



Shire of Northam
Heritage, Commerce and Lifestyle

SHIRE OF NORTHAM

MINUTES

SPECIAL COUNCIL MEETING

HELD

WEDNESDAY

29 JUNE 2016

SHIRE OF NORTHAM
MINUTES
SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

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**Minutes of the Special Meeting of Council held in the Council Chambers on
WEDNESDAY, 29 June 2016 at 5:30 pm.**

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1. OPENING AND WELCOME

The Shire President, Cr S B Pollard declared the meeting open at 5.33pm.

2. DECLARATION OF INTEREST

Item Name	Item No.	Name	Type of Interest	Nature of Interest
2016/17 Road Program 2016/17 Draft Budget – Roads Program	12.1	Cr S B Pollard	Impartiality	His daughter and son-in-law and family live on Dr Dunlop Grove, a road being considered for inclusion in the draft budget.

3. ATTENDANCE

COUNCIL

Councillors

S B Pollard
T M Little
D G Beresford
J E Williams
J Proud
R W Tinetti
C L Davidson
U Rumjantsev
C R Antonio
D A Hughes

Chief Executive Officer
Executive Manager Engineering Services
Executive Manager Development Services
Executive Manager Community Services
Executive Manager Corporate Services
Executive Assistant – CEO
Manager Recreation Services

J B Whiteaker
C D Kleynhans
C B Hunt
R Rayson
C Young
A C Maxwell
M Brooks

GALLERY

Three (3) members of the public
Timothy Williams – Avon Valley Advocate

4. APOLOGIES

Nil.

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5. LEAVE OF ABSENCE PREVIOUSLY APPROVED

Cr D A Hughes has been granted leave of absence from Friday, 1 July 2016 to Sunday, 31 July 2016 inclusive.

6. APPLICATIONS FOR LEAVE OF ABSENCE

Nil.

7. RESPONSE TO PREVIOUS PUBLIC QUESTIONS TAKEN ON NOTICE

Nil.

8. PUBLIC QUESTION TIME

Annette Poulton – Bakers Hill

Question: What is the current status of the proposed works for Yates Street, including Newman Road and Keane Street, Bakers Hill?

Response: Main Roads have confirmed that there is a financial allocation for works in the 2016/17 financial year. Staff are currently assessing Main Roads designs and trying to establish whether there is a potential cost saving for Council if the Shire completes their road works in partnership with Main Roads.

The Chief Executive Officer advised that works are unlikely to commence until 2017.

Question: What end of the street will the street numbers begin?

Response: The Chief Executive Officer advised that this has not yet been determined. This is likely to be confirmed in the next 6 months.

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9. PUBLIC STATEMENT TIME

Trevor Stephen – Northam Swimming Club

Basis of Statement: Mr Stephen advised that he would like to see Council retain the existing site with a 50m pool as the chosen location.. He outlined that swimming has many benefits and is a good way to assist in keeping the community active and healthy.

Response: The Shire President thanked Mr Stephen for providing his statement and asked what the current ‘trend’ is in terms of 25m verse 50m pools for competition purposes. Mr Stephen advised that in many cases Councils are steering away from 25m pools and developing 50m pools as an alternative using Mandurah as an example.

10. PETITIONS/DEPUTATIONS/PRESENTATIONS

Nil.

The Shire President advised that the order of business would be adjusted as follows;

- 12.2 - Swimming Pool Revitalisation
- 12.1 - 2016/17 Road Program 2016/17 Draft Budget – Roads Program

One (1) member of the Gallery departed the Council Chambers at 5.42pm.

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12. SPECIAL ITEMS

12.2 SWIMMING POOL REVITALISATION

Name of Applicant:	Shire of Northam
Name of Owner:	Shire of Northam
File Ref:	1.3.8.4
Officer:	Ross Rayson
Officer Interest:	N/A
Policy:	N/A
Voting:	Simple Majority

PURPOSE

For Council to consider options for the future development of Northam Swimming Pool, and to provide endorsement on the recommended option.

BACKGROUND

The Northam Swimming Pool has recently had a condition assessment (Ninnes 2015) undertaken to ascertain its immediate and long term future. The result of this assessment showed that the pool was at the end of its useful life, and consideration should be given to a redevelopment of the existing pool or a development of a new pool within Northam. The Northam pool has been the subject of debate for the last decade as its condition began to noticeably deteriorate, and its future location was discussed as part of the recommendations from the 2009 Recreation Facilities Development Plan, compiled by CCS Strategic.

Since 2009, a review of the Recreation Facilities Development Plan (CCS 2016), Community Perceptions Survey (Catalyse 2014), and Swimming Pool Redevelopment survey (Catalyse 2016) have all received community input about the future design and location of the Swimming Pool. The Swimming pool development survey 2016 presented Council with 3 preferences, although there was no clear preference:

- building an outdoor, heated 8 lane x 50m pool and toddlers' pools at Northam Recreation Centre
- build an indoor, heated 8 lane x 25m pool at Northam Recreation Centre
- A complete redevelopment of the existing site with a new 8 lane x 50m pool to replace the existing pool and new heated toddlers' pool

The Shire of Northam Swimming Pool Development assessment is attached. This report provides a summary of previous discussions, indicative capital cost analysis for each of the options, and an indicative 12 monthly operating budget for each option. As

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requested by Council, some indicative costs for the construction of a hydrotherapy/programme pool have also been included.

STATUTORY REQUIREMENTS

N/A

CONFORMITY WITH THE STRATEGIC COMMUNITY PLAN

OBJECTIVE C3: Provide active and passive recreation services and facilities

STRATEGY C3.1: Develop, maintain and support appropriate recreation facilities throughout the shire.

BUDGET IMPLICATIONS

The Shire of Northam currently has capacity to use a mix of funding for this project. Modelling within the provided report is around utilisation of \$500,000 from reserve with the remaining funds coming from debt and external sources. In saying this the Council contribution could be increased significantly if required.

OFFICER'S COMMENT

It is apparent that the condition of the Northam Pool is poor, with it at the end of, or nearing the end of its economic life. Consequently a decision around its future is viewed as imperative given it is estimated to be a twelve to eighteen month lead time between decision and work commencing on the ground. Further to this, potential funding avenues with Department of Sport and Recreation Community Sport & Recreation Facilities Fund (CSRFF) major grants close in mid-September 2016, for project to be funded in 2017/18. Consequently if this timeframe were missed the project would not be able to commence until 2018/19. Staff have serious concerns that the current pool will require remedial action prior to this to enable it to continue to be operational.

It is clear from the attached reports and previous studies undertaken on the pool that there is a number of options which will have different benefits to the community. Whilst the final decision on the development may depend ultimately on Councils willingness or ability to fund each of the options, officers are of the opinion that the final decision is between either location (existing vs Recreation Centre); and water space and usability (i.e. retaining an existing 50 metre pool vs smaller 25m pool).

In formulating the recommendation to Council it became apparent that there is no 'right' or 'wrong' decision. The final decision, resting with Council, is around the context of what is considered affordable and in the best interest of the Community.

The context for the decision is around Council resolving previously to develop a 25m Pool at the Recreation Centre in 2009, whilst the 'draft' Recreation facilities Plan recommends to develop a 50m Pool at the Recreation Centre, making provision for it to

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be covered into the future. Staff have made their recommendation based on the context as stated previously of affordability and perceived community interest.

Given that Council has resolved previously to build a 25m Pool at the Northam recreation Centre a rescission motion would be required. The relevant form is provided.

Notice is hereby given by the following

	Councillor Name	Signature
1.	Cr John Proud	
2.	Cr Chris Davidson	
3.	Cr Ulo Rumjantsev	
4.	Cr Des Hughes	

To revoke or change the following decision

Meeting / Date	21 July 2009
Agenda Item No	12.2
Agenda Item Name	Recommendation for the Northam Recreation Facilities Development Plan
File Reference	2.1.3.2
Resolution No	C.941

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RECOMMENDATION / COUNCIL DECISION

Minute No: C.2737

Moved: Cr Davidson

Seconded: Cr Hughes

That Council rescind the following items which form part of Council decision C.941 from the Special Council meeting held on 21 July 2009;

- **Hydrotherapy Pool;**
- **Construction of a new 8 lane, 25m outdoor pool with 500m² leisure pool at the Jubilee site as a subsequent stage of development but included within the design of the building;**
- **Pool change-rooms/toilets to be part of the recreation centre to allow for shared use.**

CARRIED 6/4
BY ABSOLUTE MAJORITY

COUNCIL DECISION

Minute No: C.2738

Moved: Cr Little

Seconded: Cr Rumjantsev

That Council suspend Standing Orders 12.2 to allow free and open discussion on agenda item 12.1 – Swimming Pool Revitalisation.

CARRIED 10/0

The Shire President advised that the suspension of standing orders was to ensure that all questions and views of Elected Members are able to be expressed and answered given the importance of the issue being deliberated on.

There were a wide range of discussions around optimal location, potential future financial impacts on the Shire of Northam for a range of the decisions and importance of making the best long term decision on behalf of the Community. The question of affordability was raised in the context of the financial position of the Council. The Chief Executive Officer advised that while the Council has the financial capacity to undertake any of the options, which render it 'affordable' the broader question Council needed to answer was how much was it prepared to 'give up' in the future as a result of the decision. This is given the fact that there will be a potential significant annual financial impact on the Council, as has been detailed in the reports provided. Council also

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needed to consider this decision in the context of other major projects which were planned in coming years.

The Council discussed the two main elements, being the preferred location and the preferred pool size. At this point consideration was given to how price sensitive the decision would be and it was deliberated that a staged approach would be appropriate, which would be around finalising costings and funding.

The Shire President advised that there would be a 10 minutes intermission at 6.32pm.

COUNCIL DECISION

Minute No: C.2739

Moved: Cr Little

Seconded: Cr Proud

That Council resume Standing Orders 12.2.

