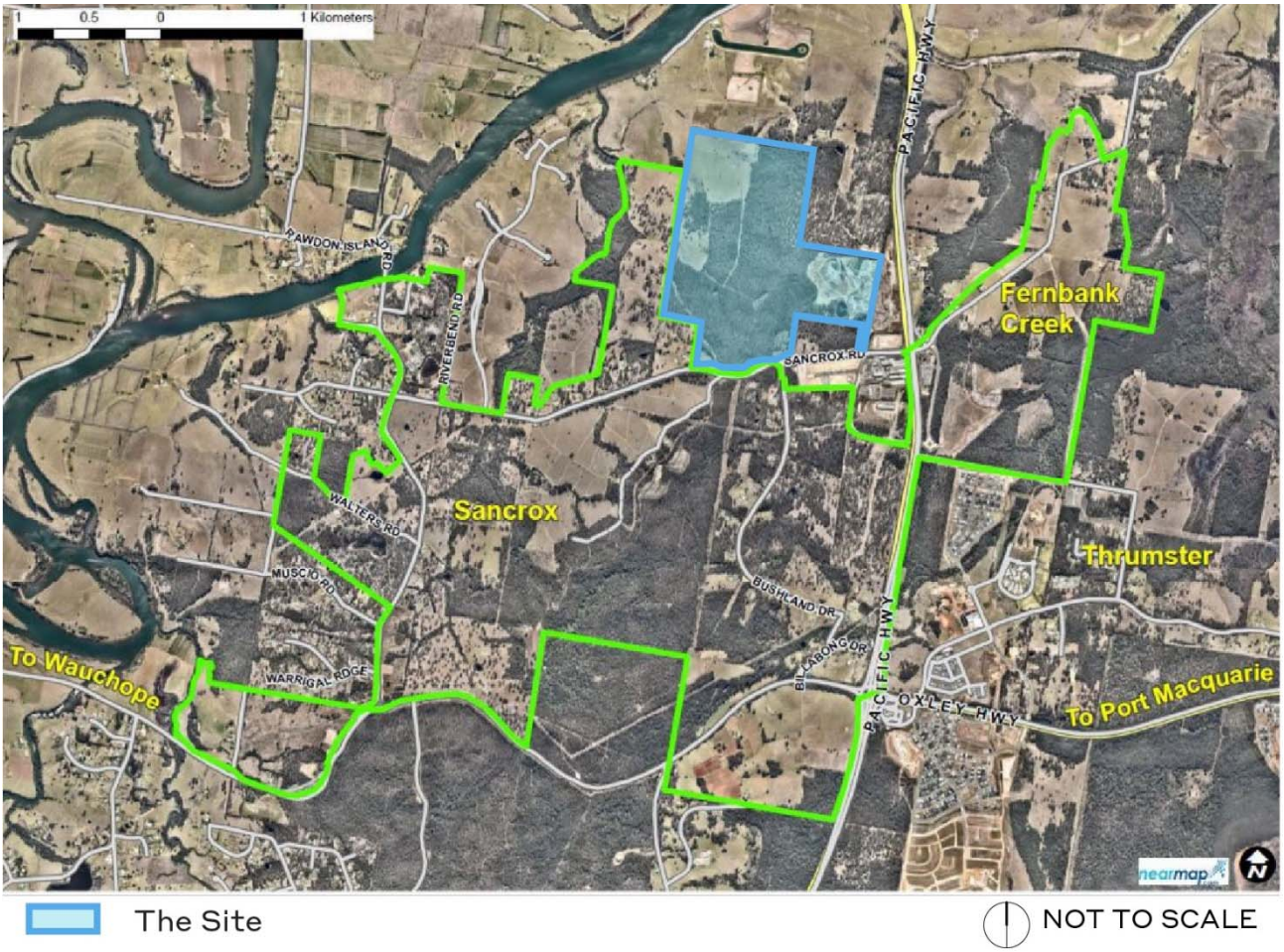

Figure 3 The site in context of the Fernbank Sancrox Investigation Area

It is highlighted that the North Coast Regional Plan 2036 does not identify any land around the Sancrox Quarry as being an Investigation Area – Urban Land (see extract of the North Coast Regional Plan 2036 in **Figure 4** below), and includes Action 13.2 which states:

> *"13.2 Plan for the ongoing productive use of lands with regionally significant construction material resources in locations with established infrastructure and resource accessibility."*

Further, the North Coast Regional Plan 2036 provides principles that must be applied whenever the Urban Growth Area is varied. These principles include:

> *"Land use conflict: The variation must be appropriately separated from incompatible land uses, including agricultural activities, sewage treatment plants, waste facilities and productive resource lands."*

There is therefore a clear obligation on the strategic planning process to address the potential for land use conflicts when new urban residential areas are being considered beyond the current urban area in close proximity to facilities involved in resource extraction.

Importantly, this direction from the North Coast Regional Plan 2036 has been reinforced in the Port Macquarie Draft Regional City Action Plan, which does not identify any of the Sancrox area west of the Pacific Highway as being a current investigation area for urban residential land.

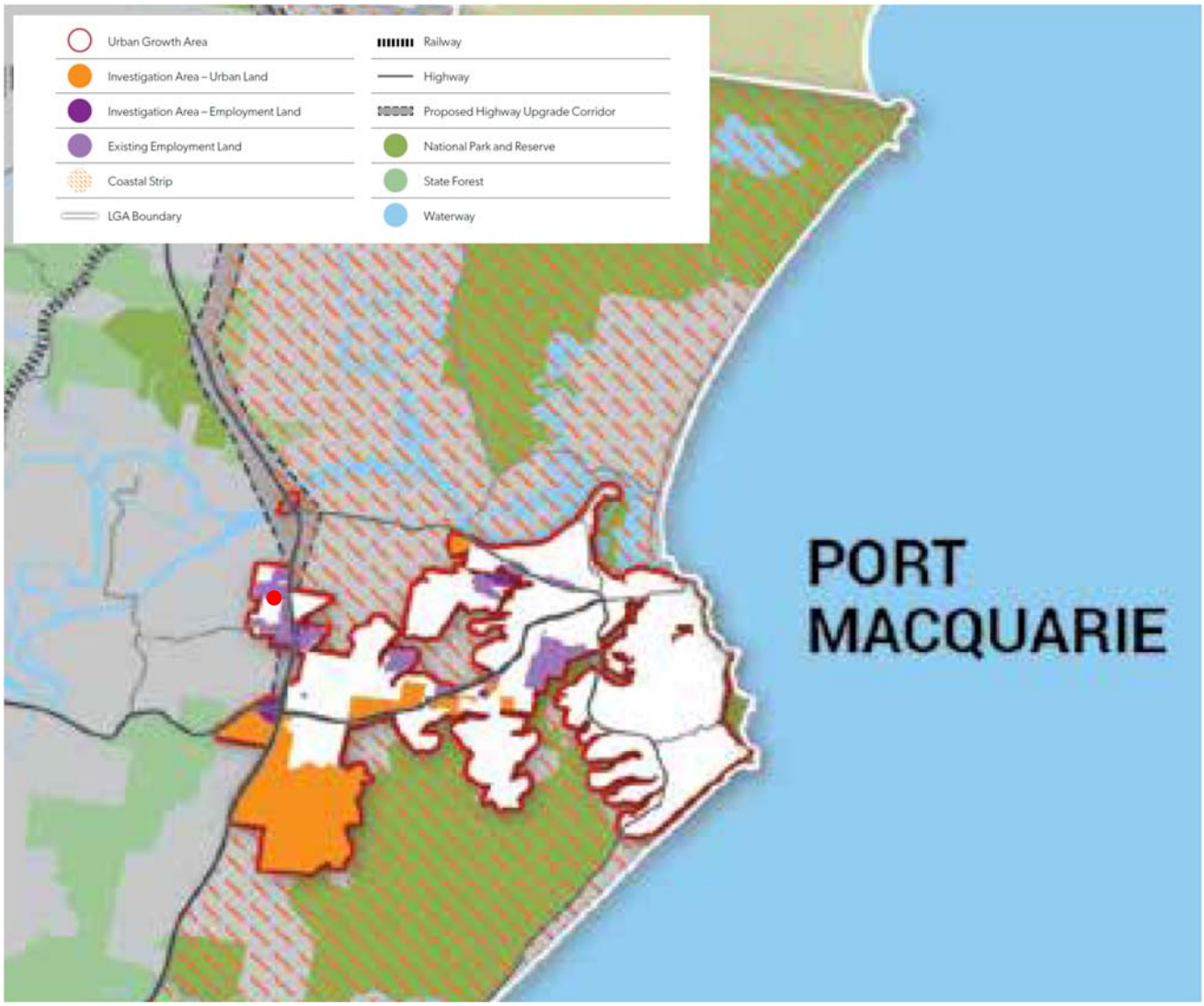

Figure 4 The site in context of the Urban Growth Area

Source: Extract from the North Coast Regional Plan 2036

1.8.5 Le Clos Sancrox Planning Proposal

A Planning Proposal has been prepared by Port Macquarie-Hastings Council for rezoning of land south-west of the Sancrox Quarry site from rural to urban uses – called the Le Clos Sancrox Planning Proposal. The Planning Proposal has obtained a Gateway approval from the Department of Planning, Industry and Environment on 13 May 2021, meaning that it will now proceed to public exhibition. The Le Clos Sancrox Planning Proposal is intended to facilitate the development of approximately 68- residential lots across approximately 75.5 hectares of land to be zoned for residential purposes. The Le Clos Sancrox Planning Proposal specifically identifies the potential land use conflict with the Sancrox Quarry, and provides an additional undeveloped ecological corridor in the north-east corner:

> *"…to provide a larger buffer to the existing quarry and any expansion, should it be approved."*

The future residential properties are located further afield from the quarry site compared to existing rural residences located south-west of the quarry.

1.9 Objectives of the Project

The objectives of the Sancrox Quarry proposal is to cater for the demand of aggregate construction materials of an estimated 12 million tonnes of hard rock in accordance with the *Mid North Coast Regional Strategy 2009.* The proposed expansion will deliver aggregates to contribute to meeting this demand in an efficient and environmentally sensitive manner without generating adverse impacts on the surrounding environment. The project seeks to deliver 25 full time equivalent jobs during the proposed 30 years of the quarry.

1.10 Structure of this Report

The RTS includes the following sections:

- Section 1 Introduction: provide a summary of the proposal
- Section 2 Exhibition and Consultation: Provides a description of the consultation which has been undertaken for the project to date.
- Section 3: Overview of Submission: Provides an analysis of the submissions received during the exhibition of the EIS and identifies key issues raised.
- Section 4: Response to Government Agency Submissions: Provides a response to the key issues received from Government Agencies and responses.
- Section 5: Response to Public Submissions: Provides a summary of the community, community organisation and private organisation submissions received and responses.
- Section 6 Further Assessment: Provides an environmental assessment of the amendment to the design with reference to technical specialist addendums where relevant.
- Section 7: Revised Mitigation Measures: Provides a list of revised recommendations and mitigation measures based on the technical studies undertaken.
- Section 8: Conclusion.

2.0 Exhibition and Consultation

2.1 Activities prior to EIS exhibition

During the preparation of the EIS, a number of consultation activities with key stakeholders took place in order to create an open dialogue. These consultation activities are documented in the EIS and summarised below.

2.1.1 Consultation with key stakeholders

As part of the Secretary's Environmental Assessment Requirements (SEARs) for the EIS, a number of key public authorities provided comment and requested various inputs be provided as part of the EIS documentation. These authorities included:

- Department of Planning, Industry and Environment
- Office of Heritage (OEH)
- Environmental Protection Authority (EPA)
- Department of Primary Industries
- Roads and Maritime Services (RMS)
- Port Macquarie Hastings Council
- NSW Rural Fire Service
- North Coast Local Land services

The requested input by those authorities were incorporated into the EIS.

2.1.2 Public Consultation

Hanson has been proactive in consulting with the community and a summary of the ongoing consultation with the community is provided as **Annex A of the EIS**. In 2018, the Sancrox Quarry Extension project Community Consultative Committee was formed with Lisa Andrews appointed as the independent chairperson in accordance with the SEAR's requirement.

2.2 Public Exhibition

The EIS in support of the State Significant Development Application (SSD 7293) was publicly exhibited for a period of 42 days inclusive between Thursday 31 October and 11 December 2019. Public exhibition occurred in accordance with the requirements of the EP&A Act.

The EIS (and associated supporting technical studies) was made available to the public in electronic format on the DPIE website during this time.

2.3 Post Public exhibition

2.3.1 Community Information Session

Following the receipt of submissions, a community information session hosted by the DPIE was held at the Rydges Bayside Ballroom Port Macquarie on Monday 10 February 2020. A total of 95 people attended including 4 Hanson employees and Councillors Lisa Intemann and Geoff Hawkins of Port Macquarie Hastings Council. The purpose of this consultation was for the DPIE to listen to landholders and interested parties' views about the project and provide advice on the SSD assessment process. Hanson attended that session in order to better understand the concerns of the community, and this has informed the amendments that are now proposed.

2.3.2 Community Consultative Committee

The proposal was also subject of further discussion as part of the Community Consultative Committee meeting held on 11 December 2020 and 26 March 2021. A draft copy of the RTS was issued to the CCC prior to the 26 March 2021 meeting, and comments were raised and discussed at that meeting. Two written submissions were further received from CCC members after the 26 March 3021 meeting. The two submissions raised (or reiterated) some further specific issues which are listed below, and a cross-reference provided to where the issue has been addressed in the RTS:

- Submission 1:
  - *The draft Fernbank Creek and Sancrox Villages Structure Plan and Le Clos Sancrox Planning Proposal should be considered in the assessment of the Sancrox Quarry Expansion Project as applicable*

    The draft Fernbank Creek and Sancrox Villages Structure Plan is addressed in detail in **Table 2** (**Section 4**) and in **Section 6.1**. The Le Clos Sancrox Planning Proposal is addressed in **Section 1.8.5** and **Section 6.1**.
  - *Earth bund should be built in stages to reflect the staging of the quarry.*

    Hanson will ensure the bund is delivered commensurate with the staging of the quarry.
  - *Noise and vibration: Clarify why the selected meteorological conditions were used for noise modelling*

    The process for determining the relevant wind direction is the EPA's noise enhancing wind analysis method (see Section 2.10.1 of the Revised Noise and Vibration Impact Assessment at **Appendix E**).
  - *Noise and vibration: Cumulative construction impacts*

    The Construction Noise Management Plan will take into account other construction projects if relevant at the time of construction. The proposed mitigation measure in **Section 7** has been amended accordingly.
  - *Noise and vibration: Consider relocating plant and equipment to the northern part of the site and/or providing a noise bund to the south west of the quarry*

    The proposed noise bund relates to surface level plant and equipment, whereas quarry operations are generally below ground level and already shielded by the quarry face. Given that noise impacts are predicted to comply with the Project Specific Noise Levels at receptors to the south-west of the site no additional noise bund is considered necessary. See **Section 6.2**.
  - *Noise and vibration: Consider updating the traffic noise assessment with more recent traffic data*

    See **Section 6.2.3** of this RTS. In summary, the background traffic noise is 10dBA or more below the criteria, and the change predicted as a result of the proposed expansion is less than 2dBA. As such, irrespective of the potential for background traffic to have increased in the intervening period, the proposal would remain compliant with the relevant traffic noise criteria.
  - *Noise and vibration: Amendments to the proposed mitigation measures*

    Mitigation measures set out in **Section 7** of this RTS have been amended accordingly.
  - *Air quality: Amendments to the proposed mitigation and management measures*

    Mitigation measures set out in **Section 7** of this RTS have been amended accordingly. Note that the propsoed dust monitoring is real-time, meaning that it is a continuous monitor. Depositional dust monitoring is not currently proposed. It is also noted that the management measures set out in Section 9 of the revised Air Quality Assessment Report at **Appendix F** will be subject to further refinement as part of the preparation of the Air Quality Management Plan, including with consultation with the relevant authorities.
  - *Air quality: revised assessment criteria for odour taking into account potential future residential receptors*

    Whilst a criteria of 6 Odour Units was legitimately established based on the currently low residential density around the site, it is highlighted that the odour emissions would be below the most stringent 2 Odour Units criterion in the case of all sensitive receptors except for a marginal 0.1 exceedance at the closest sensitive receptor to the south west.
  - *Water: Clarify when the recommendations of the groundwater peer review would be implemented*

The REN consulting Groundwater Model Peer Review Report at **Appendix C** sets out recommendations to further develop and improve the confidence-level of the groundwater model during detailed quarry planning and design.

- *Water: Clarify whether reticulated water would be used is site won was insufficient*

  Yes, although the water balance does not predict that the site will be deficient of site won water even in a low rainfall year. Site won water will be suitable for concrete batching.

- *Water: Clarify whether reticulated water would be used is site won was insufficient*

  Yes, although the water balance does not predict that the site will be deficient of site won water even in a low rainfall year. Site won water will be suitable for concrete batching.

- *Biodiversity: Update the Biodiversity Assessment to address inconsistencies and missing sections.*

  The Revised Biodiversity Assessment Report has been updated and is provided at **Appendix H**.

- Submission 2:

  - *Annual production increase remains unjustified*

    A response to this is provided to the Department of Planning, Industry and Environment in **Table 2, Section 4.** Hanson is projecting strong long-term growth in the demand for aggregates, concrete and asphalt on the mid-north coast based on the well documented population increase projections for the Mid-North Coast area. Indeed, the site is currently at capacity for its 2021 annual limit, with future big projects taking precedent, any many new orders being turned away for the remainder of the financial year 2021 – highlighting the level of market demand that Hanson is trying to respond to.

  - *The footprint of the expanded quarry shouldn't extend to the northern boundary in the context of the approved Sancrox Employment Precinct and with consideration of noise and fly rock concerns*

    The existing quarry footprint extends to the northern boundary, noting that apart from the top bench of the northern face, the quarrying will occur away from this boundary and below ground level. Further assessment of noise and fly rock issues are addressed in **Section 6.2** and the Revised Noise and Vibration Impact Assessment at **Appendix E** – which concludes that noise impacts at the future industrial properties to the north (at 40-41 dBA $L_{eq,\ 15\text{-}min}$) would be well below the relevant Project Specific Noise Levels for industrial properties (70 dBA $L_{eq,\ 15\text{-}min}$), and that fly rock can be managed using good blast design in accordance with the Blast Management Plan. Further, for the western half of this boundary the properties are separated by a 20m Crown Road Reserve which forms the defendable space as part of a bushfire Asset Protection Zone for any building in this area, meaning that there will always be a 20m separation distance between any future industrial building in this location and the quarry, even if the quarry extends close to the boundary. No part of the expanded quarry or any of the physical works or activities will encroach across the property boundary. Hanson are confident that all impacts of the proposed Sancrox Quarry can and will be managed within the Sancrox Quarry site, and no blast exclusion zones will be imposed on adjoining properties.

