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2. Description of the project

2. Description of the project

2.1 Project works

The primary aims of the Jilalan Rail Yard Upgrade Project (JRYUP) are to provide:

- A new bidirectional locomotive provisioning facility
- A new wagon maintenance facility
- Refurbishment of an existing wagon maintenance building into a new locomotive maintenance facility
- New tracks to store three trains, assembled and ready for immediate deployment
- New bypass tracks to eliminate conflicts between through rail traffic and the new yard facilities
- New station and yard control facility

The key infrastructure required to provide the above functionality includes:

- Bypass and provisioning trackwork and facility
- Wagon maintenance building and trackwork
- Train storage trackwork
- Reconfiguration of existing wagon maintenance building into a locomotive maintenance building, including associated trackwork
- New station building and carpark
- Road realignment and overpass for Oonooie Road
- Road realignment for Gurnetts Road and new intersection with Armstrong Beach Road
- Road realignment for Smyths Road and new intersection with Armstrong Beach Road
- Armstrong Beach Road overpass (extension or new structure)
- Grade separation for Smyths Road

Figures 2.1 to 2.4 illustrate the general project infrastructure. Where indicated on the drawings, Below Rail refers to proposed QR Network Access assets and Above Rail refers to proposed QR National assets.

These figures represent the layout described as Option 4. The Option 4 layout considered the location of identified rare/threatened species, including Cycads and Eucalyptus, and other environmental values of the area which resulted in minimal or least line of disturbance.

Further details on the Project are provided below.

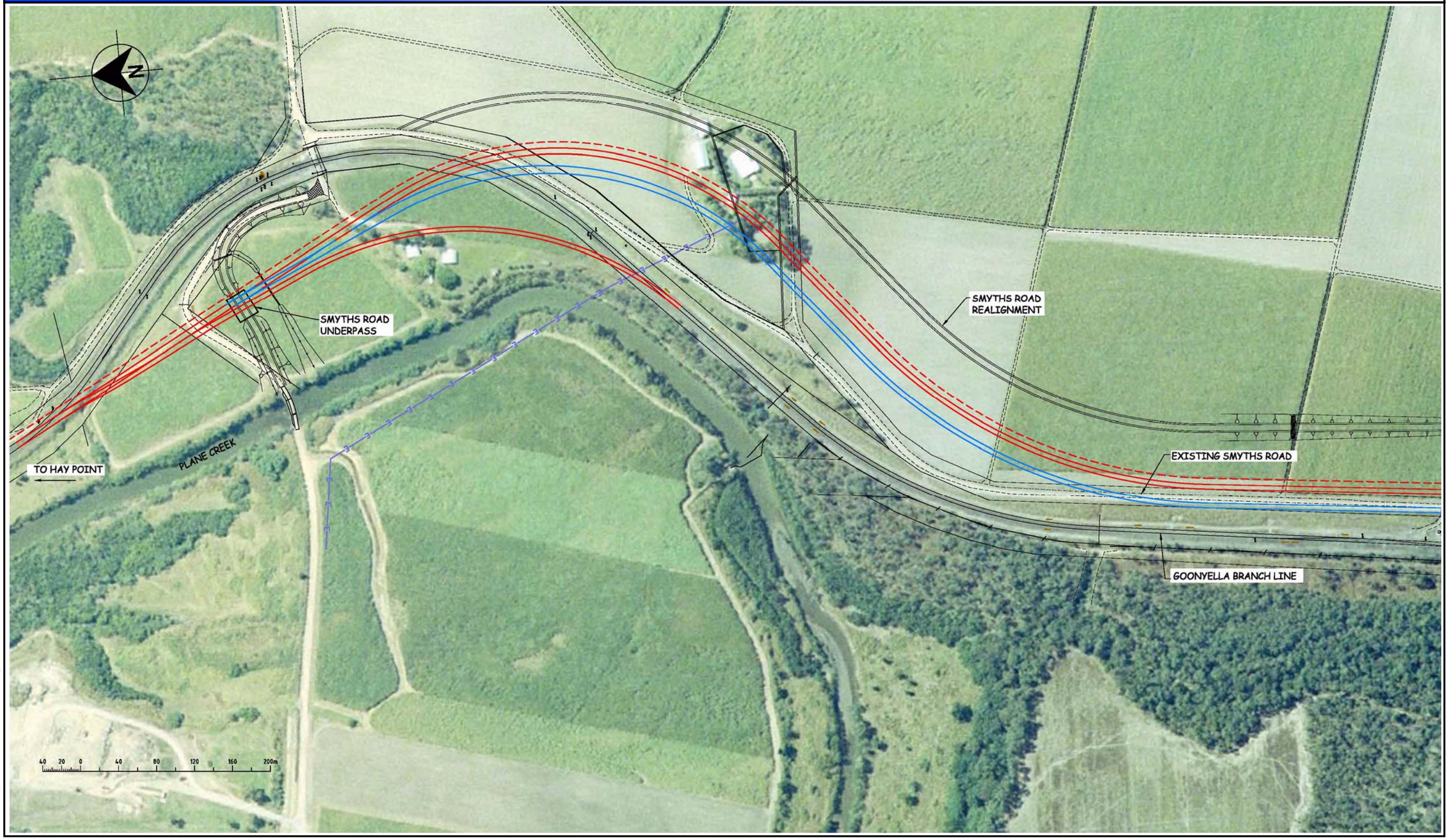
2.1.1 Bypass and provisioning lines

Two new bypass lines have been proposed around the existing yard and the proposed new wagon maintenance yard, with allowance for a future third bypass track. The provisioning lines will run generally parallel to the bypass lines. Vehicular access tracks will be required adjacent to most rail lines for track maintenance and train examination vehicles.

A locomotive provisioning facility will be located over the provisioning tracks. This will be used to provide sand, water, lubricants and toilet decanting facilities for the locomotives. Typical details of the provisioning facility are included in Appendix E.

The bypass/provisioning lines will cross two major creek systems, Willy and Elizabeth Creeks. These crossings may consist of either bridge or culvert structures. Adjacent vehicular access tracks will also include culvert or bridge structures, wherever these tracks are required to cross the creeks. Temporary vehicle crossings will be required during construction to allow construction machinery to cross the creeks, prior to the construction of the rail crossings.