CARRIED 10/0

RECOMMENDATION

That Council:

- 1. Endorses the redevelopment of the existing site, by building inside the existing pool shell, as the preferred option to replace the current pool, subject to funding and with the intent of undertaking the project on a design and construction tender basis;**
- 2. Request officers to undertake conceptual infrastructure and cost planning for the new facility in order to make application to the Department of Sport & Recreation, CSRFF in 2016; and**
- 3. Request officers to seek alternative funding opportunities to offset the capital cost of the project.**

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MOTION / COUNCIL DECISION

Minute No: C.2740

Moved: Cr Beresford

Seconded: Cr Tinetti

That Council;

- 1. Supports the development of an outdoor Heated 50m Swimming Pool and associated leisure facilities at the Northam Recreation Centre Precinct, subject to:
 - a. Preliminary design including parking to a level of detail which allows for costings to be confirmed by a qualified quantity surveyor and to be signed off by Council prior to any grant application being submitted; and**
 - b. Ability to attract external funding of not less than 25%.****
- 2. Will reconsider its position in the event that items 1(a) and / or (b) are not achieved by March 2017.**

CARRIED 10/0

REASON FOR CHANGE

Council formed the view that whilst the Officers had recommended the most cost effective option, the more strategic decision was as resolved.

One (1) member of the Gallery departed the Council Chambers at 7.07pm.

ATTACHMENT 1

2016

Shire of Northam
Swimming Pool
Development Assessment

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1. INTRODUCTION

This report details the background and decision making which has occurred in relation to the redevelopment of the Northam Swimming Pool, which has been an ongoing issue for the past ten years.

The report highlights that Council has previously made a decision, in 2009, to develop a 25m outdoor swimming pool at the Northam Recreation Centre, making provision for the facility to be enclosed at a later date. However given the timeframe between this decision and the current year, it was considered worthwhile exploring the option once again and seek a Council decision on the matter. It is envisaged that Council will make a decision on its preferred location and pool structure in June 2016 with conceptual designs developed over the ensuing months with the view of making application to the Department of Sport & recreation CSRFF Grant funding round ending September 2016.

In developing the report it is apparent that there is no correct answer or position on the future development or redevelopment to the Northam swimming pool. The final decision, which rests with the Council, will ultimately be down to a combination of financial appetite (how much is Council prepared to contribute to the building and ongoing operations of the facility), and perceived community benefit of each of the competing locations and competing sizes.

2. BACKGROUND

In April 2009 the Shire of Northam engaged CCS Strategic Management (CSS 2009) to prepare a Recreation Facilities Development Plan. This study was to encompass a review of previously developed proposals for the co-location and redevelopment of sporting facilities at Jubilee Oval together with consideration of sport and recreation needs at other localities throughout the Shire.

The CSS 2009 report identified that major facilities requiring attention included the swimming pool, the recreation centre and the hard courts in town used by netball, basketball and tennis. The Jubilee Pavilion servicing the main oval and the two football clubs were also identified as being in poor condition.

A key element of the CSS 2009 study was an assessment of the validity and viability of a proposed recreation facility plan which had been circulated to the community for comment. The plan showed a focus on Jubilee Oval and recommended the relocation of the swimming pool, hockey, cricket and netball facilities to Jubilee and the subsequent closure of the existing pool, Bert Hawke Park and the Clarke Street Netball courts. Key principles underpinning the concept plan were the shared use of spaces such as playing fields, hard courts, clubroom and change room areas to maximise their use.

The response from the community and sporting groups in 2009 to the plan was lukewarm. Concerns were expressed about overcrowding of the Jubilee Oval precinct and the perceived lack of parking, loss of identity and excessive wear on playing fields. The mildly positive support received was conditional upon the relocated swimming pool being indoors, heated and operational year round. Given a comparative cost differential of relocating to a new pool of almost \$2,000,000 (in 2009), and a projected operating deficit of around \$600,000-\$700,000 for an indoor heated pool open all year, this option was not considered sustainable at the time for community the size of Northam.

CSS 2009 (p.11) noted that when being considered, aquatic centres are generally benchmarked at 1 per 50,000 and where sustainability is implicated an indoor heated pool is considered sustainable when population exceeds 110,000. Until population reaches critical mass they are generally provided as a community safety and wellbeing investment by the Shire.

In response to the poor negative community feedback a new approach was investigated in CSS 2009. On the basis that the community would be faced with an outdoor, seasonal, unheated pool; the choice became either retaining the 50m pool or moving to a 25m pool with associated leisure water. The

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community strongly favoured retaining the 50m pool option. It is understood that a new 50m pool at the Recreation Centre was not considered at the time due to advice received from the Department of Sport & Recreation which indicated they would only support a 25m development and NOT a new 50m pool.

Amongst a range of other discussion points the CSS 2009 report noted the following in relation to the pool;

- *On assessment of the issues and discussions it is evident that these have remained relatively constant in regards to the 'current issues and discussion'*
- *There are a number of reports related to the condition and future of the aquatic centre from staff, consultants and contractors. Perhaps the most telling of all statements is from AVP Commercial Pools who indicate:

"The pool appears to be around 50 years old and near the end of its expected life span."*
- *A report by ACS (another specialist pool construction company) reinforced the findings of AVP that there are elements of the pool shell, in particular the gutters, in such poor condition that failure is imminent. Gutter failure would warrant closure of the pool due to flooding of the balance tank.*
- *It is evident not only by the current condition of the pool but also the structure's age that remedial works will be required in the near future if the pool is to be retained.*
- *Concerns have been raised regarding the pool being located on the outskirts of town, the exposure of the pool from winds blowing across the Avon River and the current practice of discharge of the backwash water into the river. These arguments have suggested a replacement facility be constructed at Jubilee Reserve as part of a co-located complex.*
- *Existing users, particularly the swimming club, advocate for the retention of the existing pool on the basis that it is a 50m pool and therefore capable of hosting country pennants and other large Swimming WA sanctioned meets. The swimming club also indicated that allowance was made in the construction of their clubhouse for the installation of solar panels on the roof to assist with raising the pool temperature and extending the swimming season.*
- *The following points are made in response to these arguments;*
 - *The swim club is correct in that only 50m pools can be venues for country pennants and other Swimming WA sanctioned events. Association rules would need to change to vary this. Notwithstanding this requirement, Northam would only host a country pennants meet on a cyclical basis of between 4 and 7 years. Other tournaments are held annually.*
 - *The installation of solar heating panels (and pool blankets for that matter) tends to increase water temperature and swimmer comfort, but this does not usually translate to an extended swimming season. Swimming in an outdoor pool is still viewed primarily as a seasonal activity with winter season activities still occupying most participants' time until the weather changes, save for a very small number of dedicated fitness and club swimmers. It does little to increase participant numbers.*
 - *As a rule of thumb, if repair and refurbishment of an existing facility is going to cost more than 60% of the cost of a new facility, go for the new facility.*

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Indicative costs previously presented to the Shire for a new facility compared to the cost to refurbish the existing pool suggest an almost equivalent cost, noting the reduction in the main pool size from 50m to 25m even though the water surface area is to be maintained by building additional leisure water. Current cost estimates suggest that refurbishment of the existing facility could be achieved at around 55% of the cost of a new facility and is therefore worth considering.

- *The argument that the existing pool is too far out of town is weak at best when Jubilee Reserve is the proposed alternative. Catchment radii are often used to demonstrate proximity of facilities to user populations. A 2km radius from either facility captures almost 90% of the township whilst a 1.5km radius sees each facility exclude roughly equal numbers of residential lots. The interruption of ready access around town by the river is noted, however, most facilities have a primary catchment within 5km, readily engulfing all of Northam and the majority of swimming pool users (most likely more than 90%) access the pool by car.*
- *Whilst the existing pool has no residential catchment on its western side, the Jubilee Reserve has no residential catchment on its north-eastern flank. Jubilee is only 200m closer to the high school than the existing pool. With both locations being more than 1km from the pool it is too far for school classes to walk to the pool. Transport will be needed in either instance making the extra 200m somewhat immaterial.*
- *Current industry practice and the state government's funding philosophy is to support more sustainable and viable facilities. This is leading to the construction of 25m lap pools with leisure water in lieu of 50m lap pools with wading pools.*
- *The chemical, water and filtration costs are reduced in these newer designs. Moreover the real push is for the enclosure and heating of the swimming pools giving 12 month operations. This is not advocated for Northam given its small population base and the likely operating losses. Accordingly, whilst Northam is proposing to offer only an outdoor, seasonal, unheated pool, the recommendation is to refurbish the existing facility. If community pressures became sufficient to warrant the provision of year round indoor heated water, enclosing a 25m pool is vastly more achievable than enclosing a 50m pool, in which case, the closure of the existing facility and the construction of a new pool adjacent to the recreation centre would be recommended. It is noted that community support for co-located facilities at Jubilee Reserve was predicated on the provision of an indoor heated pool.*

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In providing all of this background and notwithstanding the recommendation of CCS Strategic Consultants in 2009, the Shire of Northam resolved as follows:

Minutes No C.941 (21 July 2009 – Special Meeting)

Moved: Cr K D Saunders

Seconded: Cr T M Little

That Council

- 1 **Adopt the Recreation Facilities Advisory Committee Position Paper as attached to this agenda for the strategic guide for the future development of recreation facilities within the Shire of Northam.**
- 2 **Adopt the following principles as generally contained within the above position paper, subject to funding:**
 - **Extension of Henry Street oval as the main oval;**
 - **Retention of Jubilee Oval;**
 - **Installation of a synthetic pitch on Jubilee Oval;**
 - **Installation of 300 lux lighting on Henry Street Oval;**
 - **New Recreation Centre located to service Henry Street Oval;**
 - **Resurfacing and fencing of May St Tennis Courts;**
 - **Some minor upgrades to Bert Hawke Pavilion;**
 - **Bert Hawke Ovals top dressed to even out surface;**
 - **Recreation Centre to incorporate:**
 - **3 multi use indoor courts;**
 - **4 outdoor courts marked for netball and basketball;**
 - **Bar Hospitality area overlooking new oval and indoor courts;**
 - **Court office;**
 - **Crèche;**
 - **Change-rooms;**
 - **Public toilets;**
 - **Storage areas;**
 - **Multi use rooms;**
 - **Administration/Offices;**
 - **Servery;**
 - **Hydrotherapy Pool;**
 - **Gymnasium;**
 - **Commercial Kitchen;**
 - **Construction of a new 8 lane, 25m outdoor pool with 500m2 leisure pool at the Jubilee site as a subsequent stage of development but included within the design of the building;**
 - **Pool change-rooms/toilets to be part of the recreation centre to allow for shared use.**
3. **Authorises the Chief Executive Officer to engage suitably qualified consultants to prepare a Master-plan and Building Design Concept for the Jubilee Oval Precinct based on the parameters defined within the recommendations above including further discussion with user groups and public consultation with respect to the final Master-plan.**
4. **Endorses the Chief Executive Officer's action in engaging WALGA to provide tender documentation preparation and assessment for the provision of architectural services for the detailed design and full construction drawings for the New Recreation Centre.**

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5. Advertise for the position of Construction Manager as provided within the Commonwealth grant funding on a two year contract basis to manage the implementation of the Jubilee Precinct Master-plan.
6. Each stage of the process to be referred back to Council.