  - *Water management: seepage should be managed to ensure no downstream impacts on neighbours properties*

    Hanson remains committed to working with its neighbours to ensure any water seepage issues around the quarry site are dealt with collaboratively and in a constructive manner.

  - *Visual impacts: Vegetated buffer should be provided along the northern boundary*

    Revegetation plantings along the northern boundary will be provided as part of the rehabilitation of the site. Hanson will investigate opportunities to bring forward the revegetation along the northern boundary of the quarry pit as early as possible in the staging program.

In addition to these further issues, one of the key pieces of feedback received at the CCC meeting 26 March 2021 was that the community wanted to understand what measures Hanson was taking to improve the environmental performance of the Sancrox Quarry, and whether the proposed extension would result in better or worse environmental impacts.

In response to this query, a schedule of recent or current environmental improvements have been listed in **Section 1.7** of this RTS. These improvements will be carried through to the proposed future upgrades, and ongoing opportunities for environmental improvements will continue to be investigated and, where appropriate, implemented throughout the life of the expanded quarry.

In relation to the second part of the query, it is not possible to definitively determine whether any particular environmental impact will improve or worsen as a result of the proposed expansion. However, it is important to note that the critical aspect of assessment and approvals process is to determine whether the quarry as it is proposed to be expanded can comply with current environmental standards. These current environmental standards are in many cases more stringent than the environmental standards that were in place at the time of the original approval for the quarry. Indeed, this is a key objective of enforcing production limits and time frames on quarry consents – to require their further assessment against current standards on a periodic basis. It is also important to note that the capital investment that comes with the expansion also includes investment in implementing modern and more effective environmental controls, including equipment and devices to reduce, manage or monitor emissions. As such, whilst the proposed quarry expansion represents an intensification of the quarry activities, emissions are unlikely to noticeably increase for many issues and receptors, and may well, in some circumstances result in reduced impacts.

2.3.3 Agency Follow Up

In relation to addressing the issues raised in submissions as part of this RTS, Hanson has also carried out further direct consultation with the following agencies:

- Biodiversity and Conservation Branch: The Biodiversity and Conservation Branch of DPIE requested further data and information to support the biodiversity assessment. This mostly revolved around the submission of the underlying data that informed the Biodiversity Assessment Report, which was subsequently provided for review by the Biodiversity and Conservation Branch. After review of the data, the Biodiversity and Conservation Branch clarified its requirements by a letter dated 3 April 2020, which consolidated the key remaining issues as being focussed around reducing the footprint of the impacted area and providing for Koala species credits as part of the biodiversity offsets program. Hanson has acknowledged these key residual issues, and has reduced the extent of the quarry pit to minimise biodiversity impacts. Further, as set out in the revised Biodiversity Assessment Report (see **Appendix H**) extensive further studies have been carried out in relation to the presence of Koala at the site, and Koala species credits have now been incorporated into the biodiversity offsets strategy.
- Department of Industry – Groundwater Assessment: After review of the groundwater model by the Peer Reviewer, Hanson consulted further with the Water Branch of DPIE to clarify the assessment comments made in their original submission. The Department of Industry reiterated its assessment comments of the requesting that a peer review report be prepared and that the model be classified in accordance with the Australian Groundwater Modelling Guidelines. A Peer review report has now been prepared by Ren Consulting and is provided at **Appendix C**.

3.0 Overview of Submissions

A total of two hundred and seventy-two (272) submissions were received in response to the public exhibition of the EIS, including submissions made by government authorities and agencies, and the public, as set out in the following sections.

A response to each of these submissions has been prepared. The key matters raised in the submissions can be grouped into six (6) categories. An overview of the submissions and a summary of the process undertaken to ensure the submissions have been accurately responded to is provided below.

3.1 Government agency submissions

Submissions were received from a total of six (6) government agencies as follows:

- Heritage Council
- Department of Industry and Environment – Division of Resources and Geoscience
- Environment Protection Authority
- Port Macquarie-Hastings Council
- Department of Planning, Industry and Environment – Diversion of Biodiversity and conservation
- NSW Rural Fire Service

As outlined above, a total of six government agencies provided submissions, with the DPIE providing a set of summary comments with the request for an RTS. Each submission varied in terms of the number and types of issues raised, with some agencies raising more issues than others (dependant on their function and responsibility). Each agency submission was reviewed in detail to identify the key issues.

The agency submissions were then provided to the relevant technical specialists of the project team for consideration and preparation of updated or supplementary assessment reports. Where additional information was required to respond to the submission issue raised, it has been provided within this RTS.

A detailed summary of the issues raised by the Government agencies and the response to those issues is provided in **Section 4**.

3.2 Public submissions

A total of two-hundred and sixty-four (264) public submissions was received from individuals, landowners, organisations and special interest groups. Four of these submissions have been classified as comments and one has been classified as in support of the proposal. The remaining 259 submissions have been classified as being an objection to the proposal.

The community submissions were reviewed and summarised into key issues. The main issues identified within these submissions were:

- Traffic and Transport;
- Hours of operation;
- Biodiversity;
- Noise and Vibration;
- Water management;
- Air quality; and
- Socio-economic impacts, including amenity impacts on residents and businesses and property values.

A detailed summary of the issues raised in the public submissions is provided in **Appendix J**, and the response to these issues is provided in **Section 5**.

4.0 Response to Government agency submissions

This section provides a response to the key issues raised in the submissions from Government agencies.

Table 2 Response to Agency Submission Issues

Issue Title	Issues Summary	Hanson's Response
Department of Planning Industry and Environment		
Scope and adequacy of information	Section 3.3.1 of the EIS provides two different total resource volumes. Provide an accurate figure of the total resource that the development application relates.	The reduced quarry pit extent has resulted in a reduced total resource for which the development application relates to approximately 15.9 million tonnes – being 530,000tpa for 30 years.
	Conceptual final landform and rehabilitation figures must be provided.	Final landform and rehabilitation plans are provided at **Appendix I**. The plan illustrates the final landform, including the location of the void and native vegetation re-planting areas around the outside edge of the void, as well the sediment basins and water storage areas that will be retained on-site at the completion of quarrying. The plan should be read in conjunction with the detailed description of quarry rehabilitation set out in Section 17 of the exhibited Environmental Impact Statement. The plan also identifies that parts of the quarry processing area could be utilised for future industrial uses, in-keeping with the immediately surrounding Sancrox Employment Precinct. It also identifies that the Concrete Batching Plant and Concrete Recycling Plant may be able to continue operating in this context.
	Clarify if the bitumen plant is coal fired or gas fired.	The asphalt (bitumen) plant will be totally enclosed and fuelled by natural-gas.
	Provide further details of the availability of hard rock resources in the Port Macquarie area and why Hanson considered the proposed quarry expansion is needed and justified.	Hanson is projecting strong long-term growth in the demand for aggregates, concrete and asphalt on the mid-north coast based on the well documented population increase projections for the Mid-North Coast area – with more than 76,000 new residents and 46,000 new homes projected by the North Coast Regional Plan 2036. These materials will be provided as part of the civil materials supply chain for the construction of, although not limited to; roads, housing, employment & industrial facilities, education facilities and medical facilities. It is also highlighted that the Sancrox Quarry is currently at capacity for its 2021 annual limit. With future big projects taking precedent, many new orders are being turned away for the remainder of financial year 2021 – providing a clear indication of the level of market demand that Hanson is trying to respond to.
Planning and Land Compatibility	Provide details on where the proposed/approved residential areas of Le Clos Verdun, Le Clos Sancrox, Thrumster, Fernbank Road and Riverpark Sancrox would occur in relation to the existing and proposed quarry expansion areas. Provide a figure containing this information.	Further details of the specified proposed / approved residential areas are provided in **Section 6.1**, along with a map illustrating the spatial relationship of these areas with the site.
	Have the proposed/approved residences been considered as residential receivers for noise and air quality assessment purposes.	Any possible new sensitive receptors around the quarry are located further away from the quarry than existing receptors 4, 7, 9, 13, 15, 19 and 20 (as labelled in the revised Noise and Vibration Impact Assessment at Appendix E), and these receptors would remain representative of the nearest and most affected sensitive receptors for both air quality and noise impact assessments.

Issue Title	Issues Summary	Hanson's Response
	Are any noise or air quality mitigation measures proposed for these approved/proposed residences.	As indicated above, compliance with air and noise criteria at the existing and specified residential receptors will ensure compliance of the same criteria at any possible new sensitive receptors located in the vicinity of these receptors.
	Provide details of Hanson's consideration of the strategic planning work associated with Council's Fernbank Creek and Sancrox Planning Investigation Area.	Hanson supports the recently exhibited Draft Structure Plan for Fernbank Creek and Sancrox Planning Investigation Area public exhibition in February 2020, which specifically identifies that the Sancrox Quarry is a 'significant regional resource', that 'protection of the resource is considered to be a high priority', and that the Structure Plan will need to "…ensure any identified urban areas will not sterilise the resource". The Discussion Paper identifies that a key objective that will inform the preparation of the Structure Plan is to "Ensure land use does not restrict or prohibit the development potential of important extractive resources".
	Justify the need to operate 24 hours per day 7 days per week	The proposal has been amended to limit operations to 5am-10pm, and Hanson will prioritise morning and normal daytime hours operations, with evening hours (i.e. 6pm – 10pm) to be added in response to market demand as required. In addition, Hanson is seeking consent to operate 10pm to 5am 20 nights per year to meet the occasional customer demand.
Noise	The EPA has identified departures from the Industrial Noise Policy.	A response to the EPA's issues is provided below.
	The Department supports the EPA's request for details to be provided of how noise mitigation measures will be achieved and implemented, and which items of equipment can meet their sound power level.	A response to the EPA's issues have been provided below. Section 2.10 of the revised Noise and Vibration Impact Assessment (see Appendix E) sets out the noise mitigation measures committed to and confirms that they are feasible. Table 2.4 specifies the sound power level reductions that are committed to, and explains that where a piece of plant or equipment cannot meet the specified power level, then acoustic enclosures or silencers will be used to achieve the specified sound power level.
	Provide an assessment of the noise impacts that will be generated during the construction of the proposed noise mitigation bunds.	Construction of the earth bund has been included as construction noise scenario SCN04, for which details are provided in Table F1, Appendix F of the revised Noise and Vibration Impact Assessment (see Appendix E), and noise modelling of this scenario has been carried out and is presented in Section 6.2 of the revised Noise and Vibration Impact Assessment.
Air Quality	The EPA has identified instances where the Approved methods for Air Quality Impact Assessment have not been followed and where air quality assessment has not been detailed enough.	A response to EPA's issues is provided below. A revised Air Quality Assessment Report has been prepared and is appended at Appendix F providing all of the further details requested by the EPA.
	The EPA has requested revised modelling to be undertaken which incorporates additional control strategies to achieve compliance with the EPA criteria.	A response to EPA's issues is provided below. A revised Air Quality Assessment Report has been prepared and is appended at Appendix F which provides revised air quality modelling and demonstrates compliance the criteria at all sensitive receptors for the 24-hour and annual averaging periods with the quarry operating under typical day operations and maximum day when hours are limited to 5am to 10pm.
	Please address the EPA's issues.	A response to EPA's issues is provided below.
	Please address how the operation of the quarry will be managed to address air quality mitigation measures set out in Council's submission.	The revised Air Quality Assessment Report as appended at Appendix F comprises a list of mitigation measures which will be subject to the development consent conditions and NSW EPA Environment Protection Licence, and Hanson's commitment to implementation of these mitigation and management measures is reiterated by their inclusion in Table 3 (see **Section 7** below).

Issue Title	Issues Summary	Hanson's Response
Biodiversity and Aboriginal Cultural Heritage	Address the Division of Biodiversity and Conservation's recommendations, including to amend the quarry footprint to avoid the scar tree.	A response to the Division of Biodiversity and Conservation's submission is provided below. The footprint of the quarry has been amended to avoid impacts on the scar tree.
	Reassess the likely impacts of the proposal on the sub-regional biodiversity corridor that runs through the site and the biodiversity matters raised in Council's submission.	The ecological surveys have been revised and updated to include all flora and fauna communities. This includes the addition of detailed Koala surveys. See the revised Biodiversity Assessment Report at **Appendix H**. The western side of the quarry pit has been pulled back to reduce the impacts on the north-south biodiversity corridor, which will be retained, although narrower, on the western side of the quarry pit. It is highlighted that the Biodiversity Assessment Report accounts for through site connectivity as part of the credit calculation, and so the impact on connectivity impacts associated with reducing the width of this biodiversity corridor have been accounted for in the biodiversity offset calculation. See also further discussion in **Section 6.3**.
	Respond to Council's concerns that the ecological surveys were not sufficiently comprehensive.	The ecological surveys were carried out in accordance with the Framework for Biodiversity Assessment. Surveys have been supplemented in the revised Biodiversity Assessment Report (see **Appendix H**), including with a supplementary Koala Survey and Assessment report (see **Appendix D**).
	Address the historic grave site identified by the NSW Heritage Council in the Response to Submissions.	A response to the Heritage Council is provided below. In summary, the historic grave site is located over 3km southwest of the Sancrox Quarry and will not be impacted by the proposed development.
Blasting	Provide further consideration of impact zones, road closure procedures, and impacts on local residents, industrial lands the Pacific Highway and the winery.	The revised Noise and Vibration Impact Assessment (see **Appendix E**) includes a detailed assessment of blasting in accordance with Australian and New Zealand Environment Council (ANZEC) – Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration, 1990, and demonstrating that blasting can be carried out in accordance with the Australian Standard AS2187.2, which sets out methods for estimating air-blast overpressure and ground-borne vibration levels. Compliance with the Australian Standard will ensure that there are no adverse off-site impacts on any neighbour.
Traffic and Transport	Respond to the EPA's issues in relation to correctly assessing road traffic noise impacts.	A detailed road traffic noise impact assessment is provided in the revised Nosie and Vibration Assessment Report (see **Appendix E**), demonstrating compliance with the Road Noise Policy criteria. The proposed quarry extraction rate has been reduced by almost 30% meaning quarry haulage vehicles will similarly reduce by some 30%. Using the same assumptions as set out in Section 12.3.2 of the EIS, the quarry development will therefore generate approximately 122 new heavy vehicles per day on average, which comprises approximately 90 additional quarried product truck movements on average (being 71% of the amount assessed in the EIS, and which has been reduced due to the lower extraction rate now proposed) and approximately 32 truck movements associated with the other proposed uses at the site that remain as assessed in the EIS. This equates to a combined total (taking into account existing heavy vehicle movements associated) of approximately 164 truck movements per day on average.
	Respond to Council's request for a per tonne monetary contribution for haulage over Council roads.	Noted. Hanson is willing to accept a condition requiring payment of a per tonnage rate per km of Council managed roads at the same rate agreed by other operators, noting that the vast majority of Hanson's trucks would use less than 500 metres of Council managed roads before accessing the Pacific Highway.

Issue Title	Issues Summary	Hanson's Response
Water	Provide further information on the volume of water required to suppress dust on the overburden stockpile in the water balance.	Overburden stockpiles/bunds will be stabilised using site won topsoil and vegetation as part of the erosion and sediment control strategy for the quarry. The need for dust control of stabilised overburden stockpiles/bunds will be minimal and, if necessary, primarily in the establishment phase. Therefore, it is estimated that water demand for dust suppression of overburden stockpiles/bunds will not exceed 1ML per annum. See also the supplementary surface and groundwater water report prepared by ERM at **Appendix G**.
	Respond to the issues raised by Expressway Spares in relation to stormwater drainage.	ERM, on behalf of Hanson, has inspected the flows on several occasions, concluding that the flows are unlikely to be surface water flows from the quarry, but are likely to be sourced from seeps or springs. Notwithstanding this, Hanson commits to working with the neighbouring landowner to develop an agreed approach to manage the seepage flows to ensure they are directed to a stable down-gradient surface water system.
Soil	Respond to the EPA's concerns in relation to impacting the very strongly acidic Euroka Soil Landscape.	A response to the EPA's submission is provided below. Impacts to the Euroka Soil Landscape have been reduced as a result of the amended proposal, and management measures have been set out in **Appendix D** for managing the acidic soils.
Social Impact Assessment	Carefully consider the potential social impacts in accordance with the Social Impact Assessment Guideline.	A Social Impact Assessment was prepared and attached to the EIS at Appendix K. The Social Impact Assessment was prepared in accordance with the Department's *Social Impact Assessment Guideline for state significant mining, petroleum production and extractive industry development*.
Heritage Council		
Impact on historic grave	There is a National Trust listed grave site identified in the Sancrox area. The EIS states a survey was undertaken but no historical heritage items were found during the survey and concludes that there are no historic heritage constraints. However, it is not clear whether the grave site was specifically searched for and given that the grave may not be in good conditions and physical evidence may have been removed since the Trust recorded it and may longer record its location, it is requested that the proponent clarify whether the grave would or would not be affected by the proposed development.	ERM has reviewed the National Trust Listing and identified the grave site located over 3km southwest of the Sancrox Quarry. The single burial site dated 03/05/1901 was surveyed in 1986 and is recorded as an imposing 2m white marble obelisk, erected in memory of Allen Johnston. The monument was reported in good condition with a cast iron surround set in sandstone. Surrounding remnants indicate that additional gravestones may have been in the area yet were not recorded in the survey. The proposed quarry expansion will not result in adverse impact upon the burial site.
Department of Planning, Industry and Environment – Division of Resources & Geoscience		
Provide resource investigation report	The referenced Hanson 2015 resource investigation report should be supplied to the Division.	The referenced Hanson 2015 resource investigation report has been supplied to the DPIE Division of Resources and Geoscience and can be found on the DPIE Major Projects website at https://www.planningportal.nsw.gov.au/major-projects/project/9946
Provide annual production data	The proponent should be required to provide annual production data for the subject site to the Division as a condition of development consent.	Hanson is willing to accept a condition that would require it provides annual production data for the Sancrox Quarry for the DPIE Division of Resources and Geoscience.
Environment Protection Authority		
Noise monitoring	Wind speed data The noise monitoring graphs appear to show that the measured wind speed at 10m was in excess of 5m/s for the majority of the monitoring period during	The Noise and Vibration Impact Assessment has been revised to reflect various wind speeds (see **Appendix E**). As described in Section 3.3.2 of the revised Noise and Vibration Impact Assessment, and can be seen in Annex E, noise data recorded

