Appendix 3


GAS
WATER
POTENTIAL FUTURE SERVICES
PROJECT IRON BOOMERANG CONTINENTAL RAIL CORRIDOR
OPTIC FIBRE
COMMUNICATIONS
PROJECT
IRON BOOMERANG
east west line parks limited

Corridor to Coast

Galilee Network

Our Focus is the Environment: Our Goal is a Single Corridor

Items for Discussion
with

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1.0 Corridor to Coast

As landholders we are charged with the responsibility of managing our country in a sustainable way. There is an expectation that the government will do the same with the State. Concerned about the long term future of the State beyond current industry and political trends and preferences we have formed Corridor to Coast (C2C), representing over 100 rural holdings. We are currently focussed on the development of the Galilee/Bowen Basin and the possible impacts with particular emphasis on potential threats to the environment and prime agricultural land; consequently to our businesses and the future health & prosperity of Queensland.

Corridor to Coast's immediate concerns relate specifically to the amalgamation of five proposed rail infrastructure corridors into a single multi user facility. Engineering plans need to be built on strong and accurate physical data relating to the direct impacts on the surrounding environment. Particularly the impacts hydrology will have given the extremely flat nature of the landscape in many sections of the current corridor proposals. Slight variations in data will have a profound effect across a large area.

We urge the government to "develop a whole farm plan" - a Strategic Assessment that minimises dissection and degradation of the landscape. This assessment needs to look at the entire coal basin and coordinate development on all fronts, which might include alternative routes that proponents (Hancock Prospecting, Waratah Coal, East West Line Parks, BHP and the Adani Group) have not yet considered. This infrastructure should have the ability to service other existing industries like grain, cotton, cattle and small crops as well as any future rural enterprises – to build the state, and create a win/win for all entities. This report will highlight the issues raised by growers and offer some long term suggestions to how the State Government can cultivate Queensland's future. Services and synergies of C2C are available to assist wherever we can.

Corridor to Coast sees this development as a great opportunity to create an infrastructural project that proves to the world that Agriculture, Mining and the Environment can work together to enhance productivity mindful of preserving the ultimate natural resource, our landscape.

Illustration 1: Wheat crops in the Kilcummin area that will be impacted by rail design

2.0 Background Information

- Waratah, Hancock and Adani have all used the same Quantum modelling program to identify their final alignment. These alignments may not necessarily be in the best interests of the State
- Each alignment has been chosen according to individual proponent parameters. These do not include hydrology/farming and grazing impacts, therefore are not considering all possible implications on the surrounding environment.
- At least three of the proponents plan to use three different axle load limits for track construction.
- Consider the impact on surrounding businesses and mitigate this by aligning the corridor within existing mining leases for as far as possible before impacting on the greater business sector (as with Adani's proposal).
- Look to address all community concerns when considering the final alignment. eg. If considering East West Line Parks project, look to move rail corridor outside of Collinsville with a view to moving other rail infrastructure to share this alignment in the future.
- 'Fast tracking' would help to give all stakeholders some certainty for the future, but should NOT be done at the expense of proper and thorough environmental investigations.
- A greater investment in the proper construction of the line will ultimately create a long term cost saving.

3.0 Maps of Current Infrastructure Proposals Supporting the Galilee Basin

Please note following map (or attached map in electronic version). Current data on the BHP rail proposal was not available for inclusion in this document at the time it was produced.

4.0 Hydrology

Rail lines crossing the Belyando River Catchment Area will face varying degrees of hydrological difficulties. This information has been transmitted by several landowners to representatives of both Hancock and Waratah Coal.

4.1 Background

It would appear that the Hancock corridor has proceeded to design phase along a proposed (IFS declared) alignment whose primary route determination was derived from altitude and with regard to degree of slope, which overlooks the obvious; the flattest area is of course straight across the floodplain and wetland area.

The watercourse in question at times has flows exceeding 15km in width. The watershed of the Belyando/Suttor system represents 57% of the catchment area for the Burdekin Dam and contributes 30% (or 2 309 480 Ml/annum) of the stream inflows (Burdekin Water Planning Advisory Committee, 1999). The soil structure is extremely fragile when disturbed, with high concentrates of sodium. The value of native and improved pastures to the beef cattle and grazing industry (which is immense) relies on both the presence of flood-out zones and its (the flood water's) speedy departure.

The above is information that should guide the placement of a single corridor. However only after the alignment was finalised (and initial designs were generated), and at the urging of affected landholders did Hancock agree to an independent review of the rail design. Unfortunately this was not extended to the alignment of the corridor.

4.2 Independent Review Findings

The independent review found that:

- The ability to allow natural flows to continue to occur across the flood plain during small and large events is going to be a challenge.
- The lack of knowledge of the flow characteristics across the flood plain needs to be addressed.
- A better understanding of catchments upstream of the Rail line to determine flows and velocities is needed.
- A more detailed assessment of the use of pipes, culverts and bridges on the flood plain to understand the velocity and flow direction impacts downstream and upstream.
- The rail design must take into consideration any disturbance on the flood plain including road and excavations.

4.3 Independent Review Recommendations

- The interim Hydrology report then went on to recommend that Hancock:
- Attain a better understanding of the sub catchments
- Widen the Lidar survey across the flood plain to better understand its flow paths and points of concern.
- More detailed modelling of the stream flows and volume is needed.
- The new modelling is to reflect the information gained from the landholders.
- An improved rail design that better reflects the current flood plain flow paths and

volumes to ensure longevity of the rail line and grazing systems.

- Road design along the rail line as well as land disturbance across the flood plain needs to be evaluated for possible impacts.
- Assessment of the soils across the flood plain.
- More detailed mapping of property infrastructure, including houses, so that it can be accessed for possible impacts.
- The above information has been presented to highlight the rushed, unco-ordinated approach that has been taken with respect to one of the three corridors. Computer generation and satellite imagery only provides certain aspects of the real hydrological situation on the ground. As identified in the independent hydrological report landholders information needs to be utilised to formulate a best case, single corridor scenario.

Photographs in Appendix A highlight the flood out capacity of some of the major watercourses impacted by the proponents proposals.

5.0 Potential Future Development Options

5.1 Farming

- The Belyando/Mistake Creek floodplain area has large areas of alluvial soil types capable of supporting irrigation development as classified on the Queensland Soil Maps and identified in 1999 by an Engineering Services study into the water infrastructure options and related issues in the Burdekin River Catchment. Such developments already exist in the area and support grain yields of up to 6-10t/ha. Given that the study identified over 500 000 hectares of arable land in the Belyando/Suttor sub catchment the potential for future development needs to be considered. This may include the development of a new grain depot if the rail corridor is positioned taking grain freight into consideration.
- THIS HIGHLIGHTS THE CRITICAL IMPORTANCE OF DETAILED, ACCURATE HYDROLOGY DATA. Failure to properly construct a rail corridor and mitigate flooding impacts will negate the development potential of this area before it even has the opportunity to begin. Given current world food concerns it would seem prudent to keep the options open for long term potential cropping areas.
- A critical shortage of rail freight for the existing Mt McLaren grain depot could be eased. The number of trucks required to transport grain to port would be greatly reduced taking pressure off local and state controlled roads that are clearly struggling to cope.

5.2 Grazing

- Central Queensland produces approximately 35% of Queensland's beef supply with an annual turn-off in the Northern and Central regions estimated at over 1.4 million head. Rail freight has the capacity to de-centralise the processing industry from the south by servicing existing meatworks facilities, potentially opening up opportunities for new processing facilities and the development of a live export facility at Abbot Point in the future. Local industry representatives estimate the Clermont/Alpha/Jericho/ Emerald/Capella areas contribute up to 350,000 head per annum. Transporting these cattle by train would take approximately 5000 B-Double trucks off the roads each year.

5.3 Fuel and Freight

- Upgrades to the existing Gregory Development Road would allow for the movement of goods / fuel from the north taking pressure off the already congested eastern (Peak Downs Hwy) and southern (Capricorn Hwy) routes.
- Fuel can be transported in triple road trains ex Townsville via the bypass that skirts the city as opposed to the B-Doubles used ex Mackay that run through the centre of the accommodation area reducing both transport costs and risk to public safety.
- Develop a connection highway between the Gregory Development Road and Capricorn Highway, potentially beside the rail corridor, to facilitate this freight movement from the north.
- Utilise the rail facility to transport mine supplies, including wide and/or over height loads to remove the stress on both the road infrastructure AND travellers trying to navigate the road network.

5.4 Tourism and Decentralisation

- An improved road network would service and encourage greater tourism trade.
- Better road access to larger centres would make living in the areas where the work is more attractive to the large workforce required to service this expansion.
- Better road access adds to the win/win for the locals being affected by the development and general operation of the Galilee Basin.
- Consider the possibility of a rail passenger line to transport workers from the coast to the mining developments or along the East West Line Parks proposal as a tourism opportunity?

6.0 Summary of Corridor to Coast Concerns

6.1 Fire Risk

It is well known and widely accepted that trains start many fires. No matter what precautions railway operators take, overheated brakes, failing wheel bearings or just discharge from the locomotives' exhausts start many fires. In 2010 one landholder in the Lillyvale mining area near Emerald was called out to four fires along the coal line on his property in just one week. This frequency has profound potential for environmental damage when extrapolated along the length of the line

The coal dust contamination of the surrounding areas along the lines makes grass unpalatable to livestock and naturally adds a huge amount of fuel to these fires. The cost of building suitable firebreaks and their ongoing maintenance is significant to each landholder. The potential damage to the ecology of the region both on private land and on the many National parks in the area is enormous.

We do recognise that the mining companies need to transport their coal from the Galilee Basin to the eastern seaboard. However by allowing more than one corridor from the one mining area to the same port is just magnifying damage to our fragile ecosystem and unnecessarily increasing the imposition on landholders.

6.2 Subdivision of Leases

As all property boundaries are not symmetrical, and proposed rail corridors are not designed to follow those boundaries, it is inevitable that various sized portions of land will be left isolated from the main portion of some individual properties. Whilst that circumstance may be manageable for some properties and in some situations, there will be many cases where this will be impractical and unmanageable, and in some cases the financial capacity of that property will be compromised and may become unviable. A solution to this problem must be found before any new rail corridor is enacted. There must be an opportunity for re-alignment of boundaries, or a subdivision of land.

We are advised that this matter can be achieved on freehold lands, through Regional Government bylaws, but this needs clarifying for all parties concerned.

We are also advised that subdivision of leasehold land is not possible under present government regulation. If this is the case regulation needs amendment to reduce the impact on land holders, by allowing the restructuring of untenable parcels of land. If this is not the case, clear and concise details of how this restructure may be achieved needs to become available.

If land leases are not able to be modified, the excision of land for rail lines is in direct conflict with the new Delbessie Agreement conditions and the recently enforced Environmental Reef Management Protection Scheme (ERMPs).

6.3 Native Title

Leasehold lands across Queensland are all subject to Native Title restrictions.

Leases are considered by law as one parcel of land. If landholders wish to improve title on any portion of that land, native title must be extinguished over the whole of that lease.

If railway corridors are to be taken through that same lease, native title must be extinguished; therefore it is logical that native title must be extinguished for the whole of that lease before any lands can be removed from that lease.

6.4 Level Crossings

Initial crossing designs from proponents indicate that level ('at grade') crossings with lights and possibly boom gates are the preferred option. C2C dismisses this form of crossing as unsafe and unmanageable in the long term. This will be critical within the next ten years when current mining exploration in the Galilee Basin reaches full capacity.

Property management requires workers to frequently cross the line on horseback, motorbikes, tractors, trucks, heavy machinery and on foot. Livestock will also need to be crossed at different times. Larger operations will have to cross upwards of one to two thousand head of cattle at a time. The frequency of trains on a duplicated line in a single corridor will make it difficult and incredibly dangerous to attempt these crossings 'at grade'. Over or under passes should be the standard for every crossing to mitigate all risks associated with people, animals and trains working at the same level.

6.4.1 Train Frequencies

The following figures have been provided by the Department of Infrastructure and Planning's website and by some of the companies themselves. These figures are for full production within the next ten to fifteen years.

Alpha Coal	30 million tons per annum
Kevin's Corner	30 million tons per annum

Carmichael Coal	60 million tons per annum
Galilee Coal	40 million tons per annum
South Galilee Coal	20 million tons per annum

BHP is also proposing a rail line for its northern Bowen Basin coal mines to Abbott Point. Their full production figures have been estimated at 20 million tons per annum. This product could also be transported on a Galilee Abbott Point Rail Line.
A total delivery figure for a Galilee Abbott Point Rail Line will be in excess of 200 million tons per annum and does not include future exploration.
Hancock Coal proposes to transport 25,000 tons per train moving 100 kilometres per hour on a standard gauge line.
To move 200 million tons of coal per annum would require 8000 loaded train movements a year or 16,000 including returns. This equates to 44 train movements per day or one train every 33 minutes 24 hours a day for every day of the year. Operating a rural business with these sorts of movements would be near impossible without overpasses or underpasses for access across the line.

6.5 Dust/Noise/Vibration Impacts

6.5.1 Dust

This information has been collated from a number of sources. C2C are aware that some proponents are indicating that the carriages they intend to use are designed differently to QR carriages, however there is only modelling data available at this point. This needs to be verified with physical data. As this will not be available until the carriages are operating stakeholders can only calculate damages on the limited data on record. Proper monitoring sites need to be established along the final route to gauge emissions accurately.

- Coal dust causes fires
- A report suggests that ballast must be reclaimed to reduce impact on the environment (As has been a case where the coal lays 100mm thick along railway lines in central Queensland) (Environmental Protection Agency)
- Dust contaminated grass is unattractive to cattle therefore reducing their food intake contributing to lower weight gains
- Contaminated water run-off accumulates in water holes and stock dams (It has been quoted that the gullies run black after the first couple of storms in the Nebo area)
- Coal dust contains heavy minerals, which may result in contamination of beef destined for export. This is unacceptable in the beef industry and can lead to cattle being condemned.
- Spillage increases with the speed of the trains
- Air temperature also increases spillage
- Coal dust escaping from loaded wagons can foul the Ballast along the railway lines and can lead to significant track structure damage.
- Wheel action is a main cause of high dust levels
- Wagon induced turbulence
- Pollution from coal effects all major body organ systems and contributes to four of the five leading courses of mortality in US.
- The health burden of coal in Australia is estimated conservatively at 2.6 Billion a

year (Doctor for the Environment Australia)

Unhealthy for Humans; Unhealthy for Livestock and wildlife

6.5.2 Coal Escaping into the Environment

Wagon Surface 80%
Parasitic Load 4 %
Door leakage 6 %
Spill Coal Corridor 9 %
Residual coal in unloaded wagons 1 %
(Qld Rail, 2008)

6.5.3 Dust/Vibration Impacts

- Grandin and Deeson note the 'place specific fear memories' of livestock (and wildlife given that are all sensory) where an animal will fear returning to an area where a 'frightening experience first occurred' (eg loud noise or rapid train movement). This causes stress to livestock (low weight gains) and coupled with dust contamination makes land adjacent to railway lines less productive. (Grandin and Deeson, 2008)
- Management practices will have to change to accommodate the above effects. eg. running breeders where bullocks should be fattened causing inefficiency and inappropriate use of land; fencing 'long paddocks' alongside rail corridor to force grazing would result in a reduction in grass, but weight gains would also be greatly reduced.
- Vibration can cause dam walls and ring tanks to burst.
- As the corridors run North East and the prevailing winds are South Easterly the worst possible impact from dust and noise will occur; in places huge environmental damage will occur from corridor to corridor.
- Diesel emissions from combustion locomotives is a notable environmental contaminant (Katestone Environmental Pty Ltd, 2009).

6.6 Impacts on Landholders Surrounding the Corridor

Current legislation does not bind proponents to enter into discussions with property owners who neighbour the rail corridor, but do not have land resumed beyond an agreement regarding the boundary fence (and some proponents feel that this is not necessary either). The environmental, hydrological and financial effects on these properties will be equal to those on the other side of the fence. Amendments need to be made to legislation to ensure the right to run a productive and profitable business is protected for landholders in any way by the corridor. Hydrological impacts to the environment further up and down stream of the corridor should also be included in these amendments.

6.7 Quarrying Rights

It is apparent that some alignments have been designed with access to gravel for construction along the proposed corridor as a design parameter. Clarification is needed for growers who have deposits on their leases as to their rights and actions that can be taken to properly quarry gravel resources whilst minimising environmental damage and protecting the integrity of overland flows etc.

6.8 Dewatering of Aquifers / Aquifer Cross Contamination

6.8.1 Dewatering of Aquifers

Construction information for the Hancock line indicate that up to 22.22 megalitres of water will be required per kilometre during the building phase. It is assumed other proponents will have similar requirements. Hancock have indicated that this water will be drawn from existing and newly created water sources including bores. Some areas of the catchment rely solely on underground water sources and the huge draw on these has the potential to permanently damage and dewater these aquifers. Alluvial aquifers close to the surface are likely to be recharged via direct infiltration of precipitation and from hydraulic connection with surface water bodies in good seasons. However aquifers below 60 metres have entire clay formations above them and are not likely to be recharged as simply. As there is no or very limited hydraulic conductivity data for some areas of the proposed alignments access to these aquifers needs to be carefully considered and monitored.

6.8.2 Aquifer Cross Contamination

The majority of deeper aquifers, particularly in the Suttor/Eaglefield catchment have high levels of salt. Care must be taken during any bore construction that contamination of fresh water aquifers by saltly aquifers does not occur.

6.9 Long Term Maintenance

As part of the Infrastructural Facility of Significance conditions, proponents must gift the rail corridor to the State upon its completion. Who then is responsible for the ongoing maintenance of the corridor and any other issues that arise as rail traffic increases?

6.10 Redundancy Management

To date there has been no redundancy plan made clear in any of the proponents submissions to the Co-ordinator General. This needs to be addressed prior to the construction of the corridor. C2C are requesting some clarification as to who will be responsible for the maintenance and decommission of the final corridor in the long term. Stakeholders along the Greenvale line are experiencing serious environmental damage where the line infrastructure has been removed but the ballast remains. Unmaintained culverts and the gradual erosion of the ballast is having a major effect in the area and is a concerning safety issue.

7.0 Sunwater Pipeline

- The long term effect of Phase 2 of the Sunwater Connors River Dam pipeline will not be as invasive as a rail corridor, providing it is correctly placed in its alignment.
- Given the water requirements indicated for the rail construction phase and the limited availability of water along the corridor, it seems it would make sense to run the pipeline along the same easement as the rail corridor for as much of the distance as possible.

8.0 Conclusion

- Landholders are NOT adverse to the construction of infrastructure to support the development of the Galilee Basin.
- Legislation does exist to compel mining entities to use a single corridor (Mass Transferred Infrastructure Project).
- We are looking to State Government to facilitate the amalgamation of the five separate corridors, Sunwater pipeline, roads, any other infrastructure that needs to be constructed to support the growth of the minerals industry and future gas field development. This needs to be done taking ALL factors into consideration including hydrology, the environment, effects on pre-existing businesses, placement of existing rail infrastructure (QR lines), long term utilisation requirements for new and existing proponents and the potential for development of other industries.
- A single corridor will minimise the catastrophic impact on the environment, waste less food producing land, reduce the risk of fire, reduce the effect on hydrology (including landholder maintenance times for flood fencing), reduce the incidence of stock losses, increase the financial bucket for construction allowing for mitigation measures such as over/under passes to be constructed on all properties and public roads and reduce the number of businesses negatively affected by the corridor's construction.
- This infrastructure, of benefit to Queensland into the future and beyond the life of coal developments, is a rare opportunity for this Government, and should not be dictated by a single element. We are all shareholders in the great state of Queensland and look to you for strong and visionary leadership on this issue to ensure our long term investment and passion for regional Australia is rewarded.

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Appendix A: Aerial Photographs of River/Creek Systems within the Belyando Catchment

Illustration 2: Belyando River at Islay Plains in January 2008

Ilustration 3: Belyando River Floodplain at Bygana 2008.

Illustration 4: Eaglefield Creek in Pasha. The Hancock Line proposes to cross this creek within this area.

Illustration 5: Woolshed at Wentworth 2008. Creek runs at right angles to the road (road appears to be a watercourse in the image).

Illustration 6: Cattle some distance from the crossing attempting to wade Diamond Creek. This water feeds in to Logan Ck / Belyando System and remained at these levels for 5 weeks in 2011.

Illustration 7: Diamond Ck at Marracoonda yards, 2008. Water joins Logan Ck in Avon in the background.