CARRIED 7/3

For the Motion: Cr A W Llewellyn, Cr T M Little, Cr K D Saunders, Cr G N Beazley, Cr R M Head, Cr R W Tinetti, Cr S B Pollard

Against the Motion: Cr L B Glass, Cr U Rumjantsev, Cr T M Letch

Subsequent to the above decision of Council various elements of the report have been implemented, most notably the development of the Northam Recreation Centre and the development of the Henry Street Oval. There are however a range of decisions of Council which are yet to be actioned, including the redevelopment of the Swimming Pool. In saying this there were conceptual designs undertaken based on the above decision of Council, refer appendix 4.

In 2015 the Shire of Northam re-engaged CCS Strategic Consultants (CCS 2016) to review the 2009 Plan. While this report has only been received recently and is still in draft form, the following are some of the key findings:

The Northam Olympic Swimming Pool has received numerous remediation treatments and remains a major asset management issue. There are leaking joints in the pool shell, challenges with water quality compliance (turnover rates), ageing and failing infrastructure including the pool gutters, soiled water collection pipes and pits and pooling on the concourse. Additionally, the pool façade, entry and reception, administration, kiosk and change rooms are all far from contemporary and exhibit a general tiredness. The pool remains outdoor, unheated and seasonal. Decisions regarding its future present a major challenge for the Shire and community in balancing the demand for an indoor, heated year round facility against maintaining a 50m competition pool in terms of location, amenity and cost. (p.14)

Largely due to the cost differential (capital and operating) and level of amenity offered, there has been a trend toward the 25m lap pool option in lieu of 50m and a year round indoor facility in lieu of a seasonal outdoor pool. This prevailing 'short course' model for fitness and competitive swimming is increasingly complemented by a body of leisure water with a beach entry and a variety of water features for water play.

Specialist learn to swim and hydrotherapy pools are a more recent trend and water playgrounds and splash pads are a current innovation. Water slides, flumes and wave pools have also growing in popularity, particularly in commercial installations, while diving boards and platforms have almost been eliminated from design, unless it is a FINA compliant competition facility.

A supplement feature from the US Recreation Management Journal³ in February 2014 summarised trends in aquatic design. Cutting-edge technology and sophisticated play features continue to propel the aquatic industry to new heights, giving aquatic facilities the opportunity not only to offer patrons more breathtaking rides, but boost long-term profitability. Commercial waterparks which offer increasingly complex and high-intensity rides, which emulate their 'cousin,' the amusement park, are now featuring in municipal facilities. Other key design innovations and drivers include:

Guest accommodations from deck chairs and pavilions to cafes and retail outlets

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Shade is increasingly important

Sitting areas and bubble benches in the pool as conversation and socialising areas

Designing for future expansion

Zero-depth entries

Tube and water slide rides are becoming longer and more exciting

Surf generators, speed slides, wave pools, water coasters and multi-level play structures are becoming more common

Mini-versions of attractions catering to younger guests

Skill-based amenities, both wet and dry, to challenge guests and their peers

Climbing walls, water slides, "spa" pools and similar attractions are finding their way into the once stoic lap pool environment.

Non-traditional waterpark/aquatic activities like climbing walls, aqua courses and zip lines. (p.22)

3. STAKEHOLDER CONSULTATION

In addition to the consultation which has been ongoing over the past ten years (refer CSS 2009), the Shire of Northam has undertaken both general community consultation (Catalyse 2014), specific community consultation (Catalyse 2016) and stakeholder consultation (CSS 2016).

The following are the main outcomes, as they relate to the swimming pool, of each of these;

CSS 2009

As previously stated the main outcomes / comments made which relate to the swimming pool include;

- *The major facilities requiring attention are the swimming pool, the recreation centre and the hard courts in town used by netball, basketball and tennis. The Jubilee Pavilion servicing the main oval and the two football clubs is also in poor condition.*
- *A key part of this study has been to assess the validity and viability of the proposed plan which had been circulated to the community for comment. The plan showed a focus on Jubilee Reserve and recommended the relocation of the swimming pool, hockey, cricket and netball facilities to Jubilee and the subsequent closure of the existing pool, Bert Hawke Park and the Clarke Street Netball courts. Key principles underpinning the concept plan were the shared use of spaces such as playing fields, hard courts and clubroom and change room areas to maximise their use.*
- *In February 2009 the Shire distributed a copy of the concept plans (the subject of this study) as recommended to the Shire by the Recreational Facilities Advisory Group for the centralisation of sporting facilities at Jubilee Reserve. The Shire received 265 responses, representing a return rate of 5% which is in itself not statistically significant. Responses for and against were quite evenly divided with only 53% supporting the plans with this support being conditional on an indoor heated pool being included as part of the plan.*
- *Fund raising and higher user fees were the most strongly supported funding strategies whilst a rate increase or levy was least favoured.*
- *Many respondents indicated some difficulty in accessing current facilities and programs including limited transport options, high costs, lack of crèche, limited opening hours and insufficient knowledge of opportunities.*

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- *The elements that would be most supported should they be built were a gymnasium, fitness classes and a café.*

Swimming Pool Petition

A community petition dated 8 February 2009 with 221 signatures was lodged with the Shire. The key issues were the potential loss of the 50m pool (to be replaced by an alternative facility at the recreation centre) and the composition of the Sport and Recreation Advisory Committee informing the Shire Council. In general it called for a more informed and open process of deliberation. (CSS 2009, p.7)

Catalyse Community Perceptions Survey 2014

As part of the Community Perceptions Survey outcomes, Residents identified a number of issues relating to Sport & Recreation including upgrading the Recreation Centre with a heated pool, air conditioning, improved facilities such as tennis and squash courts, a gym and sufficient safe parking.

Catalyse Swimming Pool Survey 2016

The recent Swimming Pool Redevelopment Community Survey asked a range of questions about the community; their current use of the pool, and their thoughts on the redevelopment. The respondents provided the following to the question of redevelopment options:

- The community is most supportive of Council building an outdoor, heated 8 lane 50m pool and toddlers' pools at Northam Recreation Centre at an estimated cost of \$7 million (48% of respondents).
- The most favorable alternatives would be to build an indoor, heated 8 lane 25m pool at Northam Recreation Centre (42% of respondents).
- A complete redevelopment of the existing site with a new 8 lane 50m pool to replace the existing pool and new heated toddlers' pool (39% of respondents).

The community is strongly opposed to converting the existing 50m pool into a 25m pool. A copy of the full survey results is provided in Appendix 1.

CSS Recreation Facility Development Plan Review 2016

As part of this review, CCS Strategic undertook a range of community workshops and a survey of facility user groups. From the Facility user group survey, the following were nominated as improvement requests to Northam Swimming Pool (CCS 2016 p.28)

- Upgrade in existing location – refer Bilgoman and Collie for what they have done
- Heating to extend seasonal operations from September to April
- Upgraded FINA compliant 50m pool with appropriate water treatment system
- New well-drained concourse
- Shaded marshalling area for events
- Improved centre administration, kiosk, changerooms and clubhouse
- Additional club storage areas
- Carpark improvements including line marking, improved lighting and access pathways

The open community workshop held on 23 February 2016 identified the following improvement requests for the pool regardless of the type of facility and location;

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- Add a playground
- Provide disabled toilets
- Amend pathways to facilitate easy wheelchair access
- Redevelop change rooms - with a roof
- Ramp entry for disabled and aged persons' access

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4. FINANCIAL ANALYSIS – VARIOUS OPTIONS

a. Capital Costs

In order for Council to make an informed decision, it is important to provide detailed information on the preferred redevelopment options in relation to both the initial capital cost and an indicative operating cost for 12 months.

Both the Northam Pool Condition Assessment report (Ninnes 2015) and the Draft Northam Recreation Facilities Development Review (CCS 2016) provided indications of estimated works and costs on project options. These estimations have been collated and presented in the form of the table provided on the following page. A full Copy of the Ninnes (2015) report and the Draft Northam Recreation Facilities Development review (2016) are provided in Appendix 2 & 3 respectively.

It is critical to note that the construction cost estimations are not based on any design and are provided merely to give a concept of the general quantum associated with construction. To provide a level of rigour to the assessments comparisons have been provided of recently developed / redeveloped facilities at both Collie and Bridgetown.

The Collie facility would be representative of a Northam redevelopment of the 50m pool at the current location, including heating, new kids play area, new plant, heating and redevelopment of associated building infrastructure.

The Bridgetown facility would be representative of a Northam development of a 25m pool, including heating, new kids play area and associated building infrastructure at the Northam Recreation Centre, on Peel Terrace.