Issue Title	Issues Summary	Hanson's Response
	the day period, and the only measurements removed were when the wind speed at 10m was above 7m/s. Justify including data where wind speeds exceed 5 m/s, or undertake further noise monitoring to record sufficient periods where wind speed is below 5m/s.	during periods of rain or when wind speeds were in excess of 5 m/s at 10m above ground level have been excluded.
	Extraneous noise affects Explanation of how measurements and analysis of the noise monitoring data at monitoring location L02 accounted for extraneous noise affects in the evening and night periods and during the evening period at monitoring location L03.	As set out in Section 3.3 of the revised Noise and Vibration Impact Assessment (see Appendix E), additional short-term operator attended noise measurements were conducted during the evening and night-time periods around the site on Monday 20 July and Tuesday 21 July 2020 to confirm background noise levels. The measurement device was sent to show instantaneous noise levels through each measurement, with noise events noted by the operator. Overall, 15 minute acoustical and statistic parameters were recorded in the device. Site noise was inaudible or barely audible for the majority of measurements as the site was generally not operational during noise logging and attended monitoring.
	Background noise Table 7.2 of the noise report presents existing noise levels in excess of 40 dBA from the existing premises during the day period, which indicates that the existing quarry has potential to influence the background noise levels at the nearest receivers. Demonstrate that the background noise monitoring was not influenced by existing operations at the premises.	Table 7.2 presents noise validation results for the property boundary – not at residential receptors. As set out in Table 3.6 of the revised Noise and Vibration Impact Assessment (see Appendix E) site noise attributable to the site was estimated during operator attended noise monitoring. In most cases the site noise was inaudible by the noise logger operator, and in only two cases on the same day was the site noise estimated at 35-39 dBA. Further, noise form the site was inaudible during the installation and demobilisation of the continuous unattended noise loggers, and during any periods when an operator was in attendance. The dominant noise source contributing to the RBLs was observed to be the Pacific Highway traffic, wind-blown vegetation, some local traffic, birds and insects.
Operational noise assessment criteria	Attended noise monitoring was not carried out during the evening and night periods and the noise report has not described the existing noise environment or quantified sources during the most sensitive periods of the proposed operation. Based on the current information in the report, it is not possible to determine if sole use of the intrusiveness criteria is appropriate. Provide further information about the existing level of industrial noise during all assessment periods to appropriately derive the Project Specific Noise Levels (PSNL) and analyse the amenity level in the derivation of the PSNL.	As set out in Section 3.3 of the revised Noise and Vibration Impact Assessment (see **Appendix E**), additional short-term operator attended noise measurements were conducted during the evening and night-time periods around the site on Monday 20 July and Tuesday 21 July 2020 to confirm background noise levels. As set out in Table 4.3, where appropriate the Amenity Noise Level has been used to establish the Project Specific Noise Level, including for residential receptors 33, 34, 35 and 38 during the night-time period.
Noise modelling	Meteorological conditions Some of the meteorological conditions used in the noise report appear to be outside of the meteorological conditions specified in ISO 9613-2. Explain how the specific meteorological conditions have been modelled.	Section 2.10 of the revised Noise and Vibration Impact Assessment (see **Appendix E**) sets out the specific meteorological conditions used for the noise modelling which have been based on the EPA's Noise Enhancing Wind Analysis.

Issue Title	Issues Summary	Hanson's Response
	Model validation Validate the noise model to demonstrate that it is capable of predicting noise levels to a reasonable level of accuracy. The validation should compare measured noise levels with predicted levels of the same operating scenario(s) at reference points.	Section 7.2 of the revised Noise and Vibration Impact Assessment (see **Appendix E**) includes details of operational noise model validation, which was carried out by taking noise measurements around the site boundary in July 2020. Noise predictions at the site boundary were within 1 dBA of the measured values.
	Sound power levels Provide a reference or other information to support the use of the assumed sound power level (SWL). The EPA considers that the SPL of the CAT 980H loader (105 dBA) is low when compared to other data available in the public domain for this type of loader.	The sound power level of existing equipment was determined using on-site measurements. Appendix F of the revised Noise and Vibration Impact Assessment (see **Appendix E**) includes details noise modelling data, and Table F.2 in Appendix F presents the spectral data of the CAT980H Loader as measured on-site whilst carrying out stockpiling and loading activities.
Noise modifying factor adjustments	The noise report repeatedly refers to applying penalties for annoying characteristics to the sound power level or sound source. However, the analysis and any applicable penalty for modifying factors should be performed on the total noise emission level at the receiver, not the source or sound power level.	As explained in Section 7.3.3 of the revised Noise and Vibration Impact Assessment (see **Appendix E**), based on the noise source data and model outputs, penalties were not applied. In addition, Hanson commits to ensuring that any activity that has the potential to generate impulsive noise will be avoided at night time and any impulsive or transient noise events expected to exceed the sleep disturbance criteria at residential receptors will be strictly avoided at night.
Noise mitigation measures	Details of how noise mitigation measures will be achieved and implemented, and which items of plant can meet its sound power level requirements.	Section 2.10 of the revised Noise and Vibration Impact Assessment (see **Appendix E**) sets out the noise mitigation measures committed to and confirms that they are feasible. Table 2.4 specifies the sound power level reductions that are committed to, and explains that where piece of plant or equipment cannot meet the specified power level, then acoustic enclosures or silencers will be used to achieve the specified sound power level.
Blasting	Justification of the approach not to use existing blast monitoring data to inform the assessment of blast over-pressure and ground vibration. The quarry is an existing operation that conducts regular blasting and it is expected that existing blasting data would be used in the assessment.	Assessment of blasting is required to be undertaken in accordance with Australian and New Zealand Environment Council (ANZEC) – Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration, 1990 and Australian Standard AS2187.2, which sets out methods for estimating air-blast overpressure and ground-borne vibration levels. Long term blasting data from the quarry have been used to inform the site constants relevant to the analysis. Section 2.6.2 and 2.6.2 of the revised Noise and Vibration Impact Assessment (see **Appendix E**) sets out the site constants that have been adopted based on historical blast monitoring data.
Construction assessment	ICNG corrections for annoying noise characteristics There is no requirement in the ICNG to apply corrections for annoying characteristics from the INP. The ICNG does nominate a 5 dB penalty to the predicted level (i.e. not at the source) for certain activities. Reassess any penalties to predicted noise levels using the ICNG.	As set out in Table 6.2 of the revised Noise and Vibration Impact Assessment (see **Appendix E**) the predicted noise levels for three of the modelled scenarios include a 5 dBA penalty for annoying noise characteristics in accordance with the ICNG.
	Noise bund construction noise assessment The noise mitigation measures include very large bunds on the property boundary. The construction of these bunds is likely to temporarily increase noise levels and needs to be accounted	Construction of the earth bund has been included as construction noise scenario SCN04, for which details are provided in Table F1, Appendix F of the revised Noise and Vibration Impact Assessment (see **Appendix E**), and noise modelling of this scenario has been carried out and is presented in Section 6.2 of the revised Noise and Vibration Impact Assessment.

Issue Title	Issues Summary	Hanson's Response
	for in the construction noise assessment.	
Road traffic noise assessment	The report has assumed that the existing traffic noise level is 5 dB below the RNP criteria, but provided no evidence that this is an appropriate assumption. It is also unclear whether road traffic noise movements during the shoulder or night period have been included in the assessment. Provide further consideration of total traffic noise levels caused by the project, providing justification and evidence for the existing traffic noise levels. This should: • consider both light and heavy vehicle movements generated by the quarry. • provide the calculation method and detail the inputs and assumptions used to calculate the predicted road traffic noise. • identify the roads considered in the assessment and identify which are the closest and most potentially affected receivers adjacent to these roads. • address impacts of vehicle movements on public roads generated by the proposal during the night period.	Section 7.4 of the revised Noise and Vibration Impact Assessment (see **Appendix E**) includes a detailed assessment of road traffic noise, including identifying existing and proposed future road traffic noise levels at the most affected residential property on both the Pacific Highway (as a Freeway standard road) and Frogs Road (a local road). The assessment of noise levels included both daytime and night time periods, and identified that the increase in noise levels is negligible and is below the 2 dBA perceptibility threshold considered acceptable under the Road Noise Policy.
Hours of Operation	Provide justification for the need to operate 24 hours, 7 days a week including measures to reduce adverse impacts to the surrounding rural-residential land users.	The proposal has been refined in relation to hours of operation, with a view to meet the community's expectations whilst providing Hanson the flexibility to meet market requirements. In particular, Hanson in no longer seeking approval for operations to occur 24 hours per day 7 days a week. Instead, Hanson is seeking approval only to operate the quarry on a regular basis during the early morning shoulder, daytime and evening periods – being 5am until 10pm. Hanson will prioritise morning and normal daytime hours operations, with evening hours (i.e. 6pm – 10pm) to be added in response to market demand as required. In addition, Hanson is seeking approval for the operation of the Processing Plant, the Asphalt Plant, and the Concrete Batching/Recycling Plant (and associated transport) during the night time period (i.e. 10 pm to 5 am) for up to 20 nights per year, in order to meet this occasional customer demand (examples of such customer demand occurs when TfNSW is upgrading the Pacific Highway, which requires works to be undertaken at night time when highway traffic is lowest). It is highlighted that, based on the revised proposed operational hours, active quarrying will never occur during the night time period.
Air quality assessment	Modelling of the worst-case scenario The AQIA presented results for one modelling scenario that included quarry activities for the operations of the quarry and all the proposed plant. This modelling scenario was based on	The revised Air Quality Assessment Report as appended at **Appendix F** has been revised to assess two emission scenarios. This includes 'Typical day' and 'Maximum day' operations. The 'Maximum day' operational scenario is based on a production capacity of 2,600 tonnes per day, which reflects

Issue Title	Issues Summary	Hanson's Response
	annual throughputs. Given the predicted additional exceedances based on annual throughput, it is likely that modelling results based on a maximum daily material handling would result in higher project-related increments and extra additional exceedances.	the likely worst-case scenario for a 24-hour period associated with an annual production limit of 530,000 tpa.
	Cumulative assessment • Cumulative results for 24-hour PM10 concentrations indicate predicted additional exceedances at 13 different receptors (R1-R4, R12-R19 and R42) located to the west and south of the project boundary. The AQIA should also state the total number of predicted additional exceedances. These results should be presented in accordance with section 11.2.3 of the Approved Methods. • The Level 2 assessment (contemporaneous assessment) results only present the largest increment and the corresponding background on the day. This analysis needs to include a summary of various days, pairing the highest background concentrations with the corresponding predicted increments, as well as the highest predicted increment concentrations with the corresponding background concentrations on the same day.	Table 7.1 of the revised Air Quality Assessment Report (see **Appendix F**) identifies the total number of predicted exceedances as a result of the cumulative assessment in accordance with the approved methods. The proposed reduction in capacity will result in the cumulative concentrations of PM_{10} below the approved criterion at all sensitive receptors for the 24-hour and annual averaging periods with the quarry operating under typical day operations and maximum day when hours are limited to 5am to 10pm. When operating at 24-hour operations, one receptor (R13) was predicted to exceed the impact assessment criterion using the maximum day scenario and operating for 24 hours a day. The Level 2 contemporaneous analysis (presented at Table 7.2 of **Appendix F**) identifies that there would be three exceedances at this receiver.
	Potential impact on future sensitive receptors The Approved Methods require potential impacts to be assessed at the nearest existing or likely future sensitive receptors. Areas to the south and east of the project are currently under development and the AQIA must assess potential impacts for pollutants at these future sensitive receptors.	The revised Air Quality Assessment Report (see **Appendix F**) has been revised to include the approved methods to address the potential impacts at the nearest existing or likely future sensitive receptors. This includes an investigation into the potential pollutant, particularly located south and east of the project site. Receptor R13 located on the southern boundary of the site has been identified as the closest sensitive receptor with the highest predicted air quality impact. However, the location of R13 is currently subject to IN2 Light Industrial zoning, indicating that it will not likely remain as a sensitive residential receptor into the long term. Land to the east, west and south of the site has been identified for possible future urban development, which would introduce new sensitive receptors around the quarry. However, these receptors are further away from the quarry than existing receptors 4, 7, 9, 13, 15, 18, 19 and 20, and these receptors would remain representative of the nearest and most affected sensitive receptors.
	Revised modelling Provide revised modelling incorporating additional control strategies to achieve compliance with the EPA criterion at all sensitive receptors.	The revised Air Quality Assessment Report as provided at **Appendix F** includes revised modelling incorporating additional control strategies and demonstrates that compliance with the EPA criteria can be met for all sensitive receptors under typical day operations and maximum day operations when hours are limited to 5am to 10pm.

Issue Title	Issues Summary	Hanson's Response
	Source apportionment Modelling predicts large project-only increments. Source apportionment results to better understand what plant operations and/or specific activities are driving the predicted large PM10 increments.	The revised Air Quality Assessment Report as appended at **Appendix F** has been revised to address and justify the large PM_{10} increments for modelling. The proposed extraction rate has been lowered to reduce overall emissions, and source apportionment was completed using iterative modelling process to identify that the most significant contributor to particular matter concentrations, in particular at Receptor R13, were haul road emissions. As such, additional controls in the form of chemical dust suppression to all unsealed haul roads has been applied.
	Mitigation Provide a list of controls that are consistent with best practice control of fugitive emissions to minimise potential impacts.	Section 8 of the revised Air Quality Assessment Report as appended at **Appendix F** includes a list of mitigation controls to minimise potential impacts in accordance with best practice control of fugitive emissions. Table 9.1 of the revised Air Quality Assessment Report provides further management measures that would be implemented through an Environmental Management Plan.
	Annual emissions estimates The assessment needs to segregate estimated annual emissions for the activities carried out at the premises, including providing additional information used to calculation of the emissions inventory to enable replication of the emissions. In particular, please provide: • A table presenting the estimated annual emissions for the activities carried out at the premises in accordance with the Approved Methods. • Further discussion of the assumptions used in the calculation of the emission rates, including a table with all parameters used for their calculation. Further explanation of how the emission estimations for hauling activities accounted for the different stages of the quarry operations. Although, most of the emission rates were calculated based on maximum annual throughputs, the AQIA has not transparently presented the assumptions made regarding distances covered in the modelling scenario or how representative they are of the different stages and future operations.	Appendix A of the revised Air Quality Assessment Report as appended at **Appendix F** includes a detailed table presenting the emission inventory data and associated assumptions and parameters, and a figure illustrating the location of unsealed haulage roads and other modelled sources. Section 5 of the revised Air Quality Assessment Report includes a detailed discussion of how the emission estimations for fugitive emissions were developed. It is also highlighted that the emissions inventory remains a conservative representation of a 'reasonable worst-case', as not every activity will occur at each source location all at the same time (as has been modelled) and the source of emissions has been based on the Stage 4 layout when mobile sources are closest to off-site sensitive receptors.
Soil properties	Revise the need to extend the development and sediment basins into the very strong acidity Euroka Soil Landscape, or provide a more detailed assessment of the potential impacts and mitigation measures addressing the potential risk to water quality.	The revised quarry extraction area has been revised to straighten and move the western quarry boundary to reduce the impact of the acidic Euroka soil landscape. Highly acidic soils that are impacted will be managed through separation and placement in stabilised overburden stockpiles for future reuse and rehabilitation of the quarry. The stockpiles will be located within the disturbed area of the quarry which drain to the site's large capacity dams, and collected runoff will be reused for dust suppression. Any discharges from the dams will be subject to compliance with the pH criteria in the EPA's Environment Protection Licence. Refer to **Appendix B** for further detail.

Issue Title	Issues Summary	Hanson's Response
Water balance	Include the volume of water required to suppress dust on the overburden stockpiles in the site water balance.	Overburden stockpiles will be at planned locations around the quarry for stormwater diversion and acoustic attenuation bunds and stabilised with site won topsoil and vegetation as part of the erosion and sediment control strategy of the quarry. The need for dust control will be minimal and primarily in the establishment phase. Therefore, water demand for dust suppression of overburden stockpiles/bunds will generally not exceed 1ML per annum. Refer to **Appendix G** for further detail.
Port Macquarie-Hastings Council		
Economic benefits	Notes also the potential strong economic development benefits likely to flow to the community and local economy as a consequence of a reasonable expansion of the above quarry.	Noted.
Community concerns	Council notes community concerns with the processing of the application for the current plan to significantly expand the size, operating hours and extraction limits of the existing quarry with respect to: • Lack of interaction and consultation with the Project Consultative Committee; • Lack of transparent consultation with the broader community; • -The adequacy and integrity of the EIS forming part of the application and, as a consequence, requests the Department of Planning to put the project on hold pending further detailed analysis and public scrutiny.	As part of the RTS, Hanson has reviewed and responded to the issues raised in over 200 submissions from the general community. It is therefore considered that all interested parties in the general community have been provided the opportunity to have their say on the proposal. In response to these issues Hanson has: • revised aspects of the proposal to reduce potential environmental impacts, in particular by reducing the extraction rate and limiting the hours of operation • undertaken further environmental impact assessment • made additional commitments to mitigate, manage or offset the predicted residual environmental impacts. We note that, in accordance with the EP&A Act and standard procedure, the Department's assessment of the project has essentially been on hold whilst the RTS has been prepared by Hanson.
Strategic planning: Fernbank Creek and Sancrox	It is requested that Council's strategic planning documents on the Fernbank Creek and Sancrox Planning Investigation Area be considered as part of the assessment process, noting that they refer to the significant regional resource the existing quarry provides and the importance of ensuring that future development in the area does not sterilise this resource, whilst still providing for the long term population growth of the Port Macquarie-Hastings.	A Draft Structure Plan for Fernbank Creek and Sancrox Planning Investigation Area was released for public exhibition in September 2020. Importantly, Section 4.9 of the discussion paper specifically identifies that the Sancrox Quarry is a 'significant regional resource', that 'protection of the resource is considered to be a high priority', and that the Structure Plan will need to "…ensure any identified urban areas will not sterilise the resource". The Discussion Paper identifies that a key objective that will inform the preparation of the Structure Plan is to "Ensure land use does not restrict or prohibit the development potential of important extractive resources. Given the strategic imperative under Ministerial Direction No 1.3 - Mining, Petroleum Production and Extractive Industries, and the way this has been correctly transposed into the Discussions Paper, it is clear that the obligation is on surrounding land owners, developers and Council to justify any future rezoning of and immediately adjacent to the Sancrox Quarry site, rather than there being any obligation on Hanson to unreasonably provide enhanced (costly) mitigation measures in relation to potential future sensitive receptors on immediately surrounding areas in advance of any detailed planning being undertaken to establish the nature and extent of these possible future urban areas. Further, in relation to noise and air quality impacts, it is highlighted that the existing residential receiver locations that are on the western and southern boundary of the site will

Issue Title	Issues Summary	Hanson's Response
		remain representative of the nearest and most affected sensitive receptors, and so compliance with the relevant criteria at these locations will essentially ensure compliance in the possible urban areas around them.
Reliance on reticulated water supply	The EIS has not adequately detailed the proposal development's reliance on reticulated water supply. Further details are required on intended usage.	Potable water will be required from Council mains water supply to support the demand of approximately 1,250 litres per day, or around 0.5ML per year, to maintain the site's amenities. Refer to **Appendix G** for further detail.
	It is requested any approval include the following requirements: • Prior to commencement of works or issue of a construction certificate (whichever occurs first), Payment to Council of developer charges, under the Water Management Act 2000. The contributions are levied in accordance with the provisions of the relevant Section 64 Development Servicing Plan towards the augmentation of the town water supply headworks. The contribution amounts are subject to adjustment in accordance with CPI increases adjusted quarterly and the provisions of the relevant plans. • A Certificate of Compliance under the provisions of Section 307 of the Water Management Act must be obtained prior to the commencement of the use or issue of any occupation certificate (whichever occurs first).	Noted. Hanson is willing to accept Council's standard conditions in relation to servicing contributions.
Haulage	The EIS has not adequately addressed impacts on the haulage route relating to Council managed roads. Council has typically entered into planning agreements with extractive industry proponents, at a per tonnage rate, to adequately compensate for the impact on the local road network attributed to heavy vehicle usage generated by such developments.	Noted. Hanson is willing to accept a condition requiring payment of a per tonnage rate per km of Council managed roads at that same rate agreed by other operators, noting that the vast majority of Hanson's trucks would use less than 500 metres of Council managed roads before accessing the Pacific Highway.
Biodiversity	The ecological surveys are not deemed to be sufficient to assess all ecological impacts on fauna and flora.	The ecological surveys have been revised and updated to include all flora and fauna communities. This includes the addition of detailed Koala surveys. See the revised Biodiversity Assessment Report at **Appendix H**.
	It is also noted that sub-regional habitat corridor runs through the site. This sub-regional corridor is not avoided and will be greatly impacted by the development footprint. This is not adequately addressed in the EIS and it is noted that ecological investigations on surrounding properties have identified the corridor as significant for the local koala population.	A detailed survey and investigation into the local Koala population has been conducted with the support of Koala experts at BioLink Ecological Consultants. The proposed expansion of the Sancrox Quarry will remove approximately 42.6ha of potential Koala habitat. A Koala survey and assessment report has been provided at **Appendix D** and the Biodiversity Assessment Report has been updated (and provided at **Appendix H**) to include species offset credits for the impacts to Koala habitat. The western side of the quarry pit has been pulled back to reduce the impacts on the north-south biodiversity corridor, which will be retained, although narrower, on the western side of the quarry pit. It is highlighted that the Biodiversity Assessment Report accounts for through site connectivity as part of the credit calculation, and so the impact on connectivity

Issue Title	Issues Summary	Hanson's Response
		impacts associated with reducing the width of this biodiversity corridor have been accounted for in the biodiversity offset calculation. See also further discussion in **Section 6.3**.
Air Quality	The list of mitigation measures is quite extensive and will require the imposition of appropriate development consent conditions and probable revision/changes to the NSW EPA Environmental Protection Licence (EPL). Any approval of the proposal should include conditions reflecting both the recommended list of mitigation measures and where appropriate, incorporate relevant assumptions etc made in relation to the mitigation measures, such as: • The dust extraction system for blasting contains 99% of all dust emissions during each bench blast being installed • The asphalt plant is completely enclosed • Bitumen vapour balancing and recovery systems are provided • Sealed haul roads with sweeps when needed • Land clearing/disturbance being kept to a minimum • Site rehabilitation being carried out on a progressive basis • Deliveries are randomised between 6am and 6pm each day • Vehicles travelling onsite at a maximum 30KPH • Limiting the number of loads of materials being delivered to the site each day • Watering and dust suppressions systems being installed and used properly such as Level 2 watering of unsealed roads.	The revised Air Quality Assessment Report as appended at **Appendix F** comprises a list of mitigation measures which will be subject to the development consent conditions and NSW EPA Environment Protection Licence, and Hanson's commitment to implementation of these mitigation and management measures is reiterated by their inclusion in **Table 3** (see **Section 7** below).
Department of Planning, Industry and Environment – Water		
Pre-Approval	Groundwater Assessment, Licencing and Monitoring • Assess and classify the groundwater model against the Australian Groundwater Modelling Guidelines and have the model peer reviewed. • Provide details on acquiring suitable surface/groundwater entitlement to cover estimated take. • Correctly identify potentially impacted water sources and revise its Aquifer Interference Policy (AIP) (DPI 2012) assessment as required.	A groundwater response has been prepared by ERM and is provided in **Appendix G**. In summary: • The groundwater model has been classified under the Australian Groundwater Modelling Guidelines as a 'Class 1' groundwater model. • Entitlements under the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016 are available. • The Aquifer Interference Policy assessment remains accurate and does not need to be revised.

Issue Title	Issues Summary	Hanson's Response
Post Approval	Groundwater Licencing and Monitoring • If a Water Access Licence (WAL) is required, it must be obtained prior to the commencement of works. • Develop a groundwater monitoring plan in consultation with DPIE Water including threshold trigger values as well as a contingency strategy if triggers are exceeded. • Develop a water quality monitoring plan for the in-pit sump(s) and existing monitoring bores while they remain accessible.	Hanson would accept conditions of consent consistent with the requirements.
	Surface Water Assessment • Establish a sediment control structure adjacent to the northern aggregate stockpile to the southeast of the Project area.	Hanson would accept conditions of consent consistent with the requirements.
Department of Planning, Industry and Environment – Division of Biodiversity and Conservation		
Biodiversity	A revised Biodiversity Assessment Report should be submitted which addresses all of the requirements of the Framework for Biodiversity Assessment, including: • Providing updated and finalised biodiversity data and information • Further consideration of indirect biodiversity impacts • Further information and justification in relation to koala habitat • Further justification for connectivity impacts • An updated and finalised FBA calculator	A revised Biodiversity Assessment Report is appended as **Appendix H**, which has been prepared in accordance with the Framework for Biodiversity Assessment and to address the Division of Biodiversity and Conservation's issues, in particular in relation to assessment of impacts on Koala. Refer to **Section 6.3** for further information regarding the ecological impact on the existing local koala habitat on the site.
Aboriginal heritage	Further attempts should be made to engage with registered Aboriginal Parties.	As identified in the Aboriginal Cultural Heritage report provided at Annex D of the EIS, four groups registered an interest in being consulted for the project being: • Birpai Traditional Owners; • Birpai Local Aboriginal Land Council (BLALC); • Yanggaay; and • Norm Archibald. Efforts to engage are outlined as follows, and further details are available in **Appendix D**: • On 15-16/11/2017, the project was surveyed by an ERM Heritage Consultant and Jason Holten on behalf of the Birpai Local Aboriginal Land Council and Birpai Traditional Owners Indigenous Corporation. • Consultation was held on 17/10/2017, and each registered Aboriginal stakeholder received an outline of the scope and the proposed survey methodology. No comments were received from any of the Aboriginal Stakeholders. • On 19/1/2018 a draft copy of the ACHAR was provided to all interested Aboriginal parties. Responses received comprised of support from the Burpai Traditional Owners and Birpai Local Aboriginal Land Council, with no responses from the other registered parties.

Issue Title	Issues Summary	Hanson's Response
		• Several efforts and attempts to contact to the Yanggaay and Norm Archibald parties, including during 2020 a part of the preparation of the RTS and in response to the Division of Biodiversity and Conservation's submission, with no additional comments received.
	The development footprint should be amended to preserve the scar tree.	The proposed extraction area has been reduced on its western side, meaning that the potential scar tree is located outside of the quarry pit footprint to the west of the extraction area. Hanson has agreed to a commitment to ensure all revised construction and extraction plans will clearly mark the tree, and consideration will be given to installation of temporary fencing during the final stages of quarrying to ensure there is no accidental damage to the tree.
	The Aboriginal Cultural Heritage induction for workers should be presented by (or involve) a representative of the RAPs, and the content should be formulated by, or reviewed prior to finalisation, by the RAPs to ensure it is culturally appropriate.	Hanson provides a commitment that all employees and subcontractors undergo environment awareness training as part of the site induction. Only information endorsed by RAPs will be included, and a representative of the RAPs will be invited to participate in the induction sessions for major contractors.
	The proposed Chance Finds protocol should be amended to require authorisation from the Department of any proposed salvage of Aboriginal objects discovered during works.	A revised Chance Finds Procedure has been provided in Appendix B and includes authorisation from Heritage NSW.
NSW Rural Fire Service		
Post Approval	NSW Rural Fire Service recommends the following conditions be applied to the development: • A Fire Management Plan be prepared in consultation with the NSW Rural Fire Service. • 20,000L water supply tank to be located adjacent the internal property access road. • A 10m defendable space with unobstructed vehicle access to be provided around the perimeter of the fixed infrastructure.	Hanson is willing to accept the NSW Rural Fire Service's recommended conditions.

5.0 Response to public submissions

This section provides a response to the key issues raised in the submissions from the public, including special interest groups and private organisations.

5.1 Heritage

Issues Raised
Key heritage issues raised in public submissions were in relation to the following:

- The impact upon aboriginal heritage sites including the nearby scar tree and ceremonial site of cultural significance.
- The negative impacts on the rights of Indigenous people to land and resources held collectively.

Response to Issues
In response to these issues:

- A Heritage response has been prepared by ERM as appended as **Appendix B**. This report confirms that the proposed quarry pit expansion has been reduced to ensure it will not result in adverse impact on the nearby scar tree heritage site. The scar tree will be identified on all construction and operational plans to remain protected.
- The ceremonial site is located approximately 3km southwest of the Sancrox Quarry, and thus is not in close proximity to the proposed works.
- Engagement and consultation with interested Aboriginal Parties was conducted. No objections were raised in regard to the methodology and protocol adopted for the proposed works.
- All employees and subcontractors will undergo environmental awareness training as part of the site induction to ensure they understand their obligations and responsibilities. Only information endorsed by Registered Aboriginal Parties will be included, and a representative of the Registered Aboriginal Parties will be invited to participate in the induction sessions for major contractors.

5.2 Traffic and transport

Issues raised
Key traffic issues raised in public submissions include:

- Increased volume of traffic, and associated noise and fumes, will further deteriorate the conditions of Rawdon Island Road / Sancrox Road.
- The traffic impact assessment did not properly account for the growth in traffic from other industrial development and planning proposals in the local area, including rezonings which will increase the population density.
- Increased heavy vehicle traffic will compromise the safety of pedestrian and cyclists on Sancrox Road and Rawdon Island Road.
- Additional heavy vehicle trips on Sancrox Road will result in increased risks for motorists, in particular during night-time hours when there is reduced visibility. This will result in bottlenecks on local roads to avoid heavy vehicle movements.

Response to issues
A Traffic response has been developed by ERM as appended as **Appendix B**. In response to these issues:

- Increased heavy vehicle traffic on the western parts of Sancrox Road and Rawdon Island Road will be limited as vehicles travelling to the site was predominantly use the Sancrox and Oxley Highway interchanges with the pacific Highway, and their associated service roads, as more suitable routes. Heavy vehicles movements west of the site will be limited to supply markets within Sancrox locality, which will be less than 1% of the total annual truck trips.

- The proposed quarry extraction rate has been reduced by almost 30% meaning quarry haulage vehicles will similarly reduce by almost 30%. Using the same assumptions as set out in Section 12.3.2 of the EIS, the quarry development will therefore generate approximately 122 new heavy vehicles per day or a combined total (taking into account existing heavy vehicle movements) of approximately 164 truck movements per day.
- The heavy vehicles will almost exclusively access the site via the Sancrox Road interchange with the Pacific Highway, which was constructed in 2015 to modern highway design standards, and took into account the expansion of the Sancrox Quarry as well as the development of the Sancrox Employment Precinct, and remains sufficient to accommodate the lower levels of additional heavy vehicle traffic rising from the proposed quarry expansion as now proposed. Hanson would expect to pay a per tonnage rate per km travelled on Council-managed roads in order to contribute to the ongoing maintenance of the local road. If further urban or residential development is progressed by Council in the vicinity of Sancrox Road, then the additional traffic on Sancrox Road or though the Pacific Highway interchange would need to be accounted for in the strategic planning stages of the urban development proposals.
- Upgrades to the road network undertaken by RMS in 2016 allow for safe pedestrian and cyclist movements along Sancrox Road and through the Quarry Access Road roundabout.
- Night-time operations have been largely removed, and are now proposed to occur a maximum of 20 days per year which will result in low cumulative road risk during night-time hours.

5.3 Hours of Operation

Issues raised

Issues raised regarding the hours of operation were primarily concerning the level of noise impact for the nearby residential areas caused from the quarry operating 24 hours and 7 days a week. Some of the ways the community has expressed their concern are noted below:

> *I am totally against any further operating hours or days for this current operation. A quarry operating 24/7 will negatively impact on our peaceful lifestyle. There will be no respite from constant noisy plant and equipment. Despite noise mitigation measures, the rural ambience is already reduced and any extra noise generation, especially at night, will only make it worse.*
>
> *I strongly object... As a nearby resident I feel that if this quarry is approved as advertised, my peaceful lifestyle will be significantly impacted by this quarry operating around the clock seven days a week particularly with increased noise, dust, truck movements and blasting.*
>
> *A facility operating 24hrs per day is not an appropriate development to be located right in the middle of the fastest growing residential area in one of the fastest growing regional LGA's in NSW.*

Response to issues

The proposed expansion of the quarry has been revised to operate to restricted hours of 5am until 10pm. Hanson will prioritise morning and daytime hours operations, with evening hours (i.e. 6pm – 10pm) to be added in response to market demand as required. Operation of the Processing Plant, the Asphalt Plant and the Concrete Batching/Recycling Plan and associated transport will be restricted to 20 nights per year to meet the occasional customer demand (which is generally associated with major infrastructure projects that require construction works to be carried out during the night time). As such, noise will only be generated by the site for up to 20 nights per year. Notwithstanding this, noise assessment has been carried out for both on-site operations and traffic noise in the night-time period, which deconstrues that the night-time Project Specific Noise Levels would be complied with for these 20 nights per year when operations may occur.

5.4 Biodiversity

5.4.1 Ecological Assessment and Offsets

Issues raised

Key biodiversity issues raised in submissions include:

- The loss of the biodiversity community corridor which serves a critical link for vegetation connectivity within the Greater Sancrox Structure Plan.

- The clearing of land which will result in habitat fragmentation and significant adverse impacts on existing native vegetation. Impacts on local flora and fauna communities.
- No mention of the existing hollow-bearing and nest box trees as part of the offset area or proposed offset strategy.
- Isolation of fauna that remains in the proposed offset area. The disconnect within the offset area will greatly reduce its ecological viability.
- Insufficient information on the effect of the proposed light and noise pollution on flora and fauna populations.
- The supplementation of “eco-credits” will not replace the loss of the habitat.
- Inadequacy of the fauna surveys which fail to acknowledge the presence of parrots and Regent Honeyeaters.

Response to issues

A revised Biodiversity Assessment Report has been prepared by SLR and is appended at **Appendix H**. The revised Biodiversity Assessment Report has also been supplemented by a Koala Survey and Assessment report prepared in collaboration between SLR and BioLink Ecological Consultants, which is provided at **Appendix D**. In response to these issues:

- The western side of the quarry pit has been pulled back to reduce the impacts on the north-south biodiversity corridor, which will be retained, although narrower, on the western side of the quarry pit. It is highlighted that the Biodiversity Assessment Report accounts for through site connectivity as part of the credit calculation, and so the impact on connectivity impacts associated with reducing the width of this biodiversity corridor have been accounted for in the biodiversity offset calculation.
- The clearing of habitats and native vegetation will be offset through new planting and revegetation of an Offset site of approximately 49 ha, to the northern portion of Lot DP 574308. The proposed revegetation of the northern portion of the site (Lot DP 574308) is designed to support the biodiversity corridor of native vegetation west of the quarry pit, and to maintain the north-south corridor link of canopy trees, in accordance with the sub-regional corridor in the Greater Sancrox Plan.
- The proposed offset area will partially compensate the loss of vegetation and deliver permanent ecological conservation outcomes providing habitat for native wildlife in the local area.
- The post-mitigation measures ensures minimal light and noise impact on flora and fauna species. The revised Biodiversity Assessment Report includes further assessment of edge effects, concluding that edge effects are unlikely to adversely affect local populations of native flora and fauna, and that there are not likely to be any threatened species affected by edge effects, as no such species are likely to be inhabiting the fringes of the proposed pit footprint, or rely on those areas for their breeding or other life cycle processes.
- The Framework for Biodiversity Assessment and the NSW Biodiversity Offsets Policy for Major Projects is an endorsed framework developed and supported by the NSW Government. The purchase and retirement of biobanking offset credits offsets the impacts on biodiversity values arising from clearing associated with development, and ensures the land that is used to offset impacts is secured in-perpetuity, in a way that is designed to ensure that no net loss of biodiversity values are caused as a result of clearing.
- The revised Biodiversity Assessment Report recognises the presence of Regent Honeyeaters which likely use the site for winter forage.

5.4.2 Koala Habitat

Issue raised

The lack of consideration to the existing koala habitat was raised as a significant issue amongst the submissions. The public commented on the importance of preserving the site for the local koala population as a result of the recent bushfire decimating large areas of koala habitats, thus threatening the survival of the species. Submissions also identified the site as a medium to high koala activity corridor with the recent Draft Coastal Koala Plan of Management 2018 produced by PMHC identifying the area core koala habitat. Further, no mention is made of the impact upon the Billabong Wildlife Park and Koala Sanctuary less than 1 km from the pit.

Response to issue
In response to this issue Hanson engaged SLR and BioLink Ecological Consultants to collaboratively carry out a Koala Survey and Assessment, which is provided at **Appendix D**. The results from the Koala Survey and Assessment have identified that the site contains Koala habitat, and have informed the revised Biodiversity Assessment Report. In particular, the proposed development has been modified to reduce impacts on Koala, including to reduce the impact on the north-south corridor on the western side of the quarry pit, and the proposed biodiversity offset strategy has been amended to include the retirement of 1,026 species credits for Koala.

The proposed development will not cause adverse off-site impacts on biodiversity values or the operating environment of facilities of a commercial or community nature, so will not impact on the operations of the Billabong Wildlife Park and Koala Sanctuary.

5.4.3 Endangered Ecological communities

Issues regarding the loss of the following threatened species, endangered ecological communities and biodiversity values were raised:

- Flax Leaved Paperbark
- Pricky-leaved tea tree
- Swamp oak and Mixed Eucalyptus trees
- Hollow bearing trees
- Spotted Gum-Grey Ironbark Open Forest
- 0.55 ha of subtropical coastal floodplain forest
- *Eucalyptus teriticornis*
- Forest Red Gum
- Loss of 27 threatened species identified so far, including 17 birds and 9 mammals, including 7 vulnerable bats.

The community raised significant concern of the impact the loss of these biodiversity values would have on species who nest and reside in the area. This includes the critically endangered Swift parrot, forests owls and glossy Black Cockatoos. Many gliders and possums also live within the area.

Response to issue
A revised Biodiversity Assessment Report has been prepared by SLR and is appended at **Appendix H**. In response to these issues the revised Biodiversity Assessment Report identifies nine threatened ecological communities in accordance with the Wildlife Atlas. Only one of the nine identified threatened ecological communities are identified in the close vicinity of the site – being the Subtropical coastal floodplain forest, which is located in the south western corner of the site, but would no longer be directly impacted by the quarry development footprint as a result of the proposed quarry extent being reduced.

The threatened species and other biodiversity values identified in the submissions are highly unlikely to be adversely impacted by the proposal because:

- There is no suitable breeding habitat for most of the species within the site. For those species that have been recorded within the area of development there are not likely to be local populations present wholly within the site or reliant on the site for their survival in isolation. Any such populations present within the locality will not be rendered locally extinct by the proposed development because of the large ranges of these species and the poor quality and condition of the habitats present within the site.
- The site is not assessed as likely to contain habitat critical to the survival of a species.
- The site is not likely to support an ‘important population’ of any threatened species.
- The proposed mitigation measures are considered sufficient in mitigating and reducing the impact on any threatened species.

5.5 Vibration – operational and blasting

Issues raised

Key vibration issues raised in submissions include:

- Excessive ground vibration impacting nearby residences.
- Impact of increased blasting and crushing for 24/7 operations.
- No risk assessment and impacts of clearing or ripping was conducted as part of the EIS.
- Lack of mitigation measures to manage daily blasting impact on traffic. Consideration of adopting the blast guarding code of conduct prepared by the Australian Explosives Industry and Safety Group.
- Lack of fly rock control and management of post blast gasses that are harmful.
- Lack of response plans in the case of an incident.

Response to issue

In response to these issues:

- A revised Noise and Vibration report has been prepared by ERM and is appended as **Attachment E**. The report sets out the ground-borne vibration and air-blast overpressure limits that the operation must comply with at any time during operations (including blasting activities).
- No vibration or ground-borne noise is expected to be generated during the construction and operation of the quarry (not including blasting), and the combined 100m distance offset to nearby residential receptors will result in minimal impact.
- Blasting will be limited between the hours of 9:00am and 3:00pm Monday to Friday in accordance with the existing EPL. It is predicted that blasting activities will not cause an exceedance of the vibration limits required by the EPA in accordance with the site's EPL. In particular, the airblast overpressure level from blasting operations at the premises must not exceed 120dBZ (L_{Peak}) at any time at any residence or noise sensitive locations, and must not exceed 115dBZ (L_{Peak}) at any residence or noise sensitive locations for more than five per cent of the total number of blasts.
- A Flyrock assessment of Sancrox blasting specifications was undertaken as part of the Buffer Zone Assessment. A Blast Management Plan is currently in use at the site, and will continue to be used to ensure the adequate design and management of blasting activities on site. A number of design management measures will be adopted and applied during quarry operations to minimise the potential fly-rock, and to protect the safety of people, property and livestock. The Blast Management Plan has been informed by blast modelling, setting blast parameters for the site and determining the blast exclusion zone. This minimises the likelihood of fly-rock outside of the exclusion zone, to protect the safety of people, property and livestock.
- Hanson has committed to the preparation of updated Emergency Response Plans for the quarry expansion.

5.6 Noise

Issues Raised

Key noise issues raised in submissions include:

- High noise levels of operations disrupting the sleep of nearby residential receivers.
- The noise of additional truck activities and operations occurring 24 hours and 7 days a week.
- Lack of appropriate noise buffers to prevent noise.
- Request for a noise bund to be installed the eastern boundary adjacent to the Expressway Spares Property, which would also act as a visual screen.
- Explanation of background noise recorded must be provided given the rural setting and various other industrial operations.
- Noise impacts upon native animals breeding and nesting in the area.

- The noise modelling as part of the EIS does not provide contour diagrams and does not clearly identify how neighbouring properties are affected.

Response to issue

A revised Noise and Vibration Assessment Report has been prepared by ERM and is appended as **Appendix E**. In response to these issues Hanson has amended the proposal to limit night-time operations to a maximum of 20 nights per year when market demand requires it (such as for major road construction that must be carried out at night-time), and to reduce the proposed extraction rates. Collectively, these amendments to the proposal will result in a significant reduction in the generation of noise from the site during operational activities. Specific responses to the issues listed above are provided as follows:

- The maximum noise levels of the general quarry operations are not predicted to exceed sleep disturbance criteria for any residential receptors surrounding the site.
- Impacts associated with road traffic noise are not anticipated for night time/morning shoulder periods with the amended proposed hours of operation.
- The proposed mitigation measures are considered appropriate in mitigating noise emissions from the quarry operations. Additionally, the quarry layout is designed with significant separation and will remain wholly within the quarry footprint to prevent excessive noise.
- The noise mitigation measures include the installation of a large earth bund on the southern property boundary, approximately 20 metres high and approximately 450 metres long to shield noise from the closest and most highly affected sensitive receiver.
- Existing background noises were conducted during unattended noise logging and quantified via attended monitoring. Further monitoring was carried out in 2020 as part of the Response to Submissions to validate the background noise levels. Measured background levels vary between 46 and 48 dBA during the day, between 39 and 47 dBA in the evening and between 32 and 47 dBA in the night. Measurements were dominated by Pacific Highway traffic, wind-blown vegetation, some local traffic, birds and insects. Site operational noise was inaudible or barely audible for the majority of measurements.
- Noise impacts as a result of the proposed development will result in a reduction in habitat quality. This will be appropriately managed and mitigated through the proposed mitigation measures.
- The Noise and Vibration report has been updated to reflect noise contours. Neighbouring properties have been identified as nearby sensitive receptors, where they are unlikely to be significantly affected.

5.7 Water Management

Issues Raised

Key water management issues raised in submissions include:

- The use of water for dust suppression in dry periods is inappropriate considering existing water restrictions and drought.
- The EIS does not identify any mitigation measures for the significant loss of volume in water from the groundwater aquifer.
- Impact upon the north and west alluvial flood plains of the Hastings River and Haydons Creek.
- impact on natural water flows, local water supply and groundwater are not adequately addressed in the EIS
- long term viability of Fernbank Creek as a result of surface water loss
- Impact of groundwater drawdown on residential properties
- Lack of scenario modelling for the existing operations and proposed development.

Response to issue

A supplementary water management response has been prepared by ERM and is appended as **Appendix G**. In response to these issues:

- The use of water is required for quarrying operations. Given the concern of drought conditions, demand management and water reuse initiatives will be adopted, with other dust suppression strategies such as surfactants and tackifiers implement.
- Water will be sourced by harvesting accumulating in disturbed areas of the quarry and groundwater seepage into the quarry pit. Any impact to groundwater access or availability will be remedied through modifying the supply bore and the affected location or an alternative water supply.
- The footprint of the proposed expansion is approximately 57 ha and result in a reduction of 24 ha corresponding to approximately 3% in the Haydon Creek Catchment and 10 ha approximately 1% of the Fernbank creek catchment.
- The proposed expansion will result in a lower contribution of flows compared to the existing catchment area as a result of the transformed catchment and significant woodland and vegetation assisting rainfall runoff. The impact of environmental flows, both in terms of frequency and characteristics is deemed to be negligible.
- Although the proposed expansion will affect an addition 10 ha (approximately 1%) of the Fernbank Creek catchment, all discharge from the quarry's water management system will discharge to Fernbank Creek and thence Hastings River. Potential reduction in flow within the Fernbank catchment may be reduced due to the site discharge location lying within the Fernbank catchment area.
- Seepage into neighbouring landowner properties results in minimal entrained sediment and is likely sourced from surface stormwater.
- Groundwater modelling was conducted by ERM and peer reviewed by REN Consulting. The peer review concluded that, whilst ground water model is appropriate in predicting long-term impacts of the proposed development in low value aquifers, the peer review report at **Appendix C** sets out a series of recommendations to further develop and improve the confidence-level of the groundwater model during detailed quarry planning and design.

5.8 Air quality

Issues Raised

The key issues regarding air quality were raised:

- Dust contamination to tank water and excessive fossil fuel emissions including a high level of carcinogenic diesel emissions and bitumen fumes resulting in health impacts.
- Increased volumes of dust diminishing the use of solar panels to power hot water, heating and electricity for nearby residents.
- Western prevailing winds across the quarry will result in dust clouds.
- The EIS fails to address the plumes of dust and fumes which extend beyond the identified receptors with no identified measures for effective real time 24/7 monitoring at multiple locations.
- The EIS has not included any modelling of air quality for the current and proposed quarry and its equipment.
- The construction and operation of the proposed Asphalt Plant will release hazardous pollutants and other agents deleterious to health.
- The EIS fails to include a real time monitoring regime to ensure emissions are detected and alarmed for automatic plant shutdown to prevent plumes affecting the residential area.

Response to issue

An updated Air Quality Assessment has been prepared by ERM to address issues raised as appended at **Appendix F.** In response to these issues:

- The assessment comprises of modelling for ambient air quality impacts and greenhouse gas emissions form construction and operations of the proposed expansion.
- The updated report provides dispersion modelling for 'typical day' operations and 'maximum day' operations. Iterative modelling was also completed to understand key source characteristics and test the effectiveness of dust control strategies.

- The updated modelling demonstrates that the sensitive receptors will result in a reduction in dust deposition compared to the initial proposal with the cumulative annual mean concentrations of PM10 below the EPA's criteria. Further, additional dust mitigation measures are in place for ongoing management of the project. Given the proposed dust dispersion is compliant with the EPA criteria, it is considered that there will be no impact on the operation of solar tanks and no need for remediation for water tanks.
- It is anticipated that an exceedance of the EPA 24-hour average PM_{10} criterion will occur at receptor R13 when operating under maximum daily throughput scenarios over a 24-hour period. Given that the site will be operated on a reduced hours basis (i.e. not over 24 hours), except for up to 20 nights per year, it is considered highly unlikely that night-time operational activities will occur at the same time as the meteorological conditions that would be necessary to result in the exceedance occurring. It is proposed to implement real-time dust monitoring adjacent to the boundary with receptor R13 along with reactive management of the quarry activities to ensure that quarry activities can be modified if night-time activities are required during adverse meteorological conditions.
- The proposed mitigation measures including a range of dust suppression techniques for exposed surfaces, haulage roads and stockpiles, will prevent the formation of dust clouds.
- The Asphalt plant will include one fully enclosed pug mill located on site with a vapour balancing system for the safe delivery of bitumen on site. A vapour recovery system will be employed for transfer of asphalt to trucks to minimise odour and dust emissions. Moreover, the asphalt plant will be totally enclosed to ensure all particulate matter emissions will captured.

5.9 Socio-economic impacts

Issues Raised

The key socio-economic issues raised in public submissions include:

- Loss of amenity for residents and the impact on their physical and mental health
- Negative impacts to property values
- Impact on surrounding businesses

Response to issue

In response to these issues:

- The expansion of the quarry's potential impact on the amenity of nearby residents has been considered, particularly in relation to the dust, noise and visual issues. Hanson will implement a range of mitigation and management measures to minimise residential amenity impacts and ensure that the quarry operates with best practice community engagement and complaints handling procedures to minimise the impacts on the local rural character experienced by the local community.
- Property prices are a complex aggregation of a large number of factors. The residual local amenity impacts have been assessed as minimal, and there are a range of management and mitigation measures that would be implemented to further minimise residual impacts. Conversely the beneficial aspects of the development are significant – including the initial capital investment, temporary construction employment, and ongoing permanent employment, that will support income and employment within the local community. Hanson operates a number of other quarries in NSW that have undergone expansions similar to the expansion proposed at Sancrox. None of these projects have resulted in any evidence that surrounding properties have reduced in value as a result of the quarry's expansion.
- As identified in the Socio-Economic Impact Assessment appended to the EIS, the potential impact to surrounding businesses will be managed in accordance with regulatory requirements to ensure acceptable limits are met at nearest receptors.

5.10 Other issues

Issues Raised

Other issues raised in public submissions include:

- The quality of the EIS and fieldwork conducted was insufficient.

- Visual impact.
- Engagement and consultation prior to the lodgement of the expansion application was insufficient.
- RU1 zoned land approved for subdivisions (some 142 allotments) on adjacent land.
- Estimated 48.4 million tonnes of Carbon Dioxide emissions increasing climate change.
- No principal hazard analysis or principal risk assessment study has been conducted. The EIS does not detail the management of ammonium nitrate, emulsion, detonators and other matters are carried out to prevent a catastrophic explosion that could impact beyond the site.
- Concern of mitigation measures will not be followed through.
- No mention of the East Coast High speed rail corridor runs through the middle of the quarry.
- Hanson's poor operational history and condition for quarry closure in 2005.
- Need of expansion given the several existing quarry resources in the region.

Response to issue
In response to these issues:

- The fieldwork and studies conducted at the time was considered appropriate and supported the EIS. A number of environmental assessments including noise, biodiversity and air quality has been revised to provide the most accurate and likely impacts of the proposed expansion.
- Given the location of the quarry amongst extensive existing vegetation, the surrounding topography and the proposed long-term rehabilitation and revegetation activates, the visual impacts associated with the project are considered negligible.
- Hanson has made genuine efforts to consult with the local community in order to understand their issues and concerns and has made substantive amendments to the proposed quarry in order to avoid, minimise and manage potential impacts.
- The assessment of noise and air quality impacts has been undertaken for the closest residential receivers located adjacent to the site boundary.
- The Air quality assessment prepared with the original EIS details that the projects contribution of greenhouse gas emissions represent approximately 0.0010% of Australia's commitment for annual emissions under the Kyoto Protocol. Appropriate mitigation measures to minimise emissions are provided.
- A risk screening assessment of potential hazards has been carried out in accordance with State Environmental Planning Policy 33 – Hazardous and Offensive Development (SEPP 33), presented at Section 15 of the EIS. The risk screening process concludes that the storage and transportation of hazardous materials would be below the Applying SEPP 33 thresholds, demonstrating that operational inventories of hazardous materials would not pose a significant risk of harm beyond the site boundary, and that risks associated with transportation are similarly unlikely to be significant. Ammonium nitrate, emulsion, detonators and other materials and equipment used for blasting will not be stored at the site. When required they will be brought to the site by specialist blasting contactors for each blast.
- Hanson is committed to complying with all mitigation measures and adhering to all the conditions of consent. Operating under these requirements will ensure the highest level of environmental protection and reduced impact on nearby uses.
- In the event of the east coast high speed rail being delivered, the quarry land will be acquired by the transport authorities. Given the very long lead times likely for the east coast high speed rail, it is likely that Hanson will have completed quarrying before the project is progressed.
- The proposed expansion will contribute to the supply of hard rock and is considered a major economic resource for regional and state development.

6.0 Further Environmental Assessment

6.1 Surrounding Residential Areas

A summary of the proposed and approved residential areas surrounding the site is provided below, and illustrated in **Figure 3** (which overlays the proposed and approved residential areas over the sensitive receptors map from the revised Nosie and Vibration Assessment Report at **Appendix E**):

- Le Clos Verdun (also known as Riverpark Sancrox): An approved rural residential subdivision located approximately 600m west of the site. Rural residential dwellings, once built, will be located significantly further from the site than existing rural residential dwellings identified as sensitive receptors R9, R10, and R11.
- Le Clos Sancrox: An approved rural residential subdivision located southwest of the site. Rural residential dwellings, once built, will be located significantly further from the site than existing rural residential dwellings identified as sensitive receptors R9 and R10. As identified in **Section 1.8.5**, the Le Clos Sancrox Planning Proposal has recently obtained a Gateway approval from the Department of Planning, Industry and Environment, meaning it will now proceed to public exhibition. The Planning Proposal relates to land south-west of the quarry site, south of Sancrox Road in part of the Sancrox B3 Area labelled in **Figure 3** as 'Le Clos Sancrox'. Importantly, any future residential property within the Le Clos Sancrox Planning Proposal area would not be closer to the site than the existing rural residential property at 162 Sancrox Road – meaning compliance with established Project Specific Noise Levels at the existing residential property would ensure compliance at the future residential properties.
- Thrumster: A recently developed urban area (and ongoing) located over 1km to the southeast. Due to the large distance away from the site no sensitive receptors have been identified in Thrumster, noting that receptors R22, R23, R24 and R25 are also located to the southeast of the quarry and are much closer.
- Sancrox Area B1: Identified as investigation area B1 within the Draft Structure Plan for Fernbank Creek and Sancrox Planning Investigation Area. No urban development has been proposed or endorsed in this area and no additional residential dwellings have been approved. Any future residential dwellings in this area will be located close to existing sensitive receptors R34 and R38 which are located on the western edge of this B1 area, and so would remain representative of the worst affected part of the B1 area.
- Sancrox Area B3: Identified as investigation area B3 within the Draft Structure Plan for Fernbank Creek and Sancrox Planning Investigation Area, and containing the Le Clos Sancrox Planning Proposal land south of Sancrox Road (see above). No urban development has been proposed or endorsed in this B3 area north of Sancrox Road and no additional residential dwellings have been approved. R19, R20 and R24 are located in the eastern part of this B3 area, and so would remain representative of the worst affected part of the B3 area.

Importantly, both the Urban Growth Management Strategy (2017) and the recently exhibited Draft Structure Plan for Fernbank Creek and Sancrox Planning Investigation Area (February 2020), specifically identify that the Sancrox Quarry is a significant regional resource, that protection of the resource is considered to be a high priority', and that any future Structure Plan for the expansion of urban development in and around the Sancrox area will need to ensure that any identified urban areas will not sterilise the extractive materials resource. The Discussion Paper specifically identifies that a key objective that will inform the preparation of the Structure Plan is to "Ensure land use does not restrict or prohibit the development potential of important extractive resources" and establishes a Resource Transition Area of approximately 500 metres around the Sancrox Quarry site with the following intention:

> "Protection of the resource is considered to be a high priority and a determination of the likely extent of westward expansion of the quarry and associated buffers (noise, vibration, flyrock) will be undertaken during the development of the Structure Plan. This will ensure any identified urban areas will not sterilise the resource. This assessment will include consultation with the current Quarry operator and the Department of Primary Industries to ensure that constraints associated with this site are adequately considered and addressed."

Further as documented in Section 1.8.4 above, neither the North Coast Regional Plan 2036 nor the Port Macquarie Draft Regional City Action Plan, identify the land around the Sancrox Quarry as being an Investigation Area for Urban Land, and the North Coast Regional Plan 2036 provides a framework for considering variations of the Urban Growth Area which requires the propsoed new urban area to address the potential for land use conflict by being appropriately separated from incompatible land uses, productive resource lands.

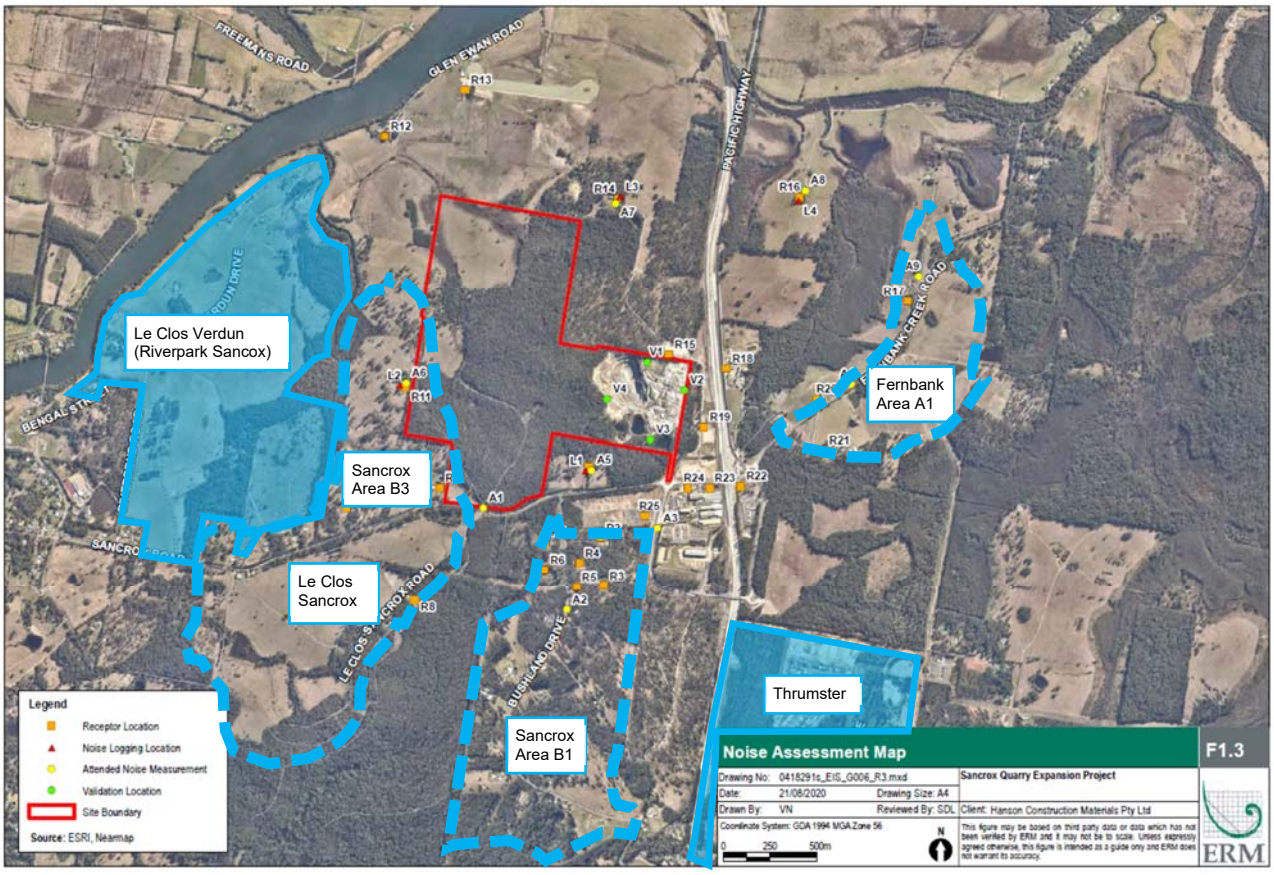

Figure 5 Future Urban Investigation Areas

Source: ERM and modified by Ethos Urban

6.2 Acoustic and vibration Impact

A revised Noise and Vibration Impact Assessment has been prepared by ERM and is provided in **Appendix E.** The revised Noise and Vibration Impact Assessment provides updated noise modelling to assess the reduced proposed extraction limit and reduced operating hours.

6.2.1 Construction Noise

The revised Noise and Vibration Impact Assessment identifies four main construction stages with works that have the potential to generate the most significant noise emissions and that have therefore been the subject of construction noise modelling, as follows:

- Demolition of existing structures.
- Site preparation and establishment.
- General construction of infrastructure.
- Construction of the earth bund.

The revised Noise and Vibration Impact Assessment indicates that the worst-case scenario $L_{Aeq,\ 15\text{-}min}$ noise levels during construction range between 23 and 64 dBA, with the highest noise levels calculated at nearby industrial and commercial premises, as well as adjoining properties that have been rezoned for industrial uses. The worst case predicted levels are identified at potential future industrial receptors 48 and 47, which are located north and east of the project site and closest to the existing processing areas. As these are future industrial receptors, it is unlikely for these receptors to be adversely impacted during the temporary construction stage.

The majority of predicted $L_{Aeq,15\text{-}min}$ noise levels are below the daytime Noise Management Levels applicable at residential and other sensitive receptors for construction works within the recommended standard hours, and all predicted $L_{Aeq,15\text{-}min}$ noise levels are below the Highly Affected Noise Management Levels applicable at residential receptors. Exceedance of the daytime Noise Management Levels by up to 9dBA is predicted for residential receptors located immediately to the south of the site under some construction scenarios.

These predicted values do not represent a constant noise emission that would be experienced by the community on a daily basis throughout the construction schedule. The predicted noise levels would only be experienced for limited periods of time and will not be experienced over whole daytime, evening or night-time periods. In practical terms, the predicted noise levels will only be for a temporary period and will not result in permanent impact on the community and surrounding environment. These results, however, do identify that general good-practice construction noise management and control techniques will be necessary to maintain acceptable noise levels at all receptors, and that construction works should be limited to the recommended standard construction hours where possible.

6.2.2 Operational Noise

The revised Noise and Vibration Impact Assessment includes revised modelling to predict the noise from four different stages of quarrying, which reflect the changing location of mobile plant and equipment as the quarry pit expands over time. Reasonable and feasible mitigation measures were identified and were incorporated into the modelling, and predicted noise levels compared to the relevant Project Specific Noise Levels calculated for each sensitive receptor.

The assessment found that the predicted $L_{Aeq,\ 15\text{-}min}$ noise levels for the proposed future operations are between 14 and 45 dBA which is within the noise level range associated with the existing quarry operations of between 13 and 50 dBA. The highest noise levels vary depending on meteorological conditions, with the highest levels generally associated with the worst case north-westerly and westerly wind conditions during evening and night-time periods when residential receptors located to the south of the site are the most significantly affected. However, the predicted noise levels will be compliant with the Project Specific Noise Levels for all future operational scenarios if conceptual mitigation as modelled is adopted, thus the proposed quarry expansion is unlikely to generate significant cumulative noise impacts.

6.2.3 Operational Road Traffic Noise

Road traffic noise was assessed based on the estimated traffic accessing the site via the Pacific Highway (motorway standard) and Frogs Road (local road). The assessment demonstrates that:

- Up to 300 quarry related heavy vehicle movements are predicted during the day-time (15 hour assessment period) with approximately 25 movements during the night time period (9 hour assessment period) on sub-arterial roads. An additional 25 quarry related heavy vehicles movements may occur during the day-time with approximately 12 movements during the night (1 hour assessment periods) for local roads. This will not result in a significant risk to the overall road traffic noise level experienced by receptors.
- Operational road traffic on Pacific Highway is predicted to increase daytime noise levels up to 0.5dBa and increase night-time noise levels by 0.2dBA. Predicted noise levels on Frogs Road is expected to increase up to 1.5 dBA during the day and up to 1.8dBA at night. Despite the increase in noise levels as a result of the proposed expansion, the predicted increase is below the 2dBA perceptibility threshold and is not considered substantial. Therefore, road traffic emissions will remain compliant with receptors along Pacific Highway and Frogs Road.

6.2.4 Blasting

Hours for operational blasting will remain in accordance with the existing EPL which specify hours of 9am-3pm Monday to Friday. Blasting operations will comply with the ANZECC 1990 guideline, AS 2187.2 and the approved DA1995/193 criteria.

The assessment identified that blasting overpressure and vibration levels at the closest receptor is predicted to comply with the vibration limits required by the EPA in accordance with the site's EPL. In particular, the airblast overpressure level from blasting operations at the premises must not exceed 120dBZ (L_{Peak}) at any time at any

residence or noise sensitive locations, and must not exceed 115dBZ (L_{Peak}) at any residence or noise sensitive locations for more than five per cent of the total number of blasts, and blasting vibration must not exceed 5 mm/s for more than five per cent of the total number of blasts. It should be noted that individual blast design should be based on meeting the overpressure and vibration criteria rather than restrictions on MIC as the blast design includes a number of variables such as location and whether the blast is located near an open face. As such, the variables of each blast will be managed through good blasting practices and the implementation of a Blast Management Plan to ensure compliance with the EPL limits.

Where flyrock blasting may result in flyrock throws, the burden, stemming height and hole angle parameters can be adjusted to calculate the appropriate clearance zone taking into account the relevant factor of safety for people and equipment. Prior to each blast a fly rock exclusion zone will be established based on blast specific risk assessments.

A Blast Management Plan has been prepared previously and is currently being implemented for existing quarry operations. The Blast Management Plan has been informed by blast modelling, setting blast parameters for the site and determining the blast exclusion zone. This minimises the likelihood of fly-rock outside of the exclusion zone, to protect the safety of people, property and livestock. The Blast Management Plan will continue to be implemented as the quarry expands.

6.3 Biodiversity

6.3.1 Koala Survey and Assessment

A supplementary Koala Survey and Assessment has been prepared by SLR in collaboration with Koala experts from BioLink Ecological Consultants and is provided in **Appendix D**. The Koala Survey and Assessment Report has been prepared to address issues raised in submissions in relation to the ecological importance of the site for the local Koala population.

Field survey assessments were conducted on the 12th and 13th of October 2020. Given the widespread presence of Koala feed trees across the site, all plant community types mapped as occurring on the site are considered to constitute Koala habitat. The survey identified that the proposed expansion of the Sancrox Quarry would result in a loss of approximately 39.02ha of native vegetation that comprises potential habitat, staged over the proposed 30-year life of the quarry.

Historically two populations of less than 10 to 15 individuals have utilised the local area; however, these populations are restricted to the areas by the Pacific Highway to the east and extensively cleared areas to the west and north. The SAT activity results indicate that one or more resident koalas are present within the site, and one Koala was sighted during the Koala Survey, approximately 50m to the west of the existing quarry. Evidence of Koala activity was found most prevalent along the western edge of the existing quarry, as well as a large proportion in the western portion of the site.

The proposed expansion of the Sancrox Quarry will result in a reduction to the availability of foraging and breeding habitat for the local Koala population and will likely increase the barriers to the local movement and dispersal of Koalas in the locality, particularly in a north-south direction. On the basis of the Koala survey, and pursuant to the Framework for Biodiversity Assessment, the Koala Survey and Assessment concludes that a 'species polygon' should be drawn around all Koala habitat within the site and species credits calculated for the purposes of calculating biodiversity offsets.

6.3.2 Biodiversity Assessment

The Biodiversity Assessment Report has been revised to address issues raised in submissions, including those raised by the Division of Biodiversity and Conservation. The revised Biodiversity Assessment Report is provided at **Appendix H**, and:

- Identifies that the direct impacts associated with the amended proposal include the clearing of 39.02 ha of native forest vegetation, compared with 43.1 ha for the originally proposed quarry pit extent. Further, the amended proposal no longer directly impacts on the threatened ecological community Subtropical coastal floodplain forest (NR117).

- Provides a revised assessment of connectivity identifying that the north-south corridor would be narrowed within the site from over 100m to less than 100m, resulting in a BioBanking Credit Calculator score of 2 for connectivity impacts, compared to zero originally as assessed. Combined with other parameters that influence the BioBanking Credit Calculator an overall landscape value score of 17 was established.
- Recalculates that 2,230 ecosystem credits are required to offset the proposed clearing of native vegetation, reduced from 2,449 as originally calculated for the EIS.
- Identifies a total of 24 potential threatened species that are candidate species credit species in the BioBanking Credit Calculator based on relevant geographic and/or habitat features that are present on site. Of these 24 candidate species credit species, four were identified as being located at the site. For three of these species (the Eastern Bentwing-bat, Little Bentwing-bat and Grey-headed Flying-fox) the need for species credits is linked to the presence of breeding habitat, however no breeding habitat was identified at the site. Conversely, Koala is also a species credit species which has been identified on-site.
- Provides updated analysis on the potential impacts on Koala drawing on the supplementary Koala Survey and Assessment described above. Based on the survey results and modelled activity levels, combined with previous Koala survey results, and the widespread occurrence of several Koala feed trees within the forested parts of the site, the site is considered to be habitat for the Koala. As such, a species polygon for the Koala has been prepared in accordance with the Framework for Biodiversity Assessment, which includes all areas of native vegetation within the development footprint totalling 39.02 ha, and results in a requirement for 1,015 species credits.
- Identifies that the western boundary of the quarry has been rationalised (i.e. straightened) and pulled to the east, reducing potential 'edge effects' and ensuring that there is as much vegetation as possible for north-south connectivity for Koala and other fauna to move around the existing and proposed quarry pit edges.
- Includes further assessment of edge effects, concluding that edge effects are unlikely to adversely affect local populations of native flora and fauna, and that there are not likely to be any threatened species affected by edge effects, as no such species are likely to be inhabiting the fringes of the proposed pit footprint, or rely on those areas for their breeding or other life cycle processes.
- Documents further mitigation measures including the preparation of a Biodiversity management plan, pre-clearance surveys and presence of an ecologist during clearing activities, and progressive rehabilitation of the disturbed areas.

The revised Biodiversity Assessment Report sets out a preferred offsetting option for the proposed development as follows:

- Generate available ecosystem credits from the proposed offset site through the creation of a Stewardship Agreement over the offset site in consultation with OEH, which will provide some of the ecosystem credits required.
- Purchase like-for-like ecosystem credits from the Credit Register (or approach potential credit sellers through the Expressions of Interest register) in advance of clearing associated with each stage of the quarry expansion.
- Purchase 'variation credits' by applying the variation rules under the Framework for Biodiversity Assessment, in the scenario that like-for-like credit cannot be found after completing "reasonable steps". In this regard, an Expression of Interest for the required ecosystem credits will be published on the OEH BioBanking 'Credits Wanted' register.
- Purchase species credits for Koala from the Credit Register (or approach potential credit sellers through the Expressions of Interest register) in advance of clearing associated with each stage of the quarry expansion.
- Pay the monetary value of the remaining credit obligation into the NSW Government's Biodiversity Conservation Fund.

In relation to rehabilitation Hanson's broad objective for progressive and final rehabilitation are to create a final landform that is suitable for post-quarrying land uses. This includes the following specific objectives:

- To produce a geotechnically stable, safe and non-polluting landform through progressive shaping of the completed areas of the Quarry.

- To provide a landform that is free-draining and has low maintenance requirements.
- To blend the landform with the surrounding landscape through careful selection of species for revegetation. Only native and endemic species would be used for revegetation.
- To monitor the success of rehabilitation over time to ensure revegetation is not dying back.
- Ensure that the final landform maintains the visual amenity of the locality and, where possible, enhances local biodiversity values.

The revised Biodiversity Assessment Report also sets out a revegetation program indicating that 10 m wide benches will be left every 10 m of depth to provide a horizontal platform on which native flora species will be established, and describes recommended revegetation methods.

6.4 Water management

A supplementary report directly addressing the submissions raised regarding water management has been prepared by ERM and is appended as **Appendix G**. The groundwater model has also been peer reviewed by REN consulting and the peer review report is appended as **Appendix C**.

6.4.1 Groundwater matters

The water report at **Appendix G** has concluded the following:

- Estimated concentrations of total dissolved solids exceed the criteria that would enable the groundwater source to be defined as highly productive;
- The peer review conducted by Ren Consulting concluded that the confidence level of the Sancrox Quarry groundwater model is classified as “Class 1” under the Australian Groundwater Modelling Guidelines and thus may be used for predicting long-term impacts of proposed developments in low-value aquifers;
- Only one of the 13 groundwater users fall within the modelled 2m drawdown contour, increasing to two under the sensitivity run scenario;
- Estimated hydraulic conductivity is low at less than 0.001m/day, which aligns with the observations from the existing pit where groundwater seepage to the pit is reportedly negligible with no active dewatering required. The low hydraulic conductivity will impact the progression of the cone of depression outside of the immediate vicinity of the quarry development and delay observable impacts of the dewatering at more distant locations. The nearest groundwater user, located inside the modelled 2 m drawdown, is approximately 700 m distant from the final quarry perimeter.

The ERM water report also notes that the predicted drawdown is based on steady state drawdown associated with the final stage of pit extension (the maximum drawdown expected over the life of the proposed development), so initial monitoring of water levels can serve as a baseline against which to compare future water level measurements. Monitoring frequency should be adaptable (depending on trends observed and stages of the quarry development) with twice annual monitoring recommended for the first year of monitoring. Water level data will be reported on an annual basis along with the reporting of the water take estimates.

The REN consulting peer review report at **Appendix C** sets out recommendations to further develop and improve the confidence-level of the groundwater model during detailed quarry planning and design.

6.4.2 Water sharing plans

The applicable water sharing plans for the proposed expansion of the Sancrox Quarry include the *Hastings unregulated and alluvial water source 2019* and the *North Coast fractured and Porous Rock Groundwater sources 2016.*

The need for a Water Access Licence for aquifer interference and/or surface water extraction will be determined in consultation with WaterNSW, noting the latter will require purchasing from existing licence shares.

6.5 Air quality

A revised Air Quality Assessment report has been prepared by ERM and is provided at **Appendix F**. The revised Air Quality Assessment provides updated air pollutant dispersion modelling to assess the modifications to the quarry plan, which includes:

- Modelling of 'Typical day' operations and 'Maximum day' operations. An additional scenario where the 'Maximum day' operations are split into operating either with the proposed (20-days per year) at 24 hours a day or by adopting the typical day operational hours of 5am to 10pm.
- Revised modelling incorporating additional control strategies to achieve compliance with the EPA criterion at all sensitive receptors.
- Assessment of potential ambient air quality impacts and greenhouse gas emissions from construction and operation of the project.

The revised modelling indicates that cumulatively, no sensitive receptors are predicted to experience exceedances of the relevant impact assessment criteria for the annual mean concentration of PM_{10} and $PM_{2.5}$.

The assessment identified a minor exceedance for the 24-hour average PM_{10} concentration which predict an exceedance of the approved methods criterion at receptor R13 when operating under maximum daily throughput scenario over a 24-hour period. However, when the amended proposed hours are reduced to operate between 5am and 10pm with the same maximum daily throughput compliance is demonstrated at R13.

It is anticipated that the probability of meteorological conditions conducive to causing an exceedance at receptor R13 occurring during the proposed 20 days of 24-hour operations is low. It is thus considered that this risk can be adequately mitigated by provision of additional dust management planning and controls prior to 24-hour operations as documented within an Air Quality Management Plan.

Notwithstanding, given the proximity of Receptor R13 to the site boundary and moderate occurrence of winds from north-western and north-eastern directions, the revised Air Quality Assessment recommends that a real-time ambient air quality monitoring system is implemented. This will allow staff to identify when additional mitigation measures are to be implemented to minimise impact from the onsite activities. One real-time monitor placed along the southern boundary of the site to monitor conditions when the site is upwind of Receptor R13 is recommended. It is also recommended to place a monitor along the northern boundary to obtain the background PM_{10} concentrations under these conditions.

7.0 Revised Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed in **Table 3** below. These measures have been modified appropriately in response to the amendments to the proposal and concerns raised in submissions, and have been informed by the revised assessments undertaken for Noise and Vibration, Air quality, Groundwater, and Biodiversity.

Table 3 Sancrox Quarry Expansion Mitigation Measures

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
Biodiversity	Biodiversity offsets	Implement a Biodiversity Offset Strategy that involves the retirement of 2,230 ecosystem credits and 1,015 species credits for Koala, as set out in the revised Biodiversity Assessment Report provided as Appendix H of the RTS. The Biodiversity Offsets Strategy would set out a program for obtaining and retiring credits in a staged a manner to correspond to the clearing of vegetation with each stage of quarry development.
	Pre-construction	Fauna residing with or occupying the expansion are safely and ethically salvaged and relocated. Delineate quarry expansion limit (to ensure no native vegetation outside expansion area is cleared.) Install and maintain erosion and sediment control measures in accordance with the requirements of the 'Blue Book' (Landcom 2004).
	During Construction	Supervision of tree felling to rescue and recover any fauna (as necessary). Management of weeds will be controlled through vehicle wash-down, and the preparation of a site weed control program Rubbish (such as food scraps and building waste) are to be properly managed during construction and must not be stockpiled on areas of native vegetation. Revegetation – re-use topsoil and seeding of pasture grasses and legumes (or as directed in relevant revegetation guidelines or management plans. Design and implement a planting plan for the corridor of native vegetation east and west of the proposed quarry pit. Traffic will be managed during construction through the implementation of: • Speed limits of 40km/hr (or less if lower speed limit imposed in other environmental assessments) to be imposed within site, reducing the likelihood of animal strikes. • Educate workers on possibility of animal strike through construction management program.
	Post-Construction	Speed limits of 40km/hr (or less if lower speed limit imposed in other environmental assessments) are proposed, reducing the likelihood of animal strikes. Limit spread of weeds in accordance with the methods provided throughout the landscape maintenance program and weed control plan. Each luminare will be aimed downwards and only switched on during loading-unloading and servicing activities outside of daylight hours and during heavy fog. Appropriate systems will be implemented to ensure that each waste stream generated by the development is effectively managed and/or disposed of off-site. There will not be any on-site stockpiling or disposal of waste materials. Prepare and implement a Biodiversity and Rehabilitation Management Plan, which will set out a revegetation program to re-establish native tree, shrub and ground cover, and processes that will aim to stabilise reshaped and benched areas. Maintain and monitor plantings within proposed native vegetation corridors east and west of quarry pit.

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
		An engineered surface water drainage and management strategy is to be prepared and implemented. Techniques currently proposed to manage stormwater including bundling walls, swales, underground water capture systems and dams.
Heritage	Historic Heritage	In the unlikely event that historic heritage items are found during works, the following Unexpected Finds Protocol will be followed. • Where a potential historic heritage item is found during works, all works within the vicinity of the item, or with the potential to impact the item will cease and a temporary exclusion zone established; • An appropriately qualified heritage consultant will examine the item to assess its significance and further archaeological potential; and • Where a relic is found, the NSW Heritage Council will be notified, and approval will likely be required prior to the continuation of works. Other archaeological deposits will be recorded and assessed for significant and potential salvage by an appropriately qualified heritage consultant.
	Aboriginal Heritage	The potential scar tree is located close to the western extent of the proposed extraction area. Whilst it will not be impacted as a direct result of extraction, in order to avoid indirect accidental impacts all site plans will identify the location of the scar tree and temporary fencing will be erected around the tree during the final stages of quarrying. The ceremonial site, although now completely destroyed, is considered to have high cultural significance and recognition of its location within the Sancrox area will be displayed in the quarry site office. The development of any cultural information will be undertaken in consultation with the Birpai Local Aboriginal Land Council. The unexpected Finds Protocol provided at **Appendix B** of the RTS will be followed if further Aboriginal heritage sites, or suspected human skeletal remains are encountered during works. Cultural Awareness Training: In order to comply with the best practice principles, all employees and subcontractors will undergo environmental awareness training as part of the site induction to ensure they understand their obligations and responsibilities. Only information endorsed by RAPs will be included, and a representative of the RAPs will be invited to participate in the induction sessions for major contractors.
Surface water/ Hydrology	Stormwater Diversion	• Stormwater diversion will be required within both clean and dirty catchments throughout the development of the Project; • Diversions in the form of bunds or drains, as fitted to the topography of the specific catchment, will be implemented to allow for the diversion of sediment-laden-run-off to sediment basins and in a few circumstances to divert clean run-off from entering the site; • Diversions with clean catchments are to be stabilised quickly through covering of the diversion channel with geofabric or revegetation • Diversion measures within dirty catchments will incorporate rock check dams to reduce sediment loads within the run-off prior to reaching the basin (to maximise efficiency of the basin and reduce desilting requirements) and where possible have low grade to lower flow velocities.
	Erosion Control	**Mulch** • The mulch will be mixed with topsoil and applied to batters and other locations requiring rehabilitation, acting as both an addition of organic matter to boost the soil quality (along with other ameliorants) and act as an erosion control measure; • Mulch will be used as a replacement to sediment fences, by creating a bund of between 300 and 500mm high; and • Mulch can also be applied as a blanket, of approximately 150mm thick, to cover disturbed areas and prevent erosion.

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure

		Site stabilisation and rehabilitation
		• A progressive site rehabilitation approach will be adopted, whereby stabilisation works (either by revegetation, hard armouring or allowing hard rock finishes to remain where no sediment-laden-run-off will be generated) is undertaken immediately following the completion of the activity. Key principles of progressive rehabilitation include:
		  • Availability of acceptable soil materials;
		  • Correct site preparation and replacement of topsoil;
		  • Selection of the most suitable establishment technique;
		  • Selection of appropriate plant species, fertilisers and ameliorants;
		  • Application of sufficient water germination and to sustain plant growth if rainfall is insufficient;
		  • An adequate maintenance program; and
		  • areas not satisfactorily revegetated will be investigated to determine the reason for failure. Appropriate remedial action will be undertaken, including replacing any lost topsoil and re-sowing the site.

	Sediment Control	**General** • Sediment basins are required for the management of disturbed locations. Conceptual locations are shown in Figure 1.3 of the Hydrology Impact Assessment Chapter, preliminary basin sizes are provided in the Hydrology Assessment (ERM 2018b); • The Proponent must restore the design storage capacity to ensure basin within five days of the cessation of a rainfall event that causes run-off to occur on the site • A basin register will be applied to the Environment Protection License (EPL 5289) to allow for progressive integration of the basins to the licence as each stage of work commences; and • Sediment basins will be established prior to the removal of all vegetation across each stage, where practicable. Essentially, this will require clearing a path to the basin location, removing the vegetation, constructing the basin and the clearing the remainder of the catchment. **Basin Desilting** • All sediment basins will be inspected regularly for accumulated sediment. Graduated makers placed within the basin will assist in measuring sediment depths. Sediment to be removed prior to reaching capacity. **Water treatment and flocculation** • water quality testing will determine compliance, and identity if pH modification (through use of products such as lime or hydrochloric acid) or TSS modification (through the use of gypsum) is required.

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
	Pollution Control	**General** • Waste receptacles will be provided for the safe and efficient storage of all construction and miscellaneous wastes, as necessary; • recyclable materials should be separated and recycled where possible. Otherwise, disposable wastes should be removed from site regularly and disposed of by approved means; • spent chemical and hydrocarbon drums should be removed from site regularly to limit the potential for spills of the remnant product; • refuelling within active quarry areas should be carried out using a mobile fuel cart fitted with an electronic fuel pump; and • routine maintenance of all plant and machinery should be carried out in the designated maintenance area adjacent to the site office to minimise the potential of accidental contamination of water. **Spill Management** • spill kits should be provided at active work locations, the workshop area, refuelling areas and adjacent to pump locations. Training of site personnel in their use will ensure that in the event of any spills appropriate action can be taken rapidly to prevent and minimise impacts to surface waters; • Material Safety Data Sheets (MSDS) for all chemicals stored on-site are to be collected and maintained by the quarry manager and made available to site personnel. Site personnel should be informed of their location as a part of the site induction; • an impervious bund should be constructed to contain any spills of more than 110% of the volume of the largest container in the bunded area, should none be present in the workshop area. Any spillage should be immediately contained and absorbed with a suitable absorbent material; • storage and transport of Dangerous Goods, Flammable and Combustible Liquids will comply with AS 1940 1993 The Storage and Handling of Flammable and Combustible Liquids and National Code of Practice for the Storage and Handing of Workplace Dangerous Goods [NOHSC: 2017 (2001)].
	Asphalt Production	• clean water diversions around the asphalt production plant site to limit catchment to smallest footprint possible and prevent clean water run-on; • the proposed sediment basin should be contrasted to capture sediment-laden run-off from the plant catchment area; • a triple interceptor or similar pollution control device should be utilised as a “first flush” for the potential hydrocarbon contaminated areas in the plant site;
	Plant Controls	• all oils, fuels, lubricants, liquids and chemicals should be stored in appropriately bunded areas; • bitumen, diesel and other chemicals handling should be undertaken within a contained (bunded) area. Any spillages should be immediately ameliorated; and • the sediment basin servicing the plant catchment should be fitted with a floating hydrocarbon boom as a precautionary measure to contain any potential loss of hydrocarbons from the plant catchment.
	Concrete Batching Plant Controls	• the footprint of the plant should be limited to the smallest extent practicable to reduce the area from which contaminated stormwater can be generated (EPA Victoria, 1998); • all contaminated stormwater and process wastewater should be collected and recycled at the earliest possible opportunity (EPA Victoria, 1998);

<table>
<tr><th>Overarching Environmental Aspect</th><th>Specific Environmental Issue/ timing</th><th>Mitigation measure</th></tr>
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a dedicated, paved and bunded washout area should be established for the following locations:

truck washing and agitator drum washout area;
the concrete batching area; and
any other location that will generate stormwater contaminated with cement dust or residues.

the stormwater from these locations should be direct to a first flush system. The OEH (2015) recommended design criteria for first flus containment systems utilised for concrete batching plants must be able to contain 10 mm of rainfall;
a bypass to the first flush system is to be created to allow for run-off from larger storm events (greater than 20mm) to bypass the collection system for when the first flush collection is full;
dry cement should be stored where it cannot generate fugitive dust or be exposed to water and generate run-off;
the sediment collected in the first flush must be regularly cleaned out; and
whenever wet weather discharges occur from the catchment system within the plant, pH and total suspended solid monitoring should be undertaken (EPA Victoria, 1998). EPA Victoria (1998) also states run-off after heavy rainfall (more than 20 mm over 24 hours) contains very small quantities of wastes and is unlikely to pose a significant threat to the environment.

</td></tr>
<tr><td></td><td>Monitoring</td><td>

site inspection of erosion and sediment controls should be undertaken at least monthly and always following rainfall events (greater than 20mm rainfall); and
the EPL 5289, and the surface water monitoring requirements within remain relevant to the Project, the following parameters for the proposed conceptual basins.

<table>
<tr><th>Pollutant</th><th>Unit of measurement</th><th>100%ile Concentration Limit</th><th>Frequency</th><th>Method</th></tr>
<tr><td>Oil and Grease</td><td>Milligrams/Litre</td><td>10 and/or not visible</td><td><24 hours prior to a controlled/scheduled discharge and daily for any continued controlled/scheduled discharge</td><td>Visual (grab sample to be taken if sheen observed)</td></tr>
<tr><td>Ph</td><td>-</td><td>6.5-8.5</td><td><24 hours prior to a controlled/scheduled discharge and daily for any continued controlled/scheduled discharge</td><td>Grab sample/ calibrated field probe</td></tr>
<tr><td>Total Suspended Solids</td><td>Milligrams/litre</td><td>50</td><td><24 hours prior to a controlled/scheduled discharge and daily for any continued controlled/scheduled discharge</td><td>Grab sample</td></tr>
</table>
</td></tr>
<tr><td>Groundwater</td><td>Licensing Requirements</td><td>The NSW Aquifer Interference Policy specifies that all water taken during an activity must be accounted for, and that a water licence is required irrespective of whether the water is taken for consumptive use or whether water is taken incidentally in the course of undertaking the activity.

Depending on specifics of licences currently being held a new licence may need to be applied for.</td></tr>
</table>

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
	Water Level Drawdown	Mitigation measures for the potential impacts associated with drawdown on bores GW303749 and GW306269 will vary dependant on the extent of the impact, but may include: • lowering the bore pump in the bore casing; • drilling a deeper bore; or • providing an alternative water source as part of “make good” arrangements.
	Groundwater Monitoring Program	It is recommended that a groundwater monitoring plan should be developed that includes specifics of such a monitoring program, including threshold trigger values as well as a contingency strategy if triggers are exceeded. While the development of such a plan falls outside the scope of this assessment, recommendations for monitoring requirements are outlined below. **Water Take** It is recommended that monitoring of inflows should be undertaken to the extent feasible as part of water balance activities. This can be done by metering water being pumped from the in-pit sumps. An estimation of rainfall contribution to water being pumped from the in-pit sumps can then be made on an annual basis by factoring in rainfall data and the pit extent after which the groundwater component can be estimated. Groundwater take should be estimated and reported in this manner on an annual basis. If geological/hydrogeological observations during quarry extension vary significantly from that considered for the groundwater flow model the groundwater flow model should be re-evaluated. The model re-evaluation may include running the existing groundwater model for different stages of pit development and including transient analysis in the modelling to evaluate contributions from aquifer storage (which may require additional pumping tests and observations bore installation). **Water Levels** The groundwater monitoring program should include monitoring of water levels at the potentially affected groundwater bores. In order to be able to identify over or under predictions by the modelling in a reasonable way, it is recommended that all bores showing a > 0.5 m of simulated drawdown should be included in the monitoring program. This would include bores GW303436, GW303749 and GW306269. As the predicted drawdown is based on steady state drawdown associated with the final stage of pit extension (the maximum drawdown expected over the life of the Project), initial monitoring of water levels can serve as a baseline against which to compare future water level measurements. Monitoring frequency should be adaptable (depending on trends observed and stages of the quarry development) with twice annual monitoring recommended for the first year of monitoring. Water level data should be reported on an annual basis along with the reporting of the water take estimates. **Water Quality** Water quality monitoring is recommended at the in-pit sump(s) and existing monitoring bores while they remain accessible. Parameters monitored should include standard field parameters (pH, EC, temperature, ORP and DO) and laboratory analysis of TDS. Monitoring frequency of these sampling locations should be adaptable (depending on trends observed) with twice annual monitoring recommended for the first year of monitoring. Water quality results should be reported on an annual basis along with the reporting of the water take estimates.

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
		Monitoring water quality of water discharges from the site should continue as per the conditions specified in the site Environmental Protection Licence (EPL). In addition to the current suite of parameters, it is recommended that consideration should be given to including EC and TDS in the EPL related compliance monitoring. ERM (2018c) outlines that pit lake modelling may be required prior to closure of the quarry.
Soil and Land Resource	Soils	The stockpiling of topsoils should ensure that the soils mapped with higher capability (Class 4 and 5 lands) are given preference for storage. These higher capability soils are considered likely to improve the success of rehabilitation. Application of lime is required to address high levels of acidity and aluminium toxicity associated with the Euroka landscape. Amelioratives should be added to other soils to address issues associated with the other landscapes. A soil sampling program should be undertaken prior to topsoil stripping to understand acidity concentrations and receive advice from the laboratory on proposed liming and ameliorative application rates.
	Contamination	No contamination risk is present or will be introduced by the Project that would warrant not undertaking the activity. Chemical and hydrocarbon management, spill prevention and control mitigation measures as outlined in Chapter 7 to be implemented. A site walkover should be undertaken prior to clearing activities taking place to ensure that any refuse is identified and can be removed from site and disposed of at an appropriate licenced location. Should unexpected contamination be identified, works should cease, and an appropriately experienced contamination specialist engaged to develop a strategy to manage the contamination.
	Erosion and Sediment Controls	Erosion and sediment controls outlined in Chapter 7 (Surface Water/Hydrology Assessment) will be implemented to prevent loss of soil and impacts to adjacent watercourses.
	Land Slippage	Standard geotechnical controls will be implemented as required to avoid or minimise impact of land slippage including: • Batter slope trimming - The angle of batter slopes will be reduced to the extent considered safe based on localised geology and hazardous blocks of rock removed. • Bunds - installed as necessary at batter bases to control falling rocks • Future bunds and material stockpiles - will be located away from top of benches where they may be subject to instability. • Void progression - will progress along a ridgeline such that any potential inflow of surface water runoff over batter faces will be minimal. Benching will also be implemented during quarry progression.

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
Noise and Vibration	Construction	To ensure noise emissions associated with construction works and activities are kept to acceptable levels, the following noise mitigation and management measures will be implemented: • Noise generating work and activities should be carried out during the ICNG recommended standard hours (i.e. 7am to 6pm Monday to Friday and 8am to 1pm Saturdays), with no work on Sundays or public holidays. If there is a requirement for out of hours work due to an unforeseen reason, the potentially affected sensitive receptors will be notified at least one week prior. • Where unforeseen works will occur in close proximity to a receptor and these works are anticipated to generate high levels of noise e.g. >75 dBA, potential respite periods e.g. three hours of work, followed by one hour of respite should be considered. Respite will be implemented if it is the preference of the affected receptors and if it is feasible and reasonable to achieve during the works. In some circumstances, respite may extend the duration of works and inadvertently increase noise impacts, hence due care should be taken when considering this management measure. • During construction planning, choose appropriate machines for each task and adopt efficient work practices to minimise the total construction period and the number of noise sources on the site. Select the quietest item of plant available where options that suit the design permit. • During the works, avoid unnecessary noise due to idling diesel engines and fast engine speeds when lower speeds are sufficient. • During the works, instruct drivers to travel directly to site and avoid any extended periods of engine idling at or near residential areas, especially at night. • During any night works, any activity that has the potential to generate impulsive noise should be avoided. These types of events are particularly annoying; especially at night and have the limited potential to generate sleep disturbance or awakening impacts. Any impulsive or transient noise events expected to exceed the sleep disturbance criteria at residential receptors should be strictly avoided at night. • During the works, ensure all machines used on the site are in good condition, with particular emphasis on exhaust silencers, covers on engines and transmissions and squeaking or rattling components. Excessively noisy machines should be repaired or removed from the site. • During the works, ensure that all plant, equipment and vehicles movements are optimised in a forward direction to avoid triggering motion alarms that are typically required when these items are used in reverse. Where it is possible tonal motion alarms should be replaced with broadband ‘squashed duck’ motion alarms. • If any validated noise complaints are received, operator attended noise measurements should be undertaken to measure and compare the site noise level contributions ($L_{eq,\ 15\ minute}$ and L_{max} in dBA) to the predicted values; and the Noise Management Levels presented in the Revised Noise and Vibration Assessment (see **Appendix E** of this Response to Submissions Report). • All site noise levels should be measured in the absence of any influential source not associated with the site. If the measured site noise levels are below the predicted values and comply with the Noise Management Levels, no further mitigation or management measures are required. If the measured site noise levels are above the predicted noise levels or Noise Management Levels, further mitigation and/or management measures will be considered. • Prior to commencement of works, a Construction Noise Management Plan (CNMP) will be prepared and implemented and will consider all potential acoustical factors identified in the Revised Noise and Vibration Assessment Report (**Appendix E** of the Response to Submissions Report) including those addressed in Chapter 5 and Chapter 6 of that report. The CNMP will detail any noise monitoring and take into consideration measures for reducing the source noise levels of construction equipment by construction planning and equipment selection where reasonable and feasible. The CNMP will also take into consideration any nearby construction projects in relation potential cumulative impacts.

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
	Operation	**Boundary Mitigation:** • Earth Bunding (approximately 20 m in height and 450 m in length) is required at the southern boundary to provide shielding from the processing plant and asphalt production plant. Note: Height and geology of earth bund to be finalised during detailed design. Heights may be lower if processing and asphalt production plant areas have been levelled. **Plant/Equipment Procurement:** • During the operational design, choose appropriate machines for each task and adopt efficient work practices to minimise the total number of noise sources on the site. Select the quietest item of plant available where options that suit the design permit, with consideration to offensive noise characteristics such as tonality, low frequency noise or impulsiveness. • The key items of plant/equipment are presented in Section 2.10.2 of the Revised Noise and Vibration Assessment Report (Appendix E of the Response to Submissions Report). The required Lw reductions for these specific items of equipment/plant and the Lw required to meet the most stringent night time PSNL are presented in Table 2.4. • Operational Lw emissions should be at or below those presented in Table 2.4 and Table 7.1 of the Revised Noise and Vibration Assessment Report (**Appendix E** of the Response to Submissions Report). Detailed noise modelling data (including Lw references and spectral data) are provided in Appendix F of the Revised Noise and Vibration Assessment Report. **At Source Mitigation:** • Where Lw values for plant/equipment outlined in Table 2.3 of the Revised Noise and Vibration Impact Assessment (**Appendix E** of the Response to Submissions Report) are not reasonable or feasible, or where it is otherwise reasonable and feasible to do so, the operational design should incorporate acoustic enclosures / barriers to assist in reducing the noise emission of identified plant/equipment. Design of acoustic enclosures / barriers should also consider offensive noise characteristics such as tonality and low frequency noise. **General Operational Mitigation Measures:** • Avoid unnecessary noise due to idling diesel engines and fast engine speeds when lower speeds are sufficient. • Instruct drivers to travel directly to site and avoid any extended periods of engine idling at or near residential areas, especially at night. • During any night works, any activity that has the potential to generate impulsive noise should be avoided. These types of events are particularly annoying; especially at night and have the limited potential to generate sleep disturbance or awakening impacts. Any impulsive or transient noise events expected to exceed the sleep disturbance criteria at residential receptors should be strictly avoided at night. • Ensure all machines used on the site are in good condition, with particular emphasis on exhaust silencers, covers on engines and transmissions and squeaking or rattling components. Excessively noisy machines should be repaired or removed from the site. • Ensure that all plant, equipment and vehicles movements are optimised in a forward direction to avoid triggering motion alarms that are typically required when these items are used in reverse. Where it is possible tonal motion alarms should be replaced with broadband “squashed duck” motion alarms. • Noisy plant and equipment should be located as far as possible from noise sensitive areas. • The location of activities, plant and equipment should optimise attenuation effects through measures such as topography, natural and purpose built barriers.

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
		• If any validated noise complaints are received, operator attended noise measurements should be undertaken within 24 hours to measure and compare the site noise level contributions ($L_{eq,\ 15\ minute}$ and L_{max} in dBA) to the predicted values; and the Project Specific Noise Levels. • All site noise levels should be measured in the absence of any influential source not associated with the site. If the measured site noise levels are below the predicted values and comply with the Project Specific Noise Levels presented in this report, no further mitigation or management measures are required. If the measured site noise levels are above the predicted noise levels or Project Specific Noise Levels presented in the Revised Noise and Vibration Impact Assessment (Appendix E of the Response to Submissions Report), further mitigation and/or management measures should be considered. • A Detailed Design Noise Impact Assessment should be undertaken during the final stages of the Project design to ensure that noise emissions from the Processing Plant and Asphalt Production Plant can be effectively reduced to compliant levels through plant / equipment procurement and construction of acoustic enclosures / barriers. • An Operational Noise Management Plan (ONMP) should be also prepared based on the detailed design, and should consider all potential acoustical factors identified in this report including those addressed in Chapter 5 and Chapter 7 of the Revised Noise and Vibration Assessment Report (Appendix E of the Response to Submissions Report). The ONMP should detail any noise monitoring and take into consideration measures for reducing the source noise levels of operational equipment by equipment selection, management and mitigation where reasonable and feasible.
Air Quality and Greenhouse Gas	General	The Air Quality and GHG Assessment considered all reasonable and feasible mitigation measures to minimise the emissions from the proposed activities at the site, including: • Roads, which are likely to remain unchanged throughout the Project stages and to be frequently used by machinery, will be sealed using asphalt and swept daily (or on an as needs basis) to minimise wheel-generated dust emissions; • Full dust extraction system for drilling; • Utilisation of water sprays during truck rear dumping; • The use of mobile sprinkler systems during the operation of Front End Loaders; • Dust suppression measures such as water sprays in place at the crushers and screeners; • Water sprays used on all conveyor transfer points; • The conveyor loading to be enclosed by a shroud; • A dust suppressant will be applied to unsealed haul roads; • Water sprays to be utilised to minimise the wind erosion from stockpiles, as required. Hanson will also investigate use of additional stabilisation techniques to be applied progressively such as revegetation and use of soil binder on stockpiles and disturbed areas; • The dry product delivered to the concrete batching and recycling plant and asphalt plant to be stored in aggregate storage bins enclosed on three sides. The aggregate storage bins to be fitted with water sprays. • Cement and cement supplement to be delivered to the concrete batching plant in the agitator trucks and pneumatically fed. • Concrete batching loading point to be totally enclosed with all particulate matter emissions generated by the facility captured by one bag filter located above the pan mixer;

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
		• Concrete recycling facility out-loading to be directly to processed material storage bins enclosed on three sides. The recycled concrete storage bins to be fitted with water sprays; • Vapour balancing system to be installed for the delivery of bitumen at the asphalt plant; • Asphalt plant loading point will be totally enclosed. All particulate matter emissions generated at the loading point will be captured by one fabric filter associated with the natural-gas fired dryer; and • Vapour recovery system to be employed for transfer of asphalt to trucks.
	Real-time ambient air quality monitoring system with reactive management	Implement a real-time ambient air quality monitoring system that includes one real-time monitor placed along the southern boundary of the site to monitor conditions when the site is upwind of Receptor R13 and one monitor along the northern boundary to obtain the background PM_{10} concentrations under these conditions. Implement a reactive management process that will allow staff to implement additional mitigation measures to minimise impact from the onsite activities when identified as required by the real-time ambient air quality monitoring system.
	Air Quality Management Plan	Prepare and implement an Air Quality Management Plan taking into account the recommendations set out in Table 9.1 of the revised Air Quality Assessment report at **Appendix F** of the response to Submissions Report.
Traffic and Access	General	The following mitigation measures are proposed to minimise impacts to road users and infrastructure: • movements to the west of the Quarry Access Road on Sancrox Road will be strictly limited to supplying markets in the Sancrox area only. Access to Wauchope and other locations to the west will be provided by utilising the Oxley Highway Interchange. Sancrox Road to the west of the quarry will not be used as a regular product transport route; • movements to the east of the Sancrox Interchange along Fernbank Creek Road will be strictly limited to supplying local residents/markets in the area. The road will not be used as a regular product transport route. • limit compression braking; • avoid bunching of quarry vehicles along product transport routes; • cover loads entering and leaving the site; • induct all drivers to the Hanson code of conduct and carry out regular tool box talks discussing road safety issues; and • all loaded vehicles leaving the site are to be cleaned of materials on tail guards and body edges that may fall on the road. • Adhere to Vehicle Operator Code of Conduct outlined in Section 12.4.1 of the Traffic Assessment.
Visual Amenity	General	The following mitigation measures are recommended to minimise visual amenity impacts: • Retain the vegetative buffer along the north western edge of the quarry pit to screen views from nearby private land. • Light spill will be minimised through detailed design and standard measures to contain lighting.
Socio-economic	General	The construction and operation of the Project is anticipated to have minimal negative socio-economic impacts and as such no additional socioeconomic specific mitigation measures have been provided, other than those provided throughout each technical assessment contained throughout this EIS.

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
		Community and stakeholder engagement has been outlined in Chapter 4, providing the local community with access to project information and the opportunity to raise any concerns with regard to the Project.

Hazards and Risks	Hazardous Material Storage and Transportation	**Storage**
		The following mitigation measures should be implemented for the storage of hazardous materials to ensure compliance with the application of SEPP 33, including but not limited to:
		• All hazardous substances that may be required for construction and operation would be stored and managed in accordance with the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005) and Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (Department of Planning, 2011), including but not limited to the following:
		  • diesel should not be stored with Class 3 materials;
		  • lubricating and hydraulic oils and grease should not be stored with Class 3 materials;
		  • maximum stored inventories (250 kg) should be located more than 25 metres (m) away from the nearest site boundary, so as to not trigger the Applying SEPP 33 thresholds if considered in aggregate.
		• As bitumen and bitumen emulsions will be present in volumes greater than 10,000kg, SafeworkNSW are to be notified and manifests and emergency plans developed.
		Transportation
		Mitigation measures relating to the transport of potentially hazardous materials include:
		• the method for delivery of explosives would be developed prior to the commencement of blasting in consultation with the DP&E and be timed to avoid the need for on-site storage. No explosive storage on site is proposed.
		• transportation routes outlined in the Traffic and Access Assessment (refer to Chapter 12) will be followed to ensure impacts to road system will be minimised where practicable.

	Bushfire Prevention and Control	**Prevention**
		For a bushfire to occur there are three factors to which must be present, namely oxygen, fuel and an ignition source, along with several other factors which affect the probability and intensity of a bushfire. While exclusion of oxygen is not feasible, each of the remaining issues will be managed as follows.
		• Fuel loads within the site will be managed through:
		  • The maintenance of Asset Protection Zones (APZ) in accordance with the Planning for Bushfire Protection Guidelines (RFS, 2006) will be established and maintained around all administration buildings and the workshop areas, as outlined in Figure 15.2 of the EIS
		  • Trees and shrubs will be maintained to prevent the spread of a fire towards the buildings, taking into account the requirement of an effective visual screen.
		• Company-controlled ignition sources and the associated management measures that will be implemented include the following:

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
		• All project-related activities will be undertaken, where practicable, in cleared areas; • All mobile equipment will be maintained in good working order with appropriate exhaust and fire suppression systems; • All mobile equipment working in vegetated areas will be inspected to ensure that they do not pose a risk of starting a bushfire. This will include inspection of exhaust and electrical systems, including, in the case of vehicles using unleaded petrol, catalytic converters; and • Mobile equipment working in vegetated areas will not be left unattended with the engine running. • Personnel, contractors and their employees will undergo site-specific training incorporating bush fire management awareness as part of the Project's induction program ensuring the following is outlined • Obligations toward prevention and notification; • All mobile equipment will be equipped with appropriate communication equipment, including two-way radios and/or mobile telephones • Restrictions of activities during period of very high (or higher) bushfire danger rating; • Emergency response procedures; • Locations of fire-fighting equipment l • Adopt appropriate controls during re-fuelling; and • Ensure fire extinguishers are fitted to all site vehicles. • Welding or other hot works activities will, as far as practicable, be conducted and confined to the main workshop area • Fuel loads within the Project site will be managed in conjunction with Hanson's obligations in relation to rehabilitation of the Project site and biodiversity offset requirements. **Control** The ability to control a bushfire depends upon available fuel, control of ignition sources and good access and water supplies. The following fire management procedures will be adopted to assist with the control of any bushfire on or adjacent to the Project site: • Provision of access to strategic areas on the site; • A static water supply is provided for firefighting purposes in areas where reticulated water is not available, this includes all weather access to the sedimentation dams; • Stockpiling of cleared vegetation with a minimum 10m cleared buffer zone and • Creating suitable all weather access tracks (with suitable signage and turning circles if not a through road) and if required during a bushfire event, strategically located fire breaks. Hanson will also incorporate bushfire management procedures in the overall Emergency Response Plan for the Project. A copy of the procedures, including a map of all fire-fighting equipment, access roads, communications protocol, emergency evacuation plans, and any locked gates will be provided to the local RFS.
Emergency Response	Emergency Response Plans	Site Emergency Response Plans will be updated for the quarry expansion.

Overarching Environmental Aspect	Specific Environmental Issue/ timing	Mitigation measure
Waste	General	Mitigation measures to be implemented to minimise wastes generated by the Project include: • Separation of recyclable and non-recyclable materials will take place where possible and be stored in designated receptacles; • Waste receptacles will be collected on a regular basis by licensed contractors or Council collection service and transported for off-site disposal at an appropriately licensed landfill or recycling facility; • Beneficial reuse of suitable resources will be undertaken where practicable in accordance with relevant requirements of the relevant resource recovery order and exemption; • All waste disposal will be in accordance with POEO Act and Waste Classification Guidelines 9 (EPA 2014); • Waste tracking will occur for any types and quantities of waste that trigger the requirement for tracking; and • Waste management measures will be incorporated into the site Construction and Operation Environment Management Plan (or form its own separate sub-plan if requested by the DP&E) which will outline measures to avoid waste generation and promote reuse, recycling and reprocessing of waste where possible.

8.0 Conclusion

This proposal for the expansion of the Sancrox Quarry has been amended and now seeks approval for the following:

- Extraction and on-site processing of up to 530,000 tonnes per annum of rock (tpa);
- A total development footprint of approximately 57.55 ha, comprising the proposed pit expansion area and the proposed infrastructure and processing area, requiring the clearing of 39.02 hectares of native vegetation. Development of the quarry pit to a depth of 40m AHD over four stages;
- Construction and operation of a concrete batching plant with an output of 20,000 tpa;
- Construction and operation of a concrete recycling facility to process 20,000 tpa;
- Construction and operation of an asphalt production plant with an output of 50,000 tpa;
- Employment of up to 25 staff on a full-time basis;
- Hours of operation:
    - Quarry operations (including production and maintenance), truck movements and equipment loading 5am – 10pm. Hanson will prioritise morning and normal daytime hours operations, with evening hours (i.e. 6pm – 10pm) to be added in response to market demand as required. In addition, Hanson is seeking consent to operate the processing and loading activities 10pm to 5am for up to 20 nights per year to meet the occasional customer demand (which is generally associated with major infrastructure projects that require construction works to be carried out during the night time).
    - Blasting operations from 9am – 3pm Monday to Friday.
- Installation of an earth bund on the southern property boundary, approximately 20 metres high and 450 metres long, to provide noise and visual screening.

This RTS has been prepared to satisfy the provisions of Section 89G of the EP&A Act and Section 85A of the *Environmental Planning and Assessment Regulation 2000*. Each of the submissions received during the public exhibition period has been collated, analysed and addressed.

This RTS has described and assessed changes that include reducing the extent of the quarry extraction pit, reducing the annual extraction limit down to 530,000 tpa, and reducing the proposed operating hours to 5am to 10pm. The amendments made to the quarry extent and operational parameters have been the subject of revised impact assessments, which have also responded to issues raised in submissions. The amendments made to the proposal result in a significant reduction in the environmental impact of the proposed development, compared to the original proposal described in the EIS.

The mitigation measures provided within the EIS have been updated where necessary to respond to the submissions received, and these updated measures will further reduce the overall environmental impacts during both the construction and operation of the proposal. In addition, Hanson is now proposing to provide species credits to offset the potential impacts to Koala habitat.

No residual significant adverse environmental, social or economic impacts have been identified. Residual environmental impacts identified will be mitigated through the implementation of management measures for the construction and operation of the proposal.

Having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development, the carrying out of the project is considered to be justified.