Jilalan Rail Yard Upgrade Project



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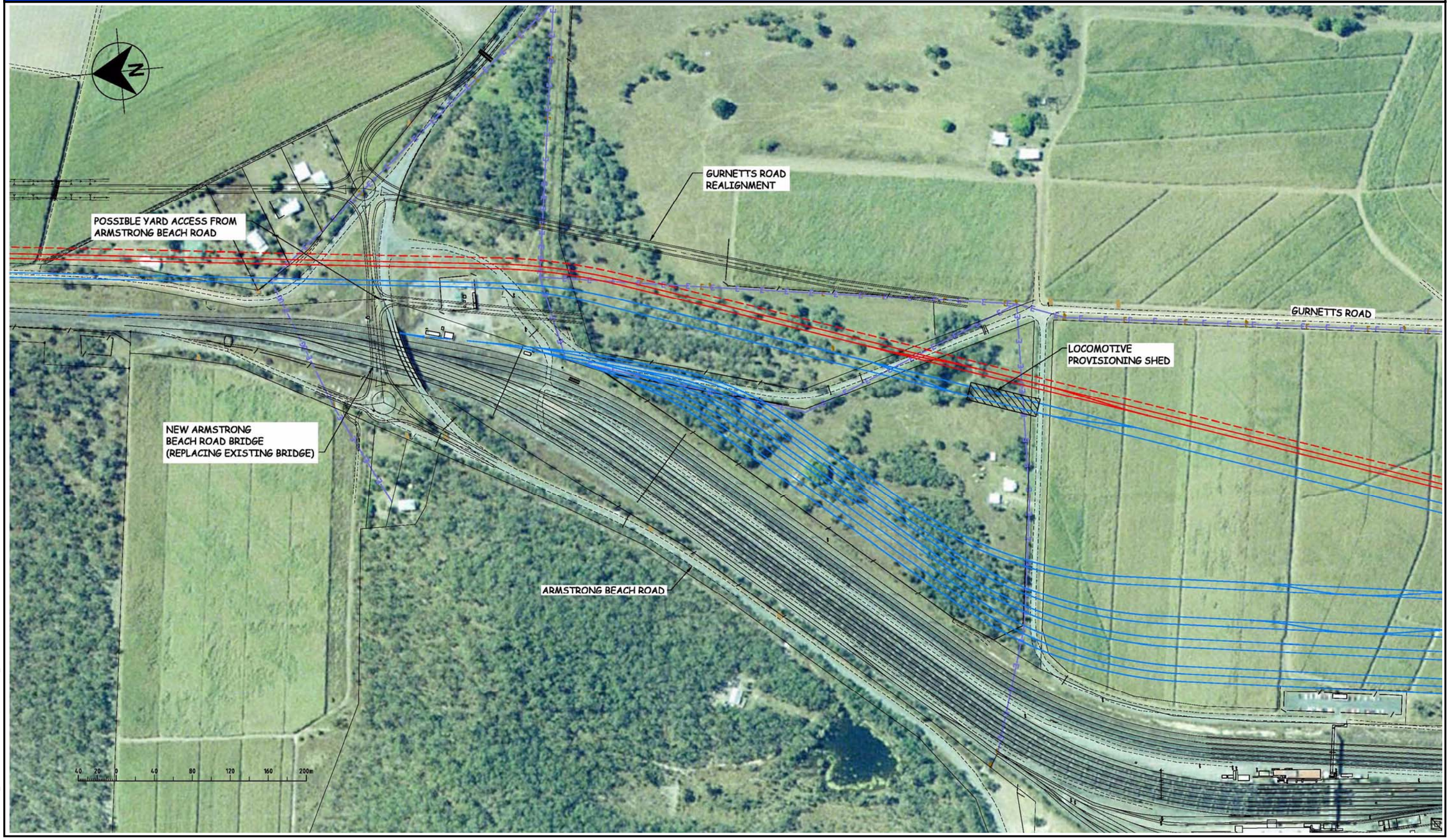
LEGEND

- Above Rail - QR National
- Below Rail - QR Network Access
- Future Track

GENERAL PROJECT INFRASTRUCTURE
OPTION 4
SHEET 1 OF 4

FIGURE 2.1

Jilalan Rail Yard Upgrade Project



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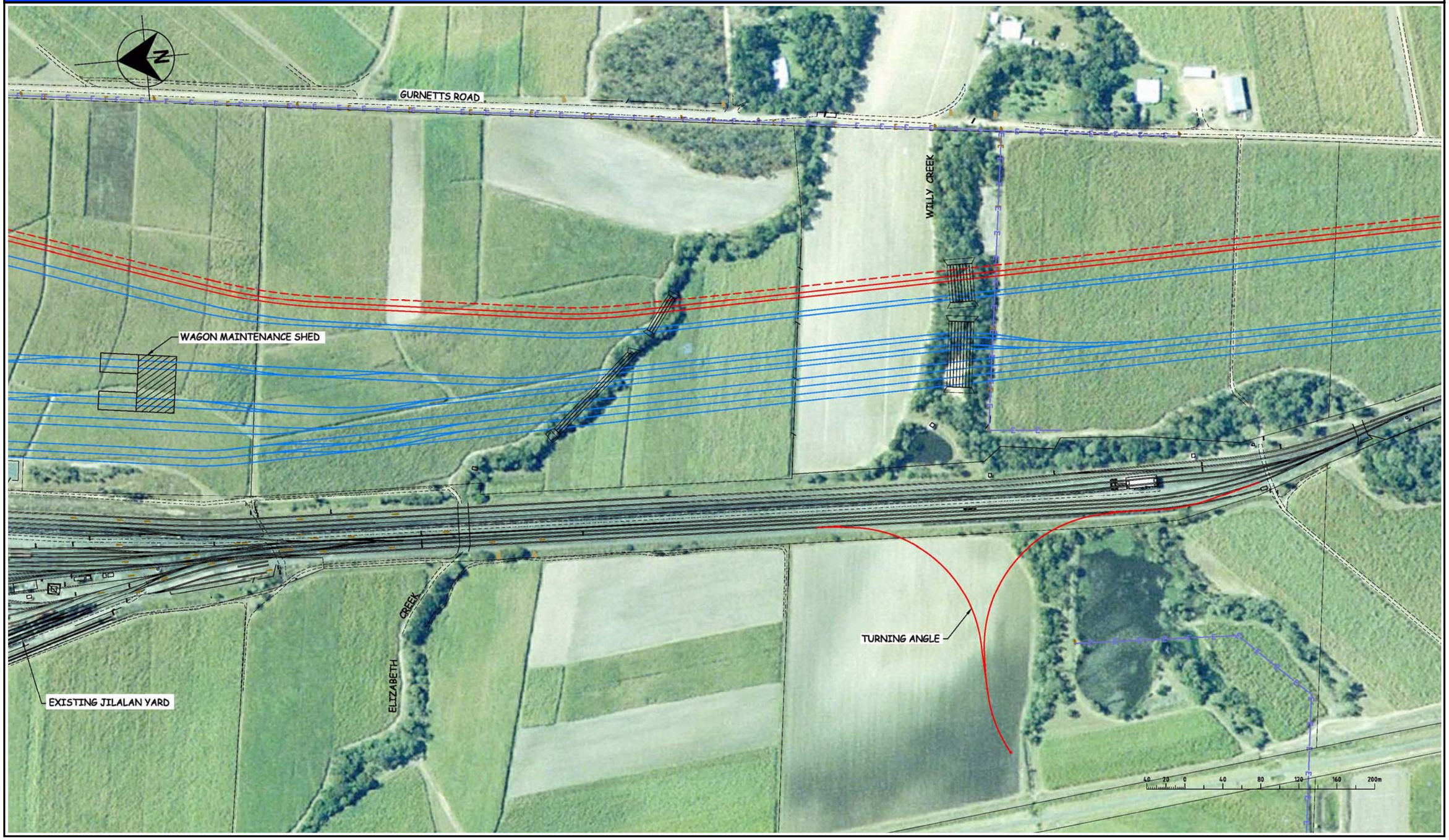
LEGEND

- Above Rail - QR National
- Below Rail - QR Network Access
- Future Track

GENERAL PROJECT INFRASTRUCTURE
OPTION 4
SHEET 2 OF 4

FIGURE 2.2

Jilalan Rail Yard Upgrade Project



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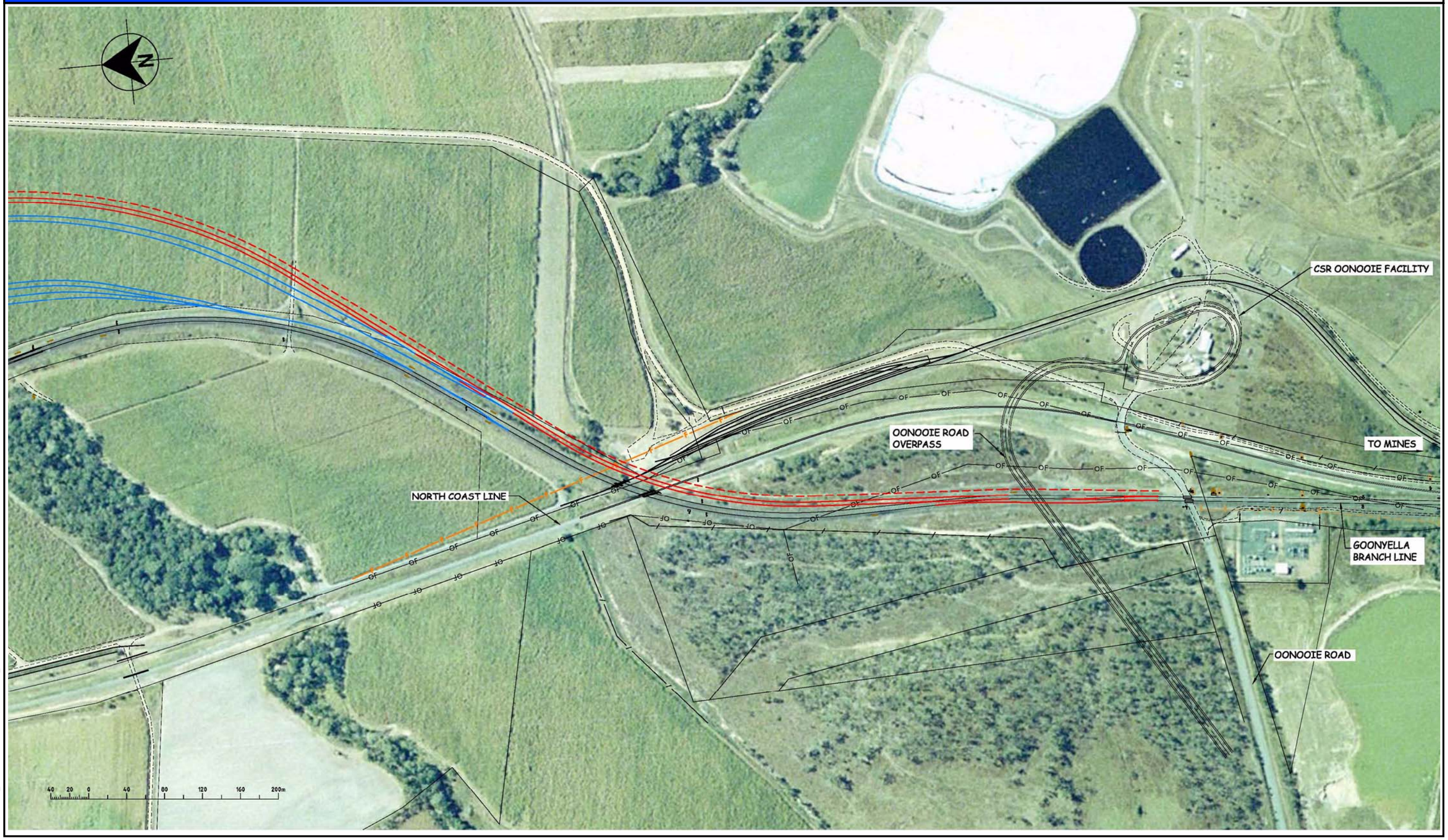
LEGEND

- Above Rail - QR National
- Below Rail - QR Network Access
- Future Track

GENERAL PROJECT INFRASTRUCTURE
OPTION 4
SHEET 3 OF 4

FIGURE 2.3

Jilalan Rail Yard Upgrade Project



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LEGEND

- Above Rail - QR National
- Below Rail - QR Network Access
- Future Track

GENERAL PROJECT INFRASTRUCTURE
OPTION 4
SHEET 4 OF 4

FIGURE 2.4

The option of temporarily or permanently diverting Elizabeth Creek into Willy Creek may be considered during the design process. This may or may not include provision to maintain a minor flow along the existing Elizabeth Creek alignment.

The design will necessitate a large cutting, through the elevated ground, south of the Armstrong Beach Road bridge. This cutting is likely to be in the order of 17 m deep. The material excavated from this cutting is expected to be used as fill material at other locations within the project site.

The new bypass lines will cross over the North Coast Line (NCL) and Cane Rail Line. Bridges and/or culverts will be used to achieve the grade separation.

Access into the new facility will either be located off Gurnetts Road and incorporate a grade separated structure across the bypass and provisioning tracks or it will enter from a new Armstrong Beach Road bridge, between the provisioning and maintenance tracks. Access to the carpark on the eastern side of the existing yard will be via this access road.

The northern end of the site will involve new rail embankment between the existing rail embankment and Plane Creek. Fill material for this embankment may be obtained from offsite sources west of Plane Creek in order to reduce the need to bring material across the operating railway.

2.1.2 Wagon maintenance facility

The proposed wagon maintenance facility will be located between the new provisioning facility and the existing Jilalan Rail Yard. The proposed facility will incorporate four bays for washing and maintaining coal wagons, with each bay accommodating one tandem pair of wagons (refer Appendix E). The Project allows for future expansion of the building to accommodate a second tandem wagon pair in each bay.

The wagon maintenance facility will also include the ability to discharge coal from a coal wagon, where faulty doors or sticky coal has prevented the wagon from emptying at the port. This coal will be loaded into another wagon or semi-trailers for disposal at the coal terminals at the Port of Hay Point.

A number of wagon storage tracks are proposed. These will provide storage for wagons, prior to and following maintenance. The maintenance tracks traverse similar topographic features as the bypass/provisioning lines (ie traverse Willy and Elizabeth Creeks and pass through a deep earthworks cutting).

2.1.3 Train storage trackwork

It is proposed that three new electrified tracks may be required to store assembled trains, ready for immediate deployment. These trains will be needed on short notice to either replace either damaged or faulty rollingstock or to provide additional rollingstock capacity when delivering coal from outer mines within the Goonyella System.

2.1.4 New locomotive maintenance facility

The existing wagon shed, which is currently used for maintenance of coal wagons, will be reconfigured into a locomotive maintenance facility. The existing three bay shed will be converted into two bays. A number of changes to the track layout within the existing yard may be required to facilitate these changes. Typical details of the proposed refurbishment are included in Appendix E.

2.1.5 Station building

A new station building is proposed to be situated between the provisioning tracks and the wagon maintenance tracks. The actual location will be the subject of further design. The building is intended to contain the control systems for the local yard signalling and will provide facilities for yard staff.

2.1.6 Oonooie Road realignment and overpass

Due to the increasing train numbers per day, it is proposed to replace the existing Oonooie Road open level crossing with an overpass over the Goonyella Branch Line. This will eliminate disruption to CSR vehicular traffic and local cane harvesting operations, from rail traffic on the operating Goonyella Branch Line. It is understood that these two activities generate almost all traffic on Oonooie Road. In addition to eliminating disruption to road traffic, the grade separated structure will also eliminate the safety risks associated with the level crossing.

The proposed location for the overpass is to the north of the existing level crossing. This will require realignment of a portion of Oonooie Road to suit the overpass. Grade separation of the NCL will also be included in the design.

2.1.7 Gurnetts Road realignment

The location of the proposed bypass lines will necessitate the realignment of the northern end of Gurnetts Road into a new roundabout on Armstrong Beach Road. The new section of Gurnetts Road will be sealed.

2.1.8 Smyths Road realignment

The location of the bypass lines will necessitate the realignment of Smyths Road, further east from its current location. The actual alignment will be the subject of further refinement during subsequent design stages and where possible will attempt to minimise disruption to cane farming operations and the occupants of the dwelling on Lot 1 on RP747769.

2.1.9 Armstrong Beach Road bridge

The existing Armstrong Beach Road bridge over the rail lines will be replaced with a new bridge to the north of the existing structure. An additional bridge will also be constructed over the new provisioning and bypass lines.

The new bridge structure will incorporate roundabouts at each end of the structure. This will enable the tight horizontal curve to be removed from the road and improve sight distances. This will also result in a reduction to the speed environment, which will further improve safety on the bridge.

2.1.10 Smyths Road grade separation

It is currently proposed to replace the existing Smyths Road open level crossing with a grade separated structure as the increasing train numbers will impact on this crossing. This would enable Smyths Road traffic to cross the Goonyella Branch Line without being impeded by rail traffic. This is important to the cane farmers on the eastern side of the rail, who need to transport cane to the cane rail siding on the western side of Plane Creek.

The concept design indicates construction of an underpass structure under the new rail embankment. Flood hydraulic considerations mean that the existing rail embankment must remain as a permanent barrier to floodwaters.

2.2 Site location

2.2.1 Location of the existing facility

The existing Jilalan Rail Yard is located 3 km south of Sarina, which is approximately 35 km south of Mackay on the central Queensland coast. The yard is approximately 20 km south of the Port of Hay Point (refer Figure 1.1).

The land surrounding the yard is predominantly used for the cultivation of sugar cane, with associated residential dwellings sparsely scattered throughout. It is understood that cattle are also farmed on the property to the west of the rail, south of Oonooie Road.

An existing industrial facility is located adjacent to and east of the rail at the southern end of the project area. This facility is owned and operated by CSR and produces fertiliser from sugar mill waste and other biological matter. It is understood that an expansion of this operation to approximately double the current capacity is currently being considered.

The NCL (a single track passenger and freight railway) runs parallel with the existing Goonyella Branch Line at the southern end of the project area and crosses under the Goonyella Branch Line north of the CSR facility. A cane rail system runs generally parallel to the NCL at this location, with both tracks running to Sarina. The NCL and the Cane Rail Line are not electrified. A cane rail siding is located on the eastern side of the NCL underpass.

The Bruce Highway, a state controlled road is located approximately 1 km west of the existing Goonyella Branch Line. The following roads are adjacent to and generally parallel to the site:

- Smyths Road
- Gurnetts Road

The following local roads cross the site:

- Smyths Road (level crossing)
- Armstrong Beach Road (bridge overpass)
- Oonooie Road (level crossing)

It is proposed to provide grade separated crossings for Smyths Road and Oonooie Road.

Changes to land ownership adjacent to the project area will negate the need for private access across the rail. Accordingly, existing occupational crossings within the project area will either be closed or converted to QR crossings as part of this Project.

Other site location issues and the chapter where they are addressed are:

- Land tenures (Chapter 4)
- Land uses and planning schemes (Chapter 4)
- Features of environmental significance (Chapters 4 to 16)
- Proposed land use buffer zones (Chapter 4)

2.2.2 Location of proposed works

The general expansion of the yard will generally be to the north, south and east of the existing yard and railway. A rail turning angle and Oonooie Road realignment works are the major exceptions, located on the western side of the existing rail.

The location of the Project is illustrated in Figure 1.1 and the proposed works shown in more detail in Figures 2.1 to 2.4.

2.2.3 Site selection process

In developing the concept design layout for the proposed rail yard, QR incorporated the results of operations modelling for the entire Goonyella System. This process drove the overall yard layout and facilities requirements.

The need for a new provisioning facility and the resulting yard length are governed by the requirement to provision trains in both loaded and unloaded directions. Storage space for an entire train length is required on both sides of the provisioning facility, as the locomotives that require provisioning may be distributed throughout the train.

QR has commissioned a number of studies to investigate the viability of the layout, including:

- Jilalan Station – Bypass Line – Land Take Concept Study (Connell Hatch 2006)
- Jilalan Station – Rail Yard Upgrade – Land Take Concept Study (Connell Hatch 2006)
- Jilalan Station – Yard Upgrade and Bypass Line Stage 1 Expansion – Preliminary Planning and Engineering Report (Connell Hatch 2007)

Further details of the selection process are included in Section 1.4.

2.3 ESD design considerations

Australia's National Strategy for Ecologically Sustainable Development (1992) ("NSESD") defines ecologically sustainable development ("ESD") as:

"using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future can be increased".

The following ESD matters will be considered during the detailed design phase of the Project:

- The examination, application and adoption of energy efficient appliances and sustainability features into buildings (WELLS rated installations).
- Optimal use of natural light to reduce energy consumption (cost-effective lighting, sensor lights, controller on office lighting).
- Use of low environmental impact materials where practical (low emission fireboards, avoid CFCs, minimise use of PVCs).
- Use of photovoltaic cells and recycle technologies to improve efficiencies and become self-sufficient or feed back into existing water and energy grids.
- Maximise use of renewable material, fuel and energy sources (green energy, plantation timber and recycled material).
- Examining 'state-of-the-art' technologies and how these may be incorporated into designs for new facilities or extensions to existing facilities (improving capability, capacity and output quality).
- Considerations of UDIA 'EnviroDevelopment' criteria. Include elements such as ecosystems (flora and fauna), waste (before, during and after construction), energy (greenhouse gas production and energy efficiency), materials (non-toxic and environmentally responsible), water (40% reduction in potable water demand and water efficiency) and community (consultation, transport, safety and facilities).
- Recycling/reuse opportunities from treated wastewater into amenities, energy storage and rebate availability.
- Consideration is made for the local community in regards to safety, local amenities, recreation and accessibility.
- Community involvement, participation and consultation in the decision making process.
- Ensure the design minimises the ecological footprint.
- Identify areas to revegetate or rehabilitate to mitigate any removal of native vegetation.
- Adopt the 'reduce, reuse and recycle' principle wherever possible.
- Ensure vegetation corridors and buffer zones are established as part of a rehabilitation scheme.
- Ensure that monitoring programmes are in place to evaluate the effectiveness of rehabilitation and revegetation works.

2.4 Construction activities

2.4.1 Pre-construction activities

Pre-construction activities are likely to include:

- Survey
- Geotechnical drilling and investigations
- Establishment of site project offices
- Construction of site offices, access roads, haul roads and hardstand areas
- Foundation works
- Utility services relocations
- Construction of accommodation village (refer Section 2.5.3)

The location of site office and worker compounds is not yet confirmed, however it will be located within the project area so as to be close to the major construction centres and yet avoiding conflicts with construction activities.

2.4.2 Rail infrastructure works

The construction of the rail infrastructure will involve:

- Site setout and pegging.
- Clearing – utilising dozers, chainsaws, excavators, trucks and similar equipment. Much of the site will be situated over existing cane fields. While these will not be farmed after the 2007 harvest, it is expected that cane regrowth will need to be cleared prior to construction. Where practical to do so, the remaining felled material will be stockpiled and mulched for later reuse on batters and within landscaping. If weed infestations are encountered, the cleared vegetation will be disposed in an appropriate manner to minimise the spread of infestation.
- Ground improvement measures – this may include wick drains, preload, geofabrics, surcharge and lime treatment. In some localised areas ground replacement may be undertaken. These operations will use trucks, excavators, piling machines, rollers, water carts and other sundry equipment.
- Bulk earthworks – major cut to fill operations include the winning of suitable construction material from sections of cut along the railway alignment or from borrow areas external to the site.
  - It is expected that all cut and borrow activities will be achieved by mechanical means (dozers, scrapers, excavators), however there may be a need for blasting if less fractured rock is encountered.
  - Equipment used in the bulk earthworks construction will include scrapers, excavators, haul trucks, water carts, compactors and graders as well as other sundry equipment.
- Construction of concrete railway bridges and culverts. This will include piling and construction of concrete piers and headstocks. Precast concrete units or girders will be used to form the bridge superstructure and may be incrementally launched over the crossings. It is envisaged that all materials for bridge structures will be delivered by road.
- Track laying, including the placement of ballast and steel rail which will be delivered by rail. The remaining materials, including sleepers and turnouts may be delivered by road.
- Overhead electrical equipment. Materials for this will be delivered by road.
- Installation of railway signalling and communications equipment.
- Construction of railway maintenance facilities, administration and amenities buildings, car and truck parking and fuel storage areas. Materials for the buildings will be delivered by road.

The construction of the bulk earthworks for the Project will involve the movement of approximately 1.2 million m^3 of rock and soil material.

The railway infrastructure will include approximately 50,300 m of trackwork and 74 turnouts.

The origin of materials delivered to site is not confirmed as it will be subject to Contractor and Supplier availability, however access will be via the Bruce Highway. Notwithstanding, proportions of delivery origins have been assumed for the assessment of road impacts.

2.4.3 Indicative construction timetable

The principal construction activities are proposed to commence immediately following the wet season in February/March 2008. Construction is likely to be required in shifts over 24 hours per day. While it is intended to undertake construction six days per week, it is possible that construction may be required seven days per week to meet the tight scheduled programme.

The bulk of the construction activities will need to be completed before November 2009 in order to allow for commissioning to be completed by the end of 2009. Some construction work may take place during this time, particularly if it is independent of the commissioning process.

An indicative Project programme is provided in Figure 2.5.

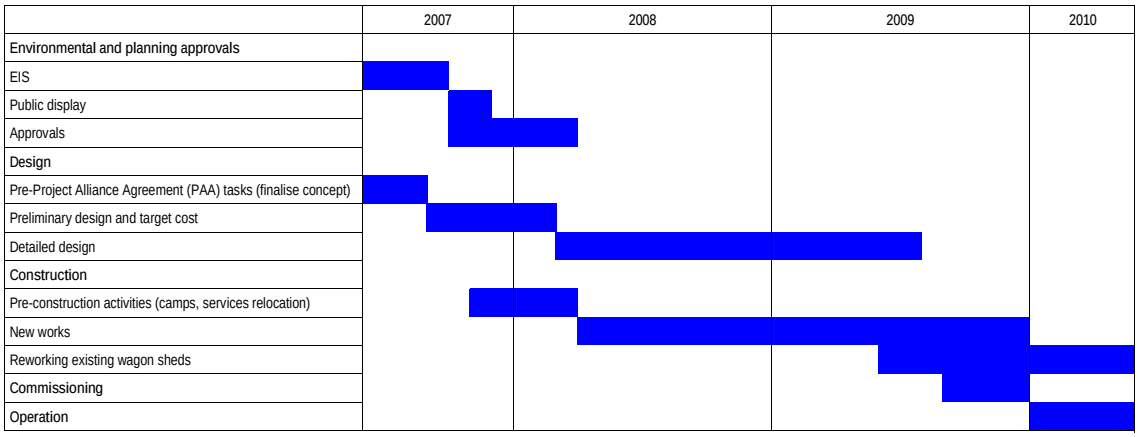

Figure 2.5 Project programme

2.4.4 Major works programme

The scheduling of activities will be governed by constructor preferences. The list below outlines an indicative construction sequence. Where practical, activities will be undertaken in parallel to minimise programme duration:

- Clearing, stripping and earthworks for the bypass, provisioning and maintenance tracks.
- Drainage structures (bridges or culverts) across Willy and Elizabeth Creeks.
- New rail bridges (or culverts) over NCL and Cane Rail Lines.
- Armstrong Beach Road overpass structure.
- Gurnetts Road realignment and new intersection with Armstrong Beach Road.
- Smyths Road realignment.
- Rail realignment at northern end of site, including Smyths Road underpass.
- Construction and fitout of provisioning shed.
- Construction and fitout of station building.
- Construction and fitout of wagon maintenance shed.
- Rail construction (pavement and trackwork) for bypass, provisioning, maintenance and storage tracks.
- Refurbishment of existing wagon maintenance facility into a locomotive maintenance facility.

- Realignment of rail within existing yard.
- Construction of the Oonooie Road realignment and overpass.

Variations to this sequence will be investigated during the detailed design phase of the Project. These investigations will address ESD principles (refer Section 2.3) and account for:

- Programme optimisation
- Constructability
- Resource availability
- Local conditions (eg weather, industry)

2.4.5 Process inputs, handling and storage

Construction will be largely dominated by earthworks activities with the initial construction phase consisting of handling of in excess of 1.2 million m^3 of earth. This will be achieved by a combination of scraper fleet, excavators with rear dump trucks and where haul distances are necessarily long excavators and road trucks. In all cases considerable effort will be made to optimize the process so as to guarantee maximum efficiency.

Bulk materials storage will be conducted in designated purpose built areas to ensure that the storage and handling of materials cannot affect land outside the project area. The Project will have little need to store large volumes of hazardous materials onsite with only fuel having large volumes stored on site.

Fuel will be handled and stored in accordance with AS1940/2004 *The storage and handling of flammable and combustible liquids*, and with self bunded relocatable fuel pods with a nominal capacity of about 40,000 L. During refilling of the pods they will be placed in an area with a drainage system capable of isolation from the surrounding area so as that any spill will be contained within a small area. Refuelling of mobile plants will be conducted using a mobile service truck that will be required to carry a spill control kit on board.

Concrete batching will require the storage of small volumes of potentially hazardous additives. These will be delivered directly to the concrete batching facility and placed in a secure bunded area where this is recommended by the Material Safety Data Sheet (MSDS) for the product. Storage of cement powder will be either in purpose built silos or in a road tanker adjacent to the batch plant. Aggregates will be stored in a location as close as practical to the batch plant to maximise process efficiency.

To manage other hazardous materials project staff will be granted access to the “Chemwatch” chemical management system. The “Chemwatch” system is a database containing thousands of independently researched and verified chemical product records. To ensure rigorous management it will be a requirement to notify a nominated officer if a hazardous material is being delivered to the Project. All efforts will be made to replace hazardous materials with non-hazardous materials. These hazardous materials must have a MSDS. All hazardous materials will only be used in compliance with the MSDS.

All subcontractors and utility organisations will be required to:

- Be familiar with the procedural requirements and sign off that they accept their responsibilities under a specific Control of Hazardous Substances Procedure.
- Provide the project nominated project officer with a list/inventory of hazardous substances intended for delivery to site.
- Provide MSDS for all hazardous substances including fuel types.
- Remove from site any redundant, out of date or unlabelled hazardous substances.

Planned and unplanned inspections of hazardous substances and the storage areas/facilities will be conducted to ensure compliance with the Construction EMP and the relevant guidelines.

Other construction materials will generally be delivered to site by road transport and stored in designated laydown areas until required. To minimise safety and environmental risks, all facilities will be maintained with the highest regard for good housekeeping practices. Monitoring of housekeeping standards will be carried out during routine safety and environmental inspections.

2.4.6 Cleanup and restoration

Following completion of construction and prior to vacating the site, the following cleanup and restoration works will be undertaken:

- Removal of all temporary structures erected during the construction process.
- Removal of all construction waste and surplus construction materials and to an appropriate and legal place of disposal.
- Removal of temporary fencing, gates and signage.
- Repair damage to offsite roads, where the damage can be directly attributed to the construction process.
- Where practicable, restore site office areas, compounds and hardstand areas to existing condition.
- Re-spread surplus stockpiles of topsoil.
- Establish appropriate vegetation over disturbed areas.

2.4.7 Ballast arrangements

It is intended that ballast will be sourced from a QR approved hard rock quarry. This material will be extracted and processed by the quarry and loaded onto rail ballast wagons. This material will be carted by rail to the construction site and will be installed directly from the ballast wagon by track laying equipment. There will be minimal need to store or handle ballast on the site.

2.5 Workforce, accommodation and support infrastructure

2.5.1 Projected project workforce

The delivery of the Project will require a workforce with a wide range of skills where specific skills are dependant on the stage of construction. In the broadest of terms the Project construction phase can be divided into:

- Earthworks
- Structures
- Building works
- Management and administration

Earthworks

The earthworks workforce is anticipated to peak at approximately 100 persons with potential to be as large as 120. Of this it is expected that this will be comprised of 60:40 split between operators of plant and general labourers. Labourers will principally be involved in drainage works and grade checking. Operators will be distributed over a variety of plant with preliminary project planning estimating:

- 2-3 large dozers
- up to 6 x 50T rear dump trucks
- 6 scrapers
- 2-3 large excavators

The remainder, (44) would comprise graders, loaders and smaller excavators, backhoes, smaller dozers and tip trucks.

Structures

Structures (bridges, culverts etc) will require approximately 70 people at peak production. The specific skill set is likely to be as follows:

- 25 formworkers
- 15 steelfixers
- 20 labourers
- 10 crane drivers and excavator operators

Buildings

The buildings workforce will be of a similar size to the structures crew with a projected peak of around 65 people. The composition will vary considerably over time with peak skills required at any one time being (note these are peak numbers and do not add up to the overall peak):

- 15 formworkers
- 8 steelfixers
- 15 labourers
- 6 operators
- 10 riggers
- 10 roofers
- 4 cranedrivers
- Up to 20 tradesmen (electricians, mechanical (a/c, piping, hydraulic and systems))
- 15 building trades

It is anticipated that the tradesmen/building people will be taking over from the structures trades in the latter stages of the Project.

Management and administration

To support and manage this workforce, a management, administration and engineering support system will need to be provided. Peak management and administration workforce is expected to be around 30-35 persons consisting of:

- Project manager
- Construction manager
- 3 engineers
- 6 foreman
- Quality assurance
- OHS
- Environment
- 5 general administration
- 4 surveyors
- 10 miscellaneous others

QR would also need staff to attend to their works and have nominated a number of 10. However, the majority of this number will occur as the construction workforce tail off and approximately five staff are likely during the course of the Project.

Overall

It is important to understand that the numbers provided are likely peaks in the individual areas and cannot necessarily be added together to generate the overall size of the workforce as different areas experience their peaks at different stages in the Project.

An analysis of the preliminary Project programme suggests a workforce peaking approximately 300 persons with the nominal distribution of the labour at any given time illustrated in Figure 2.6.

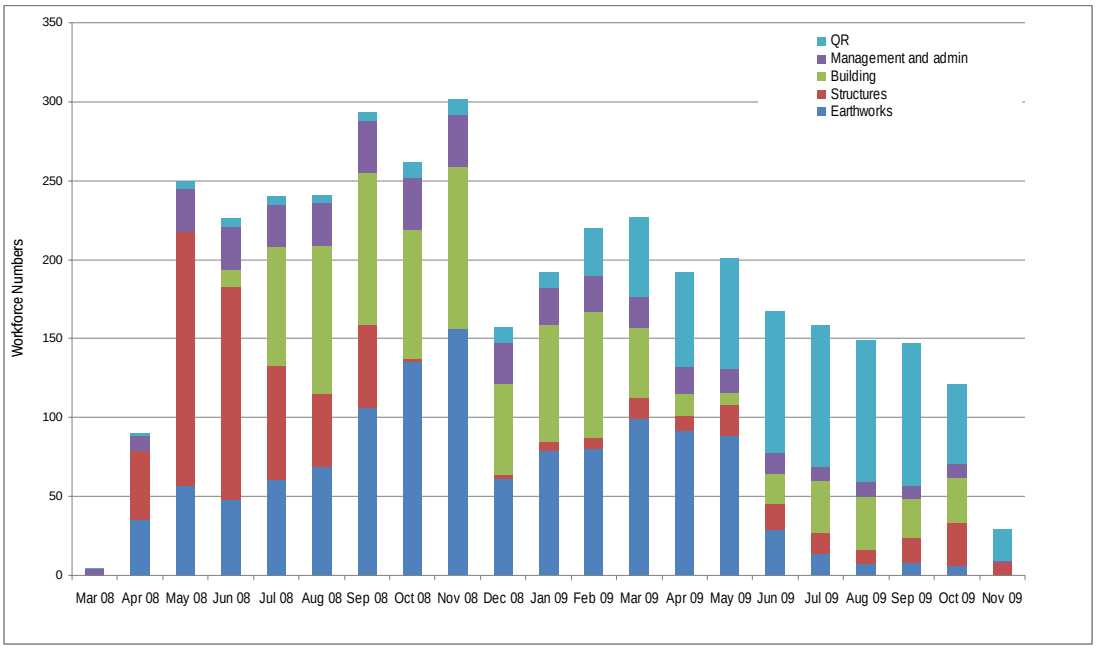

Figure 2.6 Indicative workforce

2.5.2 Recruitment

There is benefit both to the community and the constructor in sourcing as much of the workforce from the local area as possible. The project team will liaise with local employment agencies and training providers regarding the provision of suitable training opportunities. Where possible this will specifically target opportunities for unemployed people.

However, it is widely recognised that the construction industry and in particular the Mackay region is suffering from an acute skills shortage. It is for this reason that up to 80% of the workforce may have to be sourced from outside of the local area and provided with accommodation during the construction life of the Project.

2.5.3 Accommodation

Given the probable high proportion of non-locals in the project workforce, it will be necessary to develop a temporary accommodation village.

The project team is committed to the development of a construction accommodation village in the Sarina Shire and will actively seek a site that is not only practical for project needs but one that offers some potential for a lasting benefit to the community.

The project team has explored opportunities to redevelop existing tourism facilities (eg caravan parks, motels) within the area for workers accommodation. No suitable sites occurred within the Shire that meet the Project needs. Consequently the most favourable option is the construction of a temporary accommodation village on an undeveloped site at the Sarina Golf Club. If this option proves to be viable, financial benefits will flow to the club through rent, green fees and sales of food and beverages and other non-cash incentives.

The development application for the accommodation village will be separate to the EIS process. The project team is working closely with the Sarina Shire Council to ensure that the development is beneficial to the community.

Preliminary discussions with Sarina Shire Council have indicated that (assuming the development is in the town area) the Sarina Shire will be able to provide potable water through a connection to the existing reticulation system without undue stress on the existing infrastructure. The Sarina Shire Council has also indicated that there is not sufficient capacity to treat sewage from the facility and it is consequently intended that the accommodation village will be responsible for the treatment of its own wastewater. It is intended to use the wastewater for construction purposes on the main project site.

To ensure adequate provision for the projected workforce, the accommodation village will be designed to cater for up to about 300 persons at peak capacity. The accommodation village will be constructed and demobilised in stages of 50-100 rooms at a time. The rooms will be ensuited cabins and kitchen, dining and recreation facilities will be included. There is no intention to serve alcohol at the facility. Table 2.1 summarises the likely relocatable building requirement of the accommodation village.

Table 2.1 Typical relocatable building requirements

Description	Size	Quantity at peak
Four person ensuite accommodation units	14.5 x 3.5 m	70+
Male and female toilets	5 x 3 m	2
Kitchen and dining facility	35 x 12 m	1
Recreation room	20 x 12 m	1
Gymnasium	6 x 6 m	1
Storage	12 x 3 m	2
Laundry	6 x 3 m	5
Cool room	6 x 2.5 m	2

The development application will address the following issues to Sarina Shire:

- Food preparation and storage
- Ablution facilities
- Disease vector and vermin control
- Fire safety
- Environmental management, specifically dust and noise control in relation to proximity to the Project area
- The service personnel required to maintain the camp and the supply of services to each construction camp

As far as practical, access will be provided to the camp directly from a main road so as to minimise the impact on local traffic roads. This impact may also be further mitigated through the provision of buses to and from site reducing the number of vehicles on the road.

2.6 Energy

The rail infrastructure requires both electricity and diesel fuel for operation. Diesel fuel is generally required for rail shunt locomotives. Three diesel locomotives are currently utilised for shunt operations, using approximately 3,000 L of diesel fuel per locomotive engine per week, or a total of 9,000 L per week.

Assuming that the shunt tasks increase at the same rate as the rail capacity, it is anticipated that approximately 12,600 L of diesel fuel per week will be required.

The existing diesel fuel facility will be upgraded from 30,000 L to 50,000 L as part of this Project. Space will be allowed for an additional 200,000 L of diesel storage capacity for potential future diesel locomotive operation on the Goonyella System by QR.

Electrical power is required for operation of electric locomotives. The overhead lines will be powered from QR's Oonooie Substation. Power supply for the rail yard lighting and the rail buildings will be derived from the Ergon Energy network and renewable energy sources where practicable. In some locations, relocation of existing Ergon powerlines will be required before construction can commence.

Where practicable, equipment will be selected to minimise energy consumption and overall life cycle costs.

2.7 Telecommunications requirements

Telecommunications for the terminal and railway facilities will most likely be derived from existing telecommunications infrastructure within the existing facility and along the existing railway.

Similar to the Ergon network, relocation of some of Telstra's telecommunications copper and fibre optic infrastructure may be required prior to construction. This is particularly required in the vicinity of Armstrong Beach Road.

2.8 Water supply and management

2.8.1 Operational water

The water supply to the site will largely be sourced from an existing pipeline, which runs adjacent to Armstrong Beach Road.

Where feasible, recycling of water will be implemented to reduce the total load on the water supply. The new wagon washdown facility will have a treatment and recycling facility, which will operate independently to the existing treatment/recycling plant on the site, however they will be linked to provide a level of redundancy.

Water required for fire fighting purposes will be provided in accordance with the relevant legislative requirements. The design of the firefighting provisions will be undertaken in consultation with the local fire brigade.

The current potable water usage on site is approximately 30 kL/day. The estimated future demand for potable water is estimated at 50 kL per day although investigations will be undertaken to reduce this demand by recycling. The total increase will indicatively be required when the proposed construction is complete (ie December 2009).

2.8.2 Construction water

The bulk of construction water will be required during the earthworks phase of the Project. This will be used for dust control as well as moisture conditioning of the fill material and gravels. It is estimated that the peak demand will be in the order of 2 ML per day.

It is intended to utilise the following sources for construction water:

- Existing Jilalan Rail Yard supply (for higher quality water)
- Recycled water from treatment facilities at the existing yard, construction offices and camp
- Plane Creek (saline water for earthworks fill and dust suppression only)
- Local farm dams (subject to availability)

- The effluent dam adjacent to the golf course (subject to treatment to reduce faecal coliform)
- Groundwater (existing/new bores)
- Sewage treatment plants associated with the Project

Storage tanks and/or dams may be required to store water for use during construction and will mitigate against any planned or unplanned interruptions to the supply.

2.9 Sewage

Sewage inflows for the existing and developed operation facility are estimated in Table 2.2.

Table 2.2 Sewage inflows for the existing and developed facility

	Existing	Developed
Average Dry Weather Flow - ADWF (kL/day)	59	78
Equivalent Person (EP)	234	310

The figures above are based on an assumption that staff will generate sewage at an average of 190 L per person per day and an "Equivalent Person" (EP) is 250 L per person per day.

A number of options for handling sewage on the new site are being considered. These include:

- Utilisation of the existing sewage treatment plant on the site.
- Construction of a new treatment plant, with the same licence discharge requirements as the existing plant.
- Construction of a sump to store sewage for tankering offsite.

The ultimate solution will involve a combination of the above options and will include consideration of reuse opportunities.

A number of modular sewage treatment plants will be installed to treat the sewage from the construction workforce, which is estimated to peak at approximately 300 people. Where possible, one or more of these modules may remain on site as the permanent operational sewage treatment facility.

2.10 Stormwater

The Project will require various stormwater drainage systems to convey stormwater over the site. Drainage systems will be generally required for:

- Road and rail cross drainage
- Maintenance facilities

In addition, temporary drainage systems will be required to manage stormwater during the construction period.

2.10.1 Road and rail cross drainage

Rail drainage crossings

The proposed rail infrastructure will intercept existing watercourses at numerous locations. At these locations it is proposed to construct culverts or bridges to enable and facilitate flow through the new infrastructure. Where a culvert structure is either not constructible or undesirable at a particular location, a diversion channel may be installed to divert runoff to a more appropriate culvert location.

The rail infrastructure will traverse Willy and Elizabeth Creeks, which converge downstream of Gurnetts Road. The concept design assumes these crossings will consist of box culverts and that creek diversions will be constructed upstream and downstream of these structures to suit the culvert configurations.

Where practical, bridges may be considered in lieu of culverts in order to minimise impacts on fauna movements.

Road drainage culverts

Road culverts will be provided at intersections between proposed roads and existing watercourses. In addition, a culvert under Armstrong Beach Road, near the intersection with Gurnetts Road, will be relocated to suit the proposed works.

The sizing of all public road culverts will be in accordance with the appropriate standards.

Construction and rail maintenance tracks

Construction roads and rail maintenance tracks will also intersect numerous drainage paths. While the location of these roads and tracks has not yet been defined, it is intended that they will include appropriate cross drainage structures. The flood immunity provided by these structures may be less than would otherwise be required for permanent rail or public roads.

2.10.2 Maintenance facilities

A treatment plant will be used to treat contaminated water (stormwater runoff and washdown) from the maintenance and provisioning facilities. Where practical, the facilities and washdown areas will be covered so that the clean roofwater can be diverted away from the contaminated water, therefore reducing the amount of water requiring treatment.

2.10.3 Stormwater during construction

It is envisaged that various measures will be required to manage stormwater runoff during the construction phase of the Project. These measures are likely to include but will not necessarily be limited to:

- Diversion of surface runoff away from construction activities.
- Installation of temporary culverts and/or causeways across waterways. This is most likely to be the case across Willy and Elizabeth Creeks, where construction access will be required before rail bridge/culvert structures are constructed.
- Installation and maintenance of sediment and erosion control measures.

2.11 Transport – road, rail and shipping

2.11.1 Construction

Most of the transport required for the Project will utilise the road network. This would typically include transport of:

- Gravel
- Concrete
- Steel
- Construction equipment
- Workers
- Machinery items

It is expected that the Bruce Highway will be the primary route utilised for the transport of construction materials. Construction materials will be sourced from areas both north and south of the site. Entry to the site will be via Armstrong Beach Road, however Oonooie Road may be utilised where appropriate.

Rail transport is limited by the availability of train paths on the Goonyella Branch Line, which are generally reserved for coal transport. It is proposed to transport ballast and rail to the site using the rail network.

It is not intended that shipping will be directly required during the construction process.

2.11.2 Operation

During operation of the rail yard, road transport will be used for the delivery of:

- Sand
- Maintenance parts and equipment
- Consumables
- Fuel

Rail operation and maintenance staff will use road transport as the primary method of travelling to and from the site.

Most operational traffic will be via Bruce Highway and Armstrong Beach Road, with the majority of traffic likely to originate from Sarina or Mackay.

2.12 Waste

The waste management requirements for the Project are described in detail in Chapter 11.

The main wastes produced from construction and operation activities will consist of:

- Building materials
- Domestic waste (cans, bottles, glass)
- Green waste
- Electrical cables
- Timber crates and pallets
- Trade waste
- Scrap steel
- Plastics
- Oil and lubricants
- Sewage
- Paints and solvents
- Sludge

The principal objectives for project waste management are:

- Minimise waste generation and the cost of waste for all stages of the construction of the rail facilities.
- Prevent damage to the environment.
- Move the company and community towards ecologically sustainable development.
- Ensure the operation complies with Environmental Licence conditions.
- Implement the requirements of the *Environmental Protection Regulation (Waste) 2000*.

It is proposed that stormwater runoff and washdown water from the facilities will be treated in a new pollution plant to remove hydrocarbons (eg oil and grease), sediment and other contaminants, before discharging to Elizabeth Creek. Options to reuse the water from the pollution plant will be investigated to reduce discharge into the waterway.

Trade waste and sludge management is discussed in Chapter 11.

2.13 Air and noise emissions

In order to control dust emissions related to construction activities and thus reduce the risk of dust nuisance at the location of nearby residences, a number of dust control measures will be implemented, which will be incorporated into an Air Quality Management Sub Plan. Additionally, air quality monitoring, specifically dust will be implemented during construction.

QR is currently undertaking a Coal Loss Environmental Evaluation which includes identifying strategies to reduce the risk of coal loss from loaded coal wagons in Central Queensland. The evaluation will include consultation with key stakeholders. An interim report will be provided to the EPA by 31 January 2008, and the final report is due 31 March 2008.

Noise sources associated with the maintenance and rail yard activities typically include gantry cranes, shunting, forklifts, idling locomotives, wagon coupling and refrigeration units (wagons).

If exceedances of QR's noise criteria are identified during the detailed design phase, mitigation measures such as limiting operating speeds, alignment design changes, noise barriers, façade treatments and resumptions will need to be investigated, as required.

Chapters 9 and 10 contain details of the predicted impacts on the existing air and noise quality, respectively, with the appropriate management measures described.

2.14 Commissioning activities

It is not expected that the commissioning process would involve activities significantly different to either the construction or operational phases of the railway. Commissioning tasks will involve testing of the track and signalling systems to ensure safe working and reliability. It is understood that commissioning will be staged to allow new infrastructure to be brought online as soon as it becomes available.

2.15 Operational activities

QR will undertake the following activities in the upgraded Jilalan Rail Yard.

- Maintenance of wagons and locomotives.
- Provisioning including sanding and decanting of locomotives.
- Rollingstock examinations including attaching and detaching of wagons and locomotives.
- Fuelling of diesel shunt locomotives with provision to diesel main line locomotives in future.
- Washing of wagons and vehicles.
- Fuelling of road and maintenance vehicles.
- Lighting of yard (upgraded yard lighting to be provided).

Additional or upgraded pollution control facilities will be provided to support these upgraded facilities.

2.16 Decommissioning

Decommissioning of the rail infrastructure is unlikely to occur in the foreseeable future, as the minimum design life for the facility is 50 years. However, decommissioning from construction phases will involve demobilisation from laydown areas and areas dedicated to the construction offices and workshop areas. Demountable sheds and offices will be removed and if in good order used for other projects.

All areas will be thoroughly cleaned of debris and other containments to a standard suitable for the purpose of the future facility. If landscaping of these areas is proposed these will be planted out and established with the appropriate vegetation.

Options that would be considered at decommissioning of the entire facility include:

- Handling of an alternative product through the facility. This would require retrofitting/modification of the entire facility to suit the alternative product.
- Dismantle and change land use. The plant is to be designed to achieve minimal contamination of the site during operations and decommissioning will therefore involve removal of materials that could lead to contamination when the plant is no longer in operation. Rehabilitation of the site will be consistent with the proposed change in land use.