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The following summary has been put together to assist in making direct comparisons between the various options

	PER KINNIS REPORT							Per CCS Strategic report		Collie Development - 50m Pool revitalisation Existing Site	Bridgetown Development - 25m Pool and Water Playground adjacent to Recreation Centre	Northam - Cooper & Daxley 2011 25m Indoor Recreation Centre
	50m pool inside existing pool	25m pool inside existing pool	New 50m pool current location	New 25m Pool current location	New 25m Pool - Recreation Centre	Hydrotherapy - Recreation Centre	Combined 25m Pool + Hydrotherapy	New 50m Indoor Pool - Recreation Centre	New 50m Outdoor Pool - Recreation Centre			
Drainage	50,000	50,000										
Pool walls and wetdeck	220,000	175,000	1,620,000	920,000	900,000	290,000	1,190,000	2,920,000	2,920,000			
Gutter demolition	50,000	50,000										
New blind floor	300,000	150,000										
New concrete encased / W lines	250,000	125,000										
Demolition of shallow end wall of pool	60,000											
Raised ends	80,000	80,000	40,000									
New end walls	50,000											
Joins	45,000	25,000										
Fill under floor	40,000	55,000										
Wet deck	45,000	24,000										
New Plant			700,000									
Balance tank			80,000		80,000	80,000	160,000					
Plant room			100,000	80,000	540,000	370,000	810,000	56,000	56,000			
Ramps			80,000		100,000	100,000	200,000					
Post					30,000	30,000	60,000					
BUILT WHAT IS THE(S)					40,000	40,000	80,000					
Hoisting	150,000	150,000	150,000	150,000	150,000	-	150,000	150,000	150,000			
Blanket & roller								20,000	20,000			
New Water Space	407,000	407,000	407,000	407,000				407,000	407,000			
New Program Pool	248,000	248,000	248,000	248,000				248,000	248,000			
New changerooms/facilities	672,000	672,000	672,000	672,000	672,000			672,000	672,000			
Indoor Pool Structure								500,000	-			
	2,425,000	1,839,000	3,725,000	2,135,000	2,605,000	813,000	2,755,000	5,413,300	4,529,300			
Contingency 20%	484,000	367,800	745,000	427,000	521,000	162,600	550,600	1,084,660	904,660			
Disabled Ramp	150,000	150,000	150,000	150,000								
Concourse redevelopment	150,000	150,000	150,000	150,000								
Additional fit out concourse work		65,000										
Building						2,110,000	2,310,000	2,310,000	-			
Site works					500,000		500,000	500,000	500,000			0
	3,210,000	2,521,800	4,770,000	2,862,000	3,625,000	3,405,600	6,113,600	9,317,960	5,927,960	-3,650,000	4,000,000	8,465,000

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b. Capital Funding

The following funds are currently available to the Shire of Northam, which could be applied to this project;

Reserve – Recreation & Community facilities	\$800,000
Reserve – Regional development	\$820,000
Budget (capacity for provision)	\$200,000

Grant funding for a project of this nature is limited, however the following opportunities have been identified;

Department of Sport & Recreation	(1/3 of project cost maximum \$ 2,000,000)
Royalties for Regions	unknown and unlikely

In relation to the Department of Sport & Recreation (DSR) funding stream there has in the past been conjecture over what they will or will not fund. The most recent advice is;

DSR have no clear direction or preference for 50m pools vs 25m pools, indoor or outdoor. It will all come down to demonstrating through needs assessment, council resolution etc. that the decision making process was sound. As far as the grant application is concerned, DSR are happy with design and construct option, subject to:

- Fairly detailed concepts with a reasonably accurate QS
- Business case and other supporting documentation
- A detailed report on where the funding is coming from.
- A full explanation of any key design features (e.g. heating) that contribute to the cost of the project.

Debt funding is available to Council and will need to be utilised in the event a project is to go ahead. Council has significant capacity to borrow funds. On the positive side it is currently a very good environment for borrowing, with Council having access to funds between 2.5% & 3.5% - depending on term. The financial modelling within this report has been undertaken on the basis of 15 year loan terms at an interest rate of 3.08%, as per recent WA Treasury advice.

Council also has the ability to sell land to fund project and whilst this is exposed to market conditions, which are not as strong as they perhaps have been in the past, this is still an option which can be considered.

It is also worth noting that in the event a redevelopment of the existing site will result in savings from an operational perspective, given the pool would be unavailable for at least one seasons). These savings could be used to offset capital costs.

c. Operating Cost

The most significant current individual cost centres for the Council provided Recreation Services at the swimming pool and recreation centre are represented by employment costs (approx. \$500,000), depreciation (approx. \$240,000) and debt servicing (approx. \$245,000). In reviewing the impacts of the various swimming pool development options being contemplated, it is considered that these three elements are the most subject to variation, depending on which option for development is selected by Council.

In relation to the employment costs, it is considered that a relocation of the Aquatic Centre to co-locate with the Recreation Centre will see savings experienced by allowing the facilities to *share* staff, although these are considered minimal. However potential employment cost savings will be offset against additional debt servicing required through a relocation – depending on which option is chosen by Council.

The below table outlines the total projected staff wages (direct only) for the Aquatic Centre and Recreation Centre as a seasonal or year-round facility.

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Venue	Position	Heated Pool (outdoor-extended season – by 6 weeks)	12 month Operation (indoor)
Aquatic Centre	Northam Pool Manager	\$33,243	\$56,988
	Duty Manager	\$33,243	\$56,988
	Lifeguard	\$63,534	\$108,945
	Total	\$130,020	\$222,921
Recreation Centre	Senior Recreation Officer	\$52,858	\$52,858
	Admin Officer	\$44,741	\$44,741
	Rec Officer	\$64,752	\$64,752
	Total	\$162,352	\$162,352
Combined total		\$292,375	\$383,350
Co-located	Senior Recreation Officer	\$56,987	\$56,987
	Duty Manager	\$84,126	\$101,446
	Admin Officer	\$44,458	\$44,458
	Rec Officer/Lifeguard	\$84,521	\$131,008
	Total	\$270,092	\$346,430

A full financial assessment has been undertaken based on a year 1 scenario for each of the various development options which are being considered by Council. These figures have been based on information which is available at the time and are subject to change based on a range of external factors and internal factors including future decisions of Council around detailed design, length of season etc.

In regards to the relative affordability of each of the options. It is worth understanding that Council has approximately \$240,000 built into its current budget for the servicing of future debt. These funds are available as a result of the debt Council retired twelve months ago and at the time the decision was made to set aside the interest and principal allocations (reserve transfer) to provide a readymade capacity to service projected future debt.

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COA	DESCRIPTION	HEATED 50m OUTDOOR POOL CURRENT LOCATION		HEATED 50m OUTDOOR POOL RECREATION CENTRE (6months use)		HEATED 50m INDOOR POOL RECREATION CENTRE (12 month use)		HEATED 25m OUTDOOR POOL RECREATION CENTRE (Plus Hydrotherapy)		HEATED 25m OUTDOOR POOL RECREATION CENTRE	
		REVENUES	EXPENSES	REVENUES	EXPENSES	REVENUES	EXPENSES	REVENUES	EXPENSES	REVENUES	EXPENSES
OPERATING EXPENDITURE			475,200		484,090		815,120		772,375		399,580
11331002	Northam Pool - Salaries		130,000		110,000		203,000		248,000		110,000
11331102	Northam Pool - Superannuation		12,350		10,450		19,285		23,560		10,450
11331202	Northam Pool - Staff Costs		10,000		10,000		12,000		12,000		10,000
11332002	Northam Pool & Plant Mtc		19,000		19,000		21,000		23,000		19,000
11332012	Northam Pool Building Mtc						-		-		-
11332022	Swimming Club Carnival		500		500		500		500		500
11332032	Swimming Pool Insurance		12,000		12,000		12,000		12,000		12,000
11332042	Northam Pool - Sundry		1,000		1,000		1,000		1,000		1,000
11332052	Northam Pool - Special Events		500		500		500		500		500
11332092	Northam Pool - Electricity		85,000		85,000		170,000		187,000		65,000
11332102	Northam Pool - Water		20,000		20,000		25,000		29,000		15,000
11332112	Northam Pool - Telephone		1,000		1,000		1,000		1,000		1,000
11332122	Northam Pool - Stock Purchase		25,000		25,000		31,250		31,250		25,000
11332132	Northam Pool Garden Mtc		15,000		15,000		22,000		22,000		15,000
11332142	Northam Pool - Operating Expenses		25,000		25,000		30,000		30,000		25,000
11336102	Depcn - Swimming Areas & Beaches		95,400		118,559		186,340		122,260		72,550
11336002	Administration Allocation		15,000		15,000		15,000		15,000		15,000
	Loan Servicing		80,000		105,000		205,000		106,000		57,000
	Less Depcn not cash backed		71,550		68,919		139,755		91,695		54,390
OPERATING INCOME		182,375		182,375		201,700		207,800		182,375	
11333003	Government Subsidy - Northam		30,000		30,000		30,000		30,000		30,000
11333013	Reimbursements - Northam		750		750		750		750		750
11333103	Charges General Admission - Northam		57,400		57,400		65,600		69,700		57,400
11333113	Charges Season Admission - Northam		28,000		28,000		32,000		34,000		28,000
11333123	Charges School Admission - Northam		30,000		30,000		30,000		30,000		30,000
11333143	Charges Special Events - Northam		500		500		500		500		500
11333163	Charges Stock Sales - Northam		35,625		35,625		42,750		42,750		35,625
11333213	Charges Telephone - Northam		100		100		100		100		100
11336003	Profit On Sale Of Asset - Swimming										
CAPITAL EXPENDITURE			146,000		185,000		370,000		195,000		103,000
11339014	Furniture & Equipment										
11339024	Buildings - Pools										
11339044	Buildings - Northam Pool										
	Loan Servicing		146,000		185,000		370,000		195,000		103,000
CAPITAL INCOME											
11333005	Transfer From Recreation Reserve										
11333065	Realisation On Asset Disposal										
TOTAL REVENUE & EXPENDITURE		182,375	620,200	182,375	669,090	201,700	1,165,120	207,800	967,375	182,375	502,580
TOTAL NET LOSS			437,825		486,715		963,420		759,575		320,205
Assumptions:		Extra 2 months		Extra 2 months		12 months per year		12 months per year		12 months per year	
		Servicing \$2.5m loan		Servicing \$3.5m loan		Servicing \$5.5m loan		Servicing \$3.5m loan		Servicing \$1.5m loan	
		40% increase in utilisation		40% increase in utilisation		60% increase in utilisation		65% increase in pool utilisation		60% increase in utilisation	
		Deprecation cash backed 25%		Deprecation cash backed 25%		Deprecation cash backed 25%		Deprecation cash backed 25%		Deprecation cash backed 25%	
						Additional utilisation hydrotherapy					

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5. OPTION ASSESSMENT

There are a wide range of options available to the Council which have been explored, financially, to varying degrees. To assist the decision making process to following table has been prepared. Whilst it is acknowledged that the table is not exhaustive in its identification of positive and negatives, it provides an insights into a range of issues which could be given consideration prior to a final decision being made.

	POSITIVES	NEGATIVES
HEATED 50m OUTDOOR POOL CURRENT LOCATION	Most cost effective	Continuity of service - Will lose at least 1 swimming season during construction
	Potential to provide entry statement into Northam	Will be slightly more expensive to run operationally than a co-located facility
	Location well known	Will be more expensive to run than a 25m pool
	Provide an extended pool season	Not providing a 12 month a year facility
	History associated with the current site	
HEATED 50m OUTDOOR POOL RECREATION CENTRE	Co-location benefits	Cost
	Opportunity to leverage recreation centre and swimming pool benefits (cross use)	Not providing a 12 month a year facility
	Provide an extended pool season	
	Walkable distance for two primary schools	
	Maintain continuity of swimming pool service	
HEATED 50m INDOOR POOL RECREATION CENTRE	True regional facility	Most Expensive to construct
	Provide all year round service	Not considered financially sustainable (whole of life)
	Provide an extended 12 month per year service	Will be an opportunity cost to other potential projects, given significant cost both operationally and capital
	Opportunity to leverage recreation centre and swimming pool benefits (cross use)	
	Co-location benefits	
	Walkable distance for two primary schools	
	Maintain continuity of swimming pool service	

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HEATED 25m OUTDOOR POOL RECREATION CENTRE (Plus Hydrotherapy / program pool)	True regional facility	Not considered financially sustainable
	Provide a positive service for aging community	Unable to run Country Swimming Championships every 5-7 years
	Co-location benefits	Does not meet expectation of Swimming club
	Opportunity to leverage recreation centre and swimming pool benefits (cross use)	Unable to run long course events generally
	Maintain continuity of swimming pool service	
	Medical benefits	
Opportunity to spend more capital funds on 'play areas'		
HEATED 25m OUTDOOR POOL RECREATION CENTRE	Cost Effective	Unable to run Country Swimming Championships every 5 – 7 years
	Potential to make provision for stage 2 – Hydrotherapy Pool / Indoor – if demand increases	Does not meet expectation of Swimming club
	Maintain continuity of swimming pool service	Unable to run long course events generally
	Opportunity to spend more capital funds on 'play areas'	

In addition the following decision matrix has been developed to try and assist in providing a framework for a decision. Again it is acknowledged that the matrix is provided for assistance only and should not be relied upon as being the final determinant of a Council decision. The weightings have been developed based on perception only and as such the outcome may change in the event the criteria and weighting is adjusted.

Assessment Criteria	Weighting	HEATED 50m OUTDOOR POOL CURRENT LOCATION		HEATED 50m OUTDOOR POOL RECREATION CENTRE		HEATED 50m INDOOR POOL RECREATION CENTRE		HEATED 25m OUTDOOR POOL RECREATION CENTRE (Plus Hydrotherapy)		HEATED 25m OUTDOOR POOL RECREATION CENTRE	
		Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score
Financial - Capital	20%	6.1	1.2	7.7	1.5	5.1	1.0	5.9	1.2	10.0	2.0
Financial - Operating	50%	7.3	3.7	6.6	3.3	3.3	1.6	6.1	3.1	10.0	5.0
Environmental	3%	10.0	0.3	10.0	0.3	10.0	0.3	10.0	0.3	10.0	0.3
Economic	3%	10.0	0.3	10.0	0.3	10.0	0.3	10.0	0.3	10.0	0.3
Regional Centre Status	5%	9.0	0.5	9.0	0.5	10.0	0.5	10.0	0.5	7.0	0.4
Community Outcome	20%	8.0	1.6	8.0	1.6	10.0	2.0	10.0	2.0	7.0	1.4
FINAL SCORE / 100		74.3		73.7		56.6		72.5		92.5	
RANKING		2		3		5		4		1	

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6. RISK ASSESSMENT

RISK ASSESSMENT-NORTHAM POOL DEVELOPMENT							
Risk Category	Detail	How Occur	Consequence	Likelihood	Level of risk	Existing controls	Additional controls
Financial	Inability to secure external funding	Poor funding applications	Extreme (5)	Unlikely	High	Internal reviews by Exec Management	Use of external consultant
		No funding opportunities	Extreme (5)	Possible (3)	High		
	Inability to afford ongoing operations	Decision made on unsuitable option	High (4)	Possible (3)	High	Feasibility report provided to Council	External review
		Financial modelling inaccurate	High (4)	Possible (3)	High	Modelling undertaken internally and compared with other like facilities	External review
							Undertake sensitivity analysis
	Increase in cost of borrowing	Reserve Bank increases Interest rate	Medium (3)	Possible (3)	Moderate		Fix interest rates for term of loan

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Risk Category	Detail	How Occur	Consequence	Likelihood	Level of risk	Existing controls	Additional controls
	Capital cost increase	In adequate cost projections	High (4)	Possible (3)	High	Have had external cost indications developed	
						Comparisons made with other similar projects recently completed have been done	Potent to engage quantity surveyor
							Add hold point to Gantt once detailed design has been completed for final sign off by Council.
	Opportunity Cost	Debt requirement to fund project results in risk to other planned projects	High (4)	Possible (3)	High	Assessment / Modelling within Long Term Financial Plan	
Health & Safety							

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Risk Category	Detail	How Occur	Consequence	Likelihood	Level of risk	Existing controls	Additional controls
Reputation	Decision made not supported by the Community	Final decision of Council	Medium (3)	Possible	Moderate	All information, including consultation outcomes provided by Council	Proactive & detailed information to be provided on reasons for decision
	Project goes over time	Unforeseen construction issues					
Service Interruption	Pool not available for use over one or more seasons	Existing Pool is refurbished	Extreme (5)	Likely	Extreme	Council has all information to make informed decision	Potential bus service to other nearby facilities
						Public Communication	Develop Project Communication Plan
Compliance	Tendering Issues	Tender becomes complex and does not require with legislative requirements	Medium (3)	Possible	Moderate	Use WALGA Tendering Service to manage process	

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Risk Category	Detail	How Occur	Consequence	Likelihood	Level of risk	Existing controls	Additional controls
Property							
Environment							

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7. APPENDIX 1 – Community Pool Survey



Community views on the future of Northam Swimming Pool

Prepared for: Shire of Northam

Prepared by: Catalyse Pty Ltd

17 May 2016

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Introduction

In April 2016, the Shire of Northam invited residents to have their say on the future of the Northam Swimming Pool.

The Shire mailed surveys to all households across the Shire and implemented a supporting communications campaign to raise awareness of this study.

Residents were invited to complete a survey in hard copy and return it to CATALYSE using a reply paid envelope or they could complete and submit their responses online on an independent site being managed by CATALYSE.

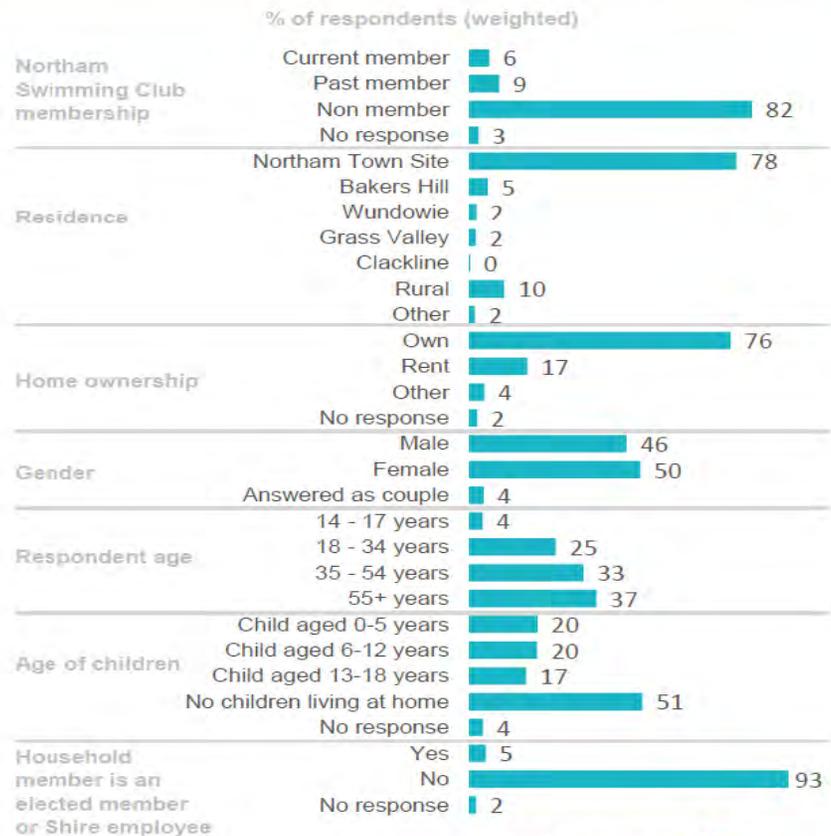
639 residents submitted a response. Of these, 521 were returned by mail and 118 were submitted online.

The overall sampling error was reduced to $\pm 3.88\%$ at the 95% confidence interval.

As there was an age and gender bias, the final dataset was weighted to match the ABS Census population profile with the following weightings:

	Males	Females
18-34	2.905	1.139
35-54	1.714	0.606
55+	1.168	0.676

Data has been analysed using SPSS. Where sub-totals add to $\pm 1\%$ of the parts, this is due to rounding errors to zero decimal places.



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Reasons for visiting Northam Swimming Pool

Around 68% of respondents said they have used the Northam Swimming Pool over the past 12 months.

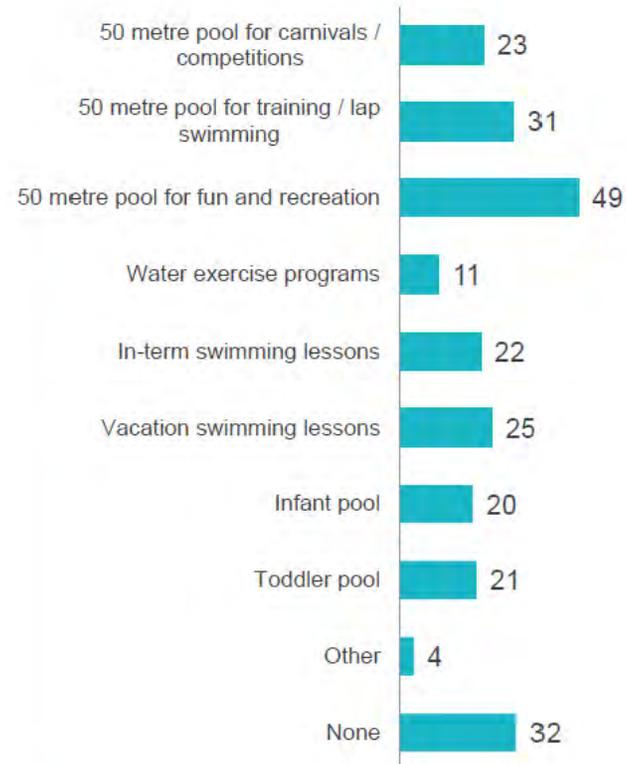
The most popular reason was fun and recreation in the 50 metre pool, mentioned by close to 50% of respondents.

Other popular uses were training or lap swimming in the 50 metre pool, vacation swimming lessons, swimming carnivals and competitions and in-term swimming lessons.

Around 20% of respondents had used the infant and toddler pools and 10% had participated in water exercise programs.

Reasons for using the pool over the past 12 months

% of respondents



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Frequency of visiting Northam Swimming Pool

While many residents are occasional users of Northam Swimming Pool, around 43% are frequent users who visit the pool more than 10 times per year.

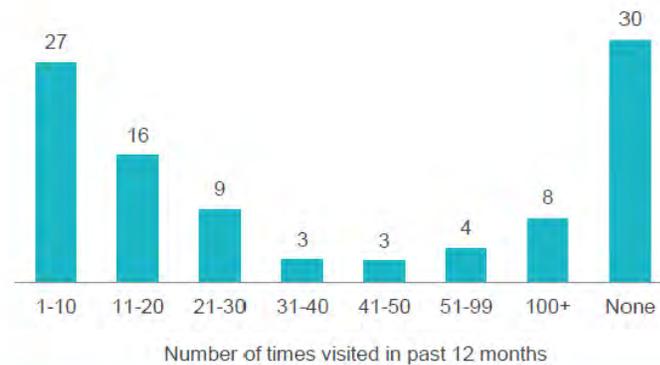
On average, residents visit Northam Swimming Pool around 21 times per year.

Visitation levels are highest among current members of Northam Swimming Club, followed by 14 to 17 year olds and families with children aged 6 to 18 years.

People who responded online, and those who have an association with the Shire, were more likely to be frequent users of the pool.

Frequency of visiting Northam Swimming Pool

% of respondents



Variations across the community

Mean frequency of visiting Northam Swimming Pool over past 12 months

Response type		Shire association		Northam Swimming club membership			Residence			Home ownership		Gender		Age of children				Respondent age			
Online	Postal	Yes	No	Current member	Past member	Non member	Northam Town Site	Shire of Northam	other	Own	Rent / other	Male	Female	0-5	6-12	13-18	None	14-17	18-34	35-54	55+
35	19	32	21	88	32	15	22	16		21	23	19	24	24	41	32	13	60	21	27	11

Q. Approximately, how many times have you been to Northam Swimming Pool over the past 12 months?

Base: all respondents, excludes 'unsure' and 'no response' (n = 590)



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MINUTES

SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

How well is the pool meeting community needs?

Most people feel Northam Swimming Pool is meeting their needs to some degree, with 72% rating the pool as okay, good or excellent.

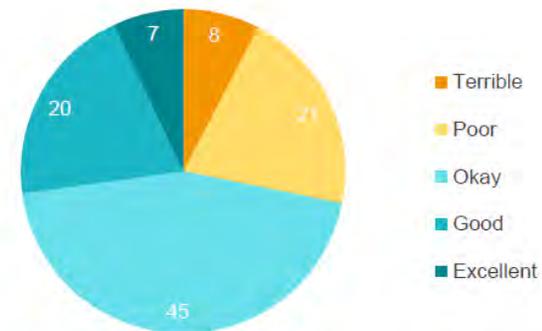
However, views are polarised at each end of the scale. While 27% rate the pool as good or excellent, 29% rate the pool as poor or terrible.

Current swimming club members and those aged 14-17 years are most likely to say the pool is meeting their needs well.

Those aged 18-34 are least likely to say the pool is meeting their needs.

How would you rate Northam Swimming Pool?

% of respondents



Variations across the community

Tables shows variance when the community segment score is +/-10 percentage points of the overall community score for good + excellent ratings

Response type		Shire association		Northam Swimming club membership			Residence			Home ownership			Gender		Age of children				Respondent age			
Online	Postal	Yes	No	Current member	Past member	Non member	Northam Town Site	Shire of Northam	other	Own	Rent / other	Male	Female	0-5	6-12	13-18	None	14-17	18-34	35-54	55+	
				+														+	-			

Q. Thinking about how well Northam Swimming Pool currently meet your needs, would you rate this facility as:
 Base: all respondents, excludes 'unsure' and 'no response' (n = 556)



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SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

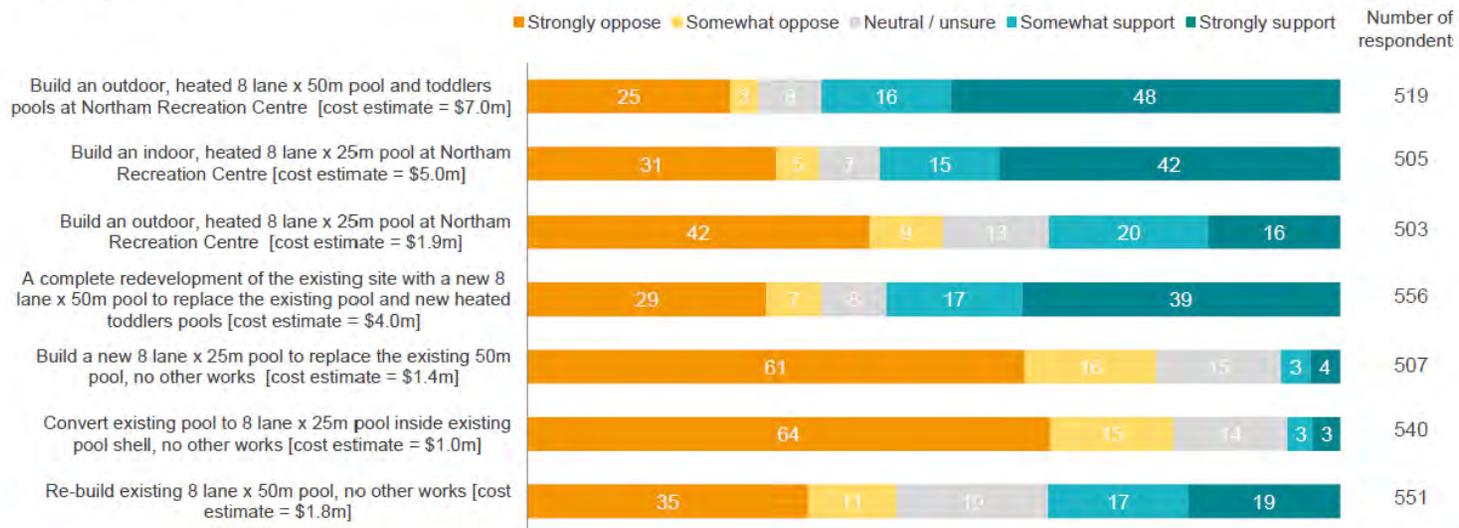
Support for redevelopment options

The community is most supportive of Council building an **outdoor, heated 8 lane x 50m pool and toddlers pools at Northam Recreation Centre** at an estimated cost of \$7 million. The most favourable alternatives would be to build an indoor, heated 8 lane x 25m pool at Northam Recreation Centre or for a complete redevelopment of the existing site with a new 8 lane x 50m pool to replace the existing pool and new heated toddlers pools.

The community is strongly opposed to converting the existing 50m pool into a 25m pool.

Level of support for redevelopment options

% of respondents



Q. Northam Swimming Pool is an aging facility that it is in need of some structural repairs. How strongly do you oppose or support the following swimming pool renovation or construction options?
 Base: all respondents, excludes 'no response' (n = varies, as indicated next to chart)



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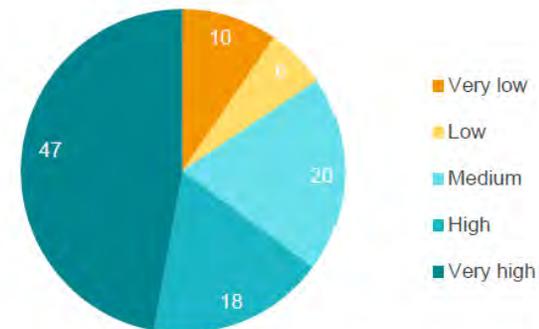
MINUTES

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How important is heating?

Heating is of high importance for 2 in 3 respondents.
 Northam Swimming Club members were most likely to provide 'very high' ratings.

Importance of heating
 % of respondents



Variations across the community

Tables shows variance when the community segment score is +/-10 percentage points of the overall community score for very high ratings

Response type		Shire association		Northam Swimming club membership			Residence			Home ownership			Gender		Age of children				Respondent age			
Online	Postal	Yes	No	Current member	Past member	Non member	Northam Town Site	Shire of Northam	other	Own	Rent/ other	Male	Female	0-5	6-12	13-18	None	14-17	18-34	35-54	55+	
				+	+				-													

Q. How important is it for the pool to be heated?

Base: all respondents, excludes 'unsure' and 'no response' (n = 600)



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SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

Top 10 service and facility suggestions

with a sample of supporting comments

1. Heated pool (mentioned by 11% of respondents)

"Having a heated pool would be very much needed, especially for people who have any kind of replacements in their body and arthritis sufferers. There are none near the hospital. Can pay a little more, even though we are on the pension."

"I personally would use a heated indoor pool at least 5 times a week. It is sad, we always have to go to Perth for facilities. NB: Donnybrook and Mandurah are right up with their heated pools."

"Covered heated pool is needed for year round swimming lessons."

"A toddler heated pool so people can take their younger children swimming more, plus, you can offer infant classes."

"As Northam consists/has a large number of seniors and people with many forms of disability a heated pool would benefit so many, including myself with a muscular disability."

"I would visit the pool on a more regular basis if it was heated."

"For swimming in the pool through winter it needs to be heated."

"Indoor Heated Pool is very important to people with severe illness and require swimming all year round but the outdoor pool does put them off."

"We need a monitored indoor heated pool for kids and children/people with disabilities, so they don't have to travel to the city."



Q. Are there any other facilities or services you'd like Council to consider including in a new or renovated swimming pool facility?
Base: All respondents (n=639)

CATALYSE 

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SHIRE OF NORTHAM

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SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

Top 10 service and facility suggestions

with a sample of supporting comments

2. Disability and elderly access and facilities (10%)

"Wheelchair access into the pool or a lift for the disabled to access the pool. Seating in the pool to enable the disabled to be able to sit in and enjoy the pool."

"Facilities for the disabled. At the moment there is no disabled toilet or change table."

*"Facilities for senior and handicapped swimmers to have adequate entry facilities.
NB: Heated pool for rehabilitation purposes rather than heated toddlers pool is necessary in Northam."*

"Structural support for disabled clients (reason I don't use at present) in maybe one lane, especially for disabled people so we are able to improve our mobility."

"At one of the indoor pools I visit in Perth with my grandchildren... There is a divider up part of the pool which has a roped off section below which enables the elderly or people doing walking therapy to use it for 'walking laps'."

3. Hydrotherapy (10%)

"Northam strongly needs a hydrotherapy pool, I work with people with injuries, chronic disease and elderly just to name a few. Hydrotherapy settings are often the only exercise these people can get."

"Some sort of hydrotherapy. The closest is at least an hour way. By the time travel and therapy is taken into account you have to allow nearly a day."

"Hydrotherapy pool for patients with physiotherapy needs."

"A hydrotherapy pool for rehab would be wonderful for many in Northam/surrounds."



Q. Are there any other facilities or services you'd like Council to consider including in a new or renovated swimming pool facility?
Base: All respondents (n=639)

CATALYSE

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SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

Top 10 service and facility suggestions

with a sample of supporting comments

4. Water park including slides and water playground (9%)

"It would be nice to see a fun water playground - to add a bit of fun for the kids."

"Incorporate a play area (water slide) like at Beatty Park Pool in Perth."

"Add a recreational part to the pool, including but not limited to, tube slides to encourage more family usage"

"Children's water slide/s. Mini water park type installations such as water sprays, dump bucket etc."

5. Remain open all year (7%)

"Yes, I think the Council should consider an aquatic centre to incorporate the whole community that can be used all year round, from babies to aged."

"Please consider - It would be wonderful to have a pool for the whole year. Many people have pools at home that they can use in the summer but very few would have one suitable for winter use. I have to take my kids to Perth to learn how to swim."

"Try to make the pool an all year round facility."

6. Add a café and/or improve kiosk options (7%)

"Kiosk area should be made into a cafe style area where coffee and light meals can be served also have tables and chairs to sit and enjoy the surroundings"

"A better food outlet - coffee shop venue would attract more people I believe."



Q. Are there any other facilities or services you'd like Council to consider including in a new or renovated swimming pool facility?
Base: All respondents (n=639)
Image credit: www.allblackhills.com

CATALYSE 

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Top 10 service and facility suggestions

with a sample of supporting comments

7. Indoor pool facilities (7%)

"The council should look at other indoor facilities and look how they have incorporated fun water activities both inside and outside to suit community needs."

"Must be indoor. Pool is wasted in winter and hence less revenue."

8. Improve toilet, shower and change room facilities (6%)

"Access to clean toilet and shower facilities."

"Make sure toilets and change rooms are cleaned and fixed accordingly."

9. More pools, classes and facilities for babies and toddlers (6%)

"A toddler heated pool so people can take their younger children swimming more, plus, you can offer infant classes."

"To have pools available for toddlers and babies."

10. Better shade over all areas (4%)

"If renovating the existing, or building new outdoor, there must be shade over the adult pool also (some at least)."

"Having shade that covers the pool and other areas to protect from the sun."



Q. Are there any other facilities or services you'd like Council to consider including in a new or renovated swimming pool facility?
Base: All respondents (n=639)

CATALYSE 

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8. APPENDIX 2 – Geoff Ninnes Fong & Partners Pty Ltd Pool Condition Report

This report has been provided loose leaf due to its size.

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9. APPENDIX 3 – CCS Strategic Recreation Facilities Development Plan Review DRAFT Report

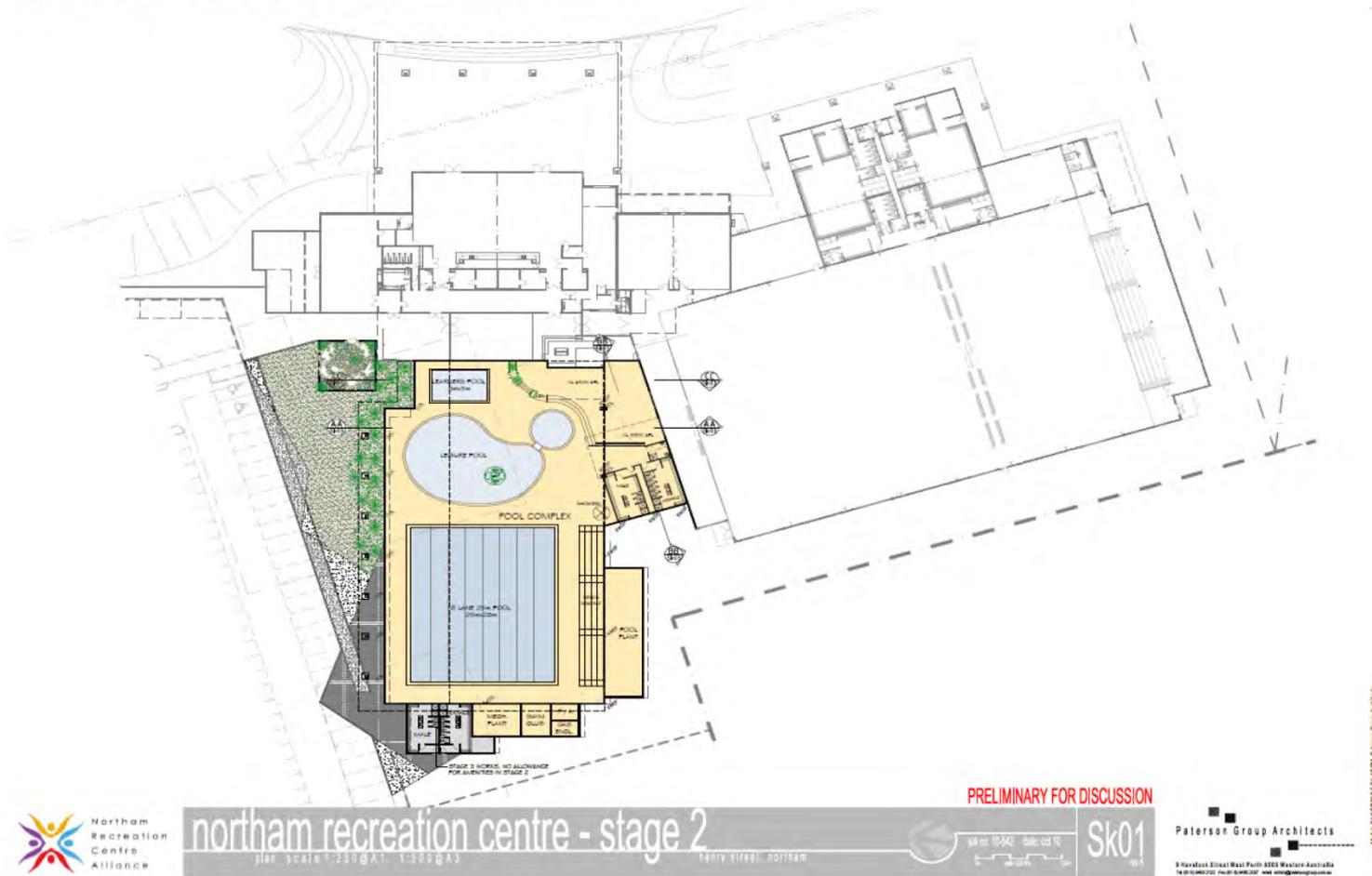
This report has been provided loose leaf due to its size.

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10. APPENDIX 4 – 2011 Cooper & Oxley Conceptual Plans 25m Pool



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11. APPENDIX 5 – Bridgetown Redevelopment Pictures



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12. APPENDIX 6 – Collie Redevelopment Pictures



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Cr S B Pollard declared an "Impartiality" interest in item 12.1 – 2016/17 Road Program 2016/17 Draft Budget – Roads Program as his daughter and son-in-law and family live on Dr Dunlop Grove, a road being considered for inclusion in the draft budget.

12.1 2016/17 ROAD PROGRAM 2016/17 DRAFT BUDGET – ROADS PROGRAM

Name of Applicant:	Engineering Services
File Ref:	
Officer:	Clinton Kleynhans
Officer Interest:	Nil
Policy/ Legislation:	Local Government Act 1995
Voting:	Simple Majority

PURPOSE

For Council to review and endorse the final list of proposed roads to be included in the 2016 / 2017 budget.

BACKGROUND

Attached is a list of projects being recommended to Council for inclusion in the 2016/17 Annual Budget.

A loose attachment has been provided which outlines a more expanded list of 'potential projects which were also considered by staff in their initial assessments, this has been placed in the Councillor depository (road considerations.pdf).

STATUTORY REQUIREMENTS

Nil.

CONFORMITY WITH THE STRATEGIC COMMUNITY PLAN

OBJECTIVE E3: Provide and support an effective and efficient transportation network.

STRATEGY E3.1: Plan for the provision and delivery of transport services and infrastructure in the Shire in close consultation with the State and Federal Governments.

BUDGET IMPLICATIONS

The attached Appendix A outlines estimated costs for shortlist of roads previously provided with the recommended final list highlighted for inclusion of the 2016/2017 Road Program.

These costs are based on current contracted rates for road re-surfacing services as well as historic data for internal construction crew's productivity and capacity.

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The table below provides a comparison to the previous year.

	2016/17	2015/16
Road Construction - Cost	3,520,029	3,487,847
	\$ 3,520,028.60	3,487,847
Labour	\$ 529,664.76	587,075
Plant	\$ 311,996.84	245,389
Cost of materials	2,678,367	\$ 2,655,383.00
Materials as % of total	76%	76%
Road Construction - Revenue	- 3,235,875	- 3,208,432
From Reserve / Funding	-	170,000
Funds Carried forward	- 531,535	- 555,251
Grants Commission - Roads	- 760,000	- 768,237
Blackspot	- 239,715	- 206,564
Grants Commission - Bridges	-	60,000
Main Roads - Bridges	-	-
Regional Road groups	- 299,625	- 226,405
Commodity Route	- 205,000	- 140,000
Roads 2 Recovery	- 1,200,000	- 1,081,975
Deproclamation GEH (Gravel Re-sheeting)		-
Overall Net cost to Council	284,154	279,415
Total net material subsidy	- 557,508	- 553,049

OFFICER'S COMMENT

In determining the proposed roads the following guidelines and selection criteria were used;

1. Funded Projects – Projects that will receive funding from an external source are given highest priority in the Program.
2. Asset Data – Interrogation of ROMAN/ RAMM asset data to determine a priority list or “ranking” The higher the ranking the higher the priority of the project. This desktop assessment was then followed by field investigation to validate the data, with consideration of joining recent year’s resurfaced sections as well as grouping projects in close proximity to provide greater value for money through reduced mobilisation and demobilisation costs.
3. External Requests and Internal Advice – Council staff have also utilised external requests from ratepayers as an indicator to pressure points within the

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Shire. These requests are being assessed against other projects identified through ROMAN/ RAMM and considered to warrant works being undertaken.

Similarly internal requests/suggestions have also been incorporated into the program, these emanate from staff who utilise their knowledge and experience to identify projects worth of consideration.

RECOMMENDATION / COUNCIL DECISION

Minute No: C.2741

Moved: Cr Little

Seconded: Cr Rumjantsev

That Council;

1. Endorse the following 2016/17 Road Program for incorporation into the 2016/17 Draft Budget

Resurface/Rehabilitate			
Road Name	Start	End	Treatment Type
O'NEILL ROAD	2490	4810	Resurface
OLD QUARRY ROAD	260	460	Resurface
STRICKLAND AVENUE	0	340	Resurface
MOUNT OMMANNEY ROAD	540	590	Resurface
PERINA PLACE	0	110	Resurface
LAWLEY AVENUE	0	310	Resurface
TRIMMER ROAD	2580	4160	Resurface
GILLETT ROAD	270	420	Resurface
THOMAS STREET	350	830	Resurface
IRISHTOWN ROAD LINK ROAD	0	320	Resurface
CHARLES STREET	570	1070	Resurface
DR DUNLOP GROVE	0	190	Resurface
GILLETT ROAD	30	270	Resurface
ENSIGN DALE PLACE	20	120	Resurface
BIRDIE PLACE	0	80	Resurface
ELIZABETH PLACE	0	130	Resurface
ELIZABETH PLACE	230	320	Resurface
MITCHELL AVENUE	0	2190	Resurface – Commodity Route Funded
CHIDLOW/ HAWES/ BURGOYNE ST	320	330	Resurface
COATES ROAD	1650	4350	Resurface
JENNAPULLIN ROAD	8800	9240	Resurface – RG Funded
LANCE STREET	0	230	Resurface
WILSON STREET	0	580	Resurface
QUEEN STREET	210	380	Rehabilitation

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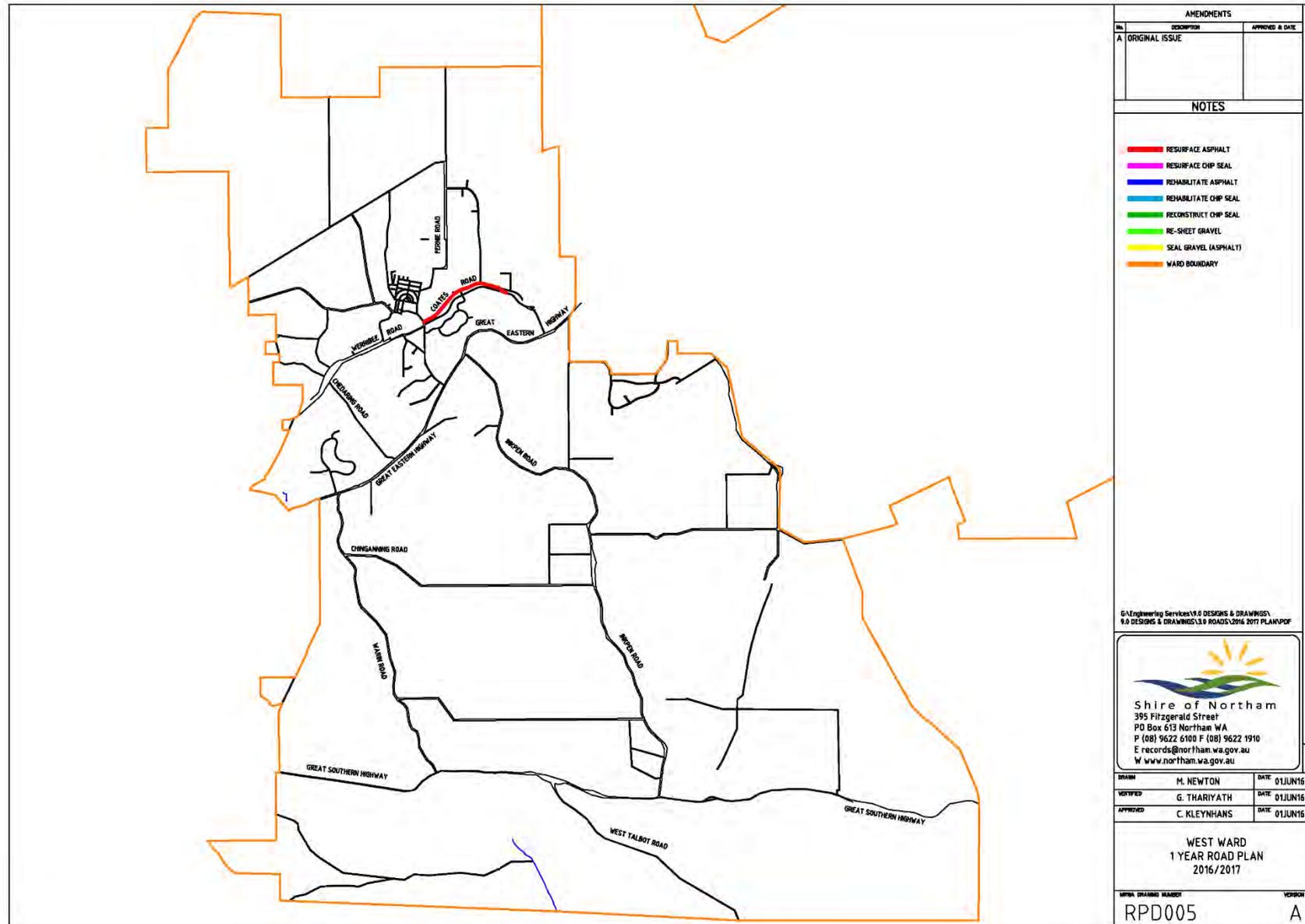
Construction			
Road Name	Start	End	Treatment Type
SPENCERS BROOK ROAD	7360	8200	Reconstruction – RRG Funded
SPENCERS BROOK ROAD	2900	5400	Reconstruction – Blackspot Funded
SOUTHERN BROOK ROAD	3600	6400	Reconstruction – RRG Funded
NEWMAN ROAD	0	500	Reconstruction
YATES STREET	0	130	Reconstruