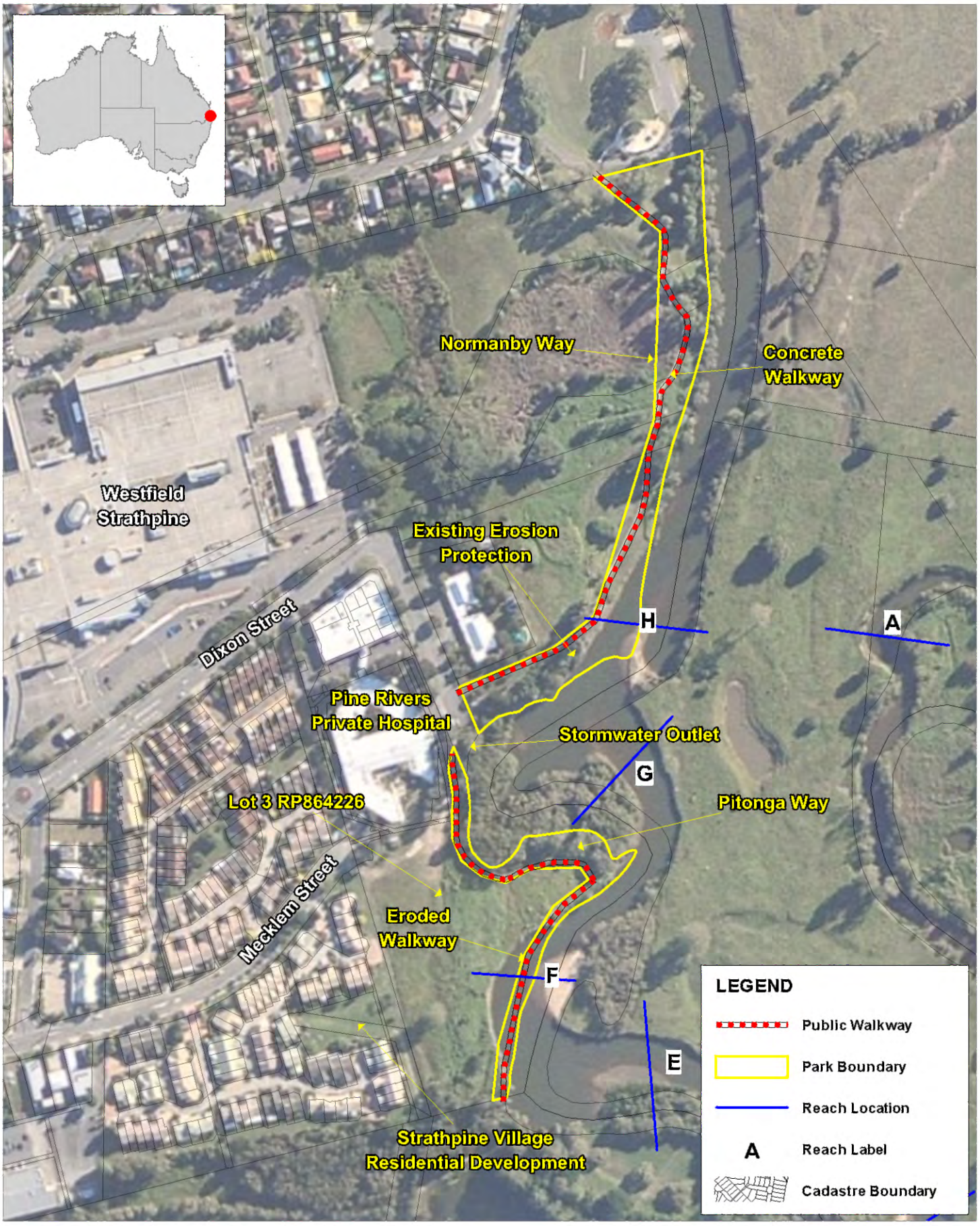
4 Pitonga and Normanby Way

4.1 Background

This reach of the South Pine River extends from the river frontage at the Strathpine Village development on Mecklem Street and runs past Pine Rivers Private Hospital along another linear park linkage known as Normanby Way (see Figure 4-1).

A linear park known as Pitonga Way used to provide a linkage along the river front between Pine Rivers Park and the hospital. However, this park linkage has been cut by bank erosion (on outside bend of Reach 'F'), and access to the river frontage is now only possible via the adjacent privately owned lot. The Strathpine Village residential development is 60m to 70m from the river bank and set a few metres higher than the river at a level of about 6mAHD. The Pitonga Way park linkage is largely destroyed with little remaining Council assets along the river.

The Normanby Way linear park commences at the hospital, and is complemented by a concrete pathway. The pathway leads from the hospital toward the river and then follows the river to Bob Bell Park. The pathway and park meet the river bank at a bend in the river that is susceptible to scour (outside bend of at Reach 'H'). The remainder of the park towards Bob Bell Park follows a gently curving river profile with little existing erosion risk.



Title:

Pitonga and Normanby Way Layout

Figure: 4-1

Rev: A

N

0 100 200m

Approx.Scale

BMT WBM

www.bmtwbm.com.au

Filepath : I:\B20079_I_CDH_SPR_SEMP\DRG\R.B20079.002.04.Stage_2\FLD_001_Study_Extent.WOR

4.2 Site Issues

The following site issues are noted:

- Extensive erosion on Reach 'F' has washed away a large section of Pitonga Way (see Figure 4-2). The erosion extends through the Pitonga Way lot and into the adjacent privately owned lot (Lot 3 RP864226). Without protection, erosion of the adjacent lot will continue in a westerly direction towards the Strathpine Village residential development.

Figure 4-2 Pitonga Way Erosion

- Erosion at Reach 'H' has occurred on the bank near the Normanby Way pathway. Council has mitigated this erosion by installation of a rock filled gabion basket retaining wall (see Figure 4-3). The implementation of this erosion protection structure is supported in this SPRSEMP due to:
  - The close proximity of the river bank to the concrete pathway asset;
  - The steep unstable bank slope; and
  - Continued erosion threat to the bank.

Figure 4-3 Erosion Protection on Normanby Way

4.3 Options Considered

4.3.1 Option A – Do Nothing

If nothing is done to manage bank erosion in Pitonga and Normanby Way area, the lot area for Lot 3 RP864226 will continue to recede as Reach 'F' migrates in a westerly direction. In time, this may threaten the Strathpine Village residential development. Council's assets in this area have been destroyed and the parkway eroded away. If Council wishes to re-establish a pedestrian linkage between Pine Rivers Park and Normanby Way an alternate alignment will be required and appropriate erosion management will be required to protect any new asset constructed.

If nothing is done to manage bank erosion on Normanby Way the existing erosion protection may fail or additional erosion may occur without notice – putting the pathway at risk of being damaged.

4.3.2 Option B – Monitor, Maintain and Defer

This option is essentially the default option under this SEMP – see Section 2. It builds on Option A, whereby no protection works to the river banks is implemented at this stage. However, the river migration is monitored and given a set tolerance for movement. When the river migrates beyond this tolerance, another management option is triggered. The migration tolerance is set considering:

- Location of key assets that are to be protected.

- Buffer zone in front of key assets to ensure their long term integrity, considering:
  - Implementation time of 'triggered' management option;
  - Bank erosion rate and stability; and
  - Any limitations in the effectiveness of the triggered management option.

This option requires a monitoring programme to be put in place along with an action plan for when the tolerance line is breached. The river bank migration should be monitored on a regular basis (say before and after every wet season) and subsequent to a large infrequent flood event.

This option includes maintenance of the existing erosion protection on Normanby Way, whereby the monitoring programme would include a condition survey of erosion protection assets. Maintenance of the erosion protection would be triggered by the outcome of the condition survey.

4.3.3 Option C – Soft Engineering

As can be seen in Figure 4-2, there are sections of channel bank where erosion has led to steep, unstable channel banks. In some areas, erosion has led to undermining and slumping failure of the bank (Reach 'F'). This presents an opportunity to rehabilitate the channel banks, by profiling the banks to a stable slope. The exposed re-profiled banks would be covered in a 'soft' erosion protection system. This may be in the form of a geotextile consisting of a woven mat, roll or bag of natural fibre or synthetic material. Additional protection of the toe of the embankment may be required; e.g. using coir rolls or a 'harder' protection such as rock roll if required. It is envisaged that this will provide erosion protection in the short to medium term. The erosion protection would be augmented by vegetation; the re-profiled banks should be seeded/planted with appropriate tidal and non-tidal riparian vegetation to promote vegetation colonisation. This will provide natural, long term erosion protection to the channel bank.

4.3.4 Option D – Hard Engineering

Hard engineering options will effectively halt the migration of Reach 'F' through the use of hard erosion protection materials such as rock and concrete. The following hard engineering options are applicable to the site:

- Re-profiling the bank and lining with rock. This approach has been used successfully further downstream along Learmonth Street to protect residential property (see Figure 5-2);
- Re-profiling the bank and lining with rock filled gabion mattress;
- Re-profiling the bank and lining with interlocking concrete blocks; and
- Installing rock filled gabion basket retaining structure. This approach has been employed in a pocket of bank scour at Normanby Way (see Figure 4-3).

4.4 Discussion

A discussion on the advantages and disadvantages of the four options considered above is listed in Table 4-1. Recommendations, which are based on this discussion, are presented in the following section.

Table 4-1 Pitonga and Normanby Way Discussion of Options

Option	Advantage	Disadvantage	Compliance Matters
Option A – Do Nothing	Low initial capital investment.	River may encroach toward development, eventually causing damage to development. Existing erosion protection may become dilapidated and ineffective without maintenance. Permanent loss of river front linkage between Pine Rivers Park and Normanby Way	No immediate approval requirements
Option B – Monitor, Maintain and Defer	Low initial capital investment. Allows natural morphological processes to occur within reasonable limits. Adaptive response avoids implementing redundant works (i.e. if migration trajectory or rates change).	Requires ongoing monitoring. Relies on there being a system in place to instigate an appropriate action at a future point in time. May be loss/damage to undeveloped property in the interim. A deferred response is not appropriate in areas where further action has already been triggered, such as along Pitonga Way.	No immediate approval requirements Existing legislative structures for owners with right-line boundaries to protect properties
Option C – Soft Engineering	Low whole life costs and lower long-term maintenance costs compared to hard engineered system. Environmental benefits of enhanced wildlife habitat, water quality improvement and aesthetics. Reduces flow velocities by dissipating energy and encourage sediment to accumulate on channel margins.	Can take some time for vegetation growth to fully establish. Can be washed away when subjected to high flow velocities. Higher day to day maintenance burden than 'hard' engineering option. Shorter design life than 'hard' engineering option. Still an emerging approach for which the limitations of different techniques are not always evident – may require some trial and error approaches to settle on an effective solution.	Potential requirement for development approval from State and/or local government Existing legislative structures for owners with right-line boundaries to protect properties
Option D – Hard Engineering	Robust and reliable approach to hold the bank alignment – limitations are well understood. Longer design life than 'soft' engineering options.	Alters the natural flow and morphological regime. High initial capital investment and maintenance cost (i.e. replacement at end of life).	Requirement for development approval from State and/or local government Existing legislative structures for owners

Pitonga and Normanby Way

Option	Advantage	Disadvantage	Compliance Matters
	Lower day to day maintenance burden than 'soft' engineering option.	Poor aesthetics – difficult to integrate into the natural environment. Reduces potential habitat for fauna and flora.	with right-line boundaries to protect properties

4.5 Recommended Strategy

Recommendations for the Pine Rivers Park area are summarised in Table 4-2.

Table 4-2 Pitonga and Normanby Way Recommendations

Option	Adopt	Reason
Option A – Do Nothing	×	Erosion will continue to extend in a westerly direction. This would limit the ability to protect any new linkage proposed between Pine Rivers Park and Normanby Way.
Option B – Monitor, Defer and Maintain	✓	Maintain existing erosion protection on Normanby Way, and monitor erosion along Normanby Way.
Option C – Soft Engineering	✓	From perspective of private property beyond Pitonga Way, the river bank is within the 'Soft Erosion Protection Zone'.
Option D – Hard Engineering	×	There is no immediate threat to unprotected assets. This option may become suitable if triggered by approved future development, such as a new public pathway along the river front to reinstate Pitonga Way.

4.5.1 Pitonga Way

Council's assets along Pitonga Way have been destroyed, and Council's land eroded away. As such, little remains to be protected. However, a footpath linking Pine Rivers Park and Normanby Way would be a valuable public amenity, and the river bank erosion management of a future reinstated linkage would need to be considered. If Council were to acquire land in this area to re-establish Pitonga Way, the overarching management strategy would support installation of an erosion protection system to protect the asset from bank erosion – see Section 2.

It is noted that a portion of the river bank in this location falls within the Soft Erosion Protection Zone shown in Figure 2-1-3. As such, this SEMP supports the implementation of soft engineering erosion protection on private land to protect the Strathpine Village residential development. It is noted that the private lot in front of the Strathpine Village development is a separate lot, thus consent would be required from the landowner.

Existing legal structures do not require Council to take action in defending this site. Measures under the *CPMA*, *SPA* and *Land Act 1994* provide landowners with right-line boundaries with a right to defend their own private property.

4.5.2 Normanby Way

The only noticeable erosion threat along Normanby Way has already been mitigated through implementation of a rock filled gabion basket retaining wall structure. This structure is considered suitable.

Portions of Normanby Way fall within the Soft Erosion Protection Zone in Figure 2-1-3. As such, this SEMP supports the implementation of further erosion protection works. However, the low erosion rates appear to offer little immediate threat to the path. Therefore, 'Option B – Monitor, Maintain and Defer' is considered suitable for this reach under current conditions. Should noticeable erosion occur, Council should consider installation of an engineered erosion protection system.

As with the measure nominated for Pitonga Way, taking no action raises no compliance issues. In the event that erosion control measures are introduced, these can be approved through the IDAS process under *SPA*.

4.6 Implementation and Cost

Implementation of this strategy would be through development of a maintenance plan. This plan would lay out a programme for condition surveys of the channel bank. The formulation and implementation of the plan would be at minimal cost. Additional costs would be borne if significant maintenance to existing erosion protection infrastructure is required or additional erosion protection infrastructure becomes necessary.

Should Council reinstate the Pitonga Way walkway, the erosion protection works could follow a similar approach as recommended for Pine Rivers Park. The river bank length is approximately half that of the Pine Rivers Park works. As such, the Pitonga Way works could be in the order of $150,000 to $600,000. There may also be cost efficiencies in installation of the Pitonga Way works together with the Pine Rivers Park works.

4.7 Approvals

There are no approvals required for this river reach as no development or similar activity is being prescribed on behalf of Council. However, to the extent that soft engineering works require the removal of marine plants, a development permit may be required unless such works are seen as self-assessable under code MP06. Clearing that is not self-assessable and cause the loss of more than 25m^2 of marine plants will require offsetting.

In the event that private landowners wish to undertake soft erosion protective works, these may constitute prescribed tidal works for the purposes of *SPA*. This will trigger the requirement for owners consent to work on land below high water. Prescribed tidal works must be consistent with the Schedule 4A IDAS Code under the *CPMR*.

Note – where landowners have a right-line boundary under the *Land Act 1994*, they have a right to protect and fill their land to the surveyed boundary, subject to the appropriate approvals. In addition, landowners may apply for a development permit to construct defensive structures on land belonging to others where appropriate owners consent and development approval are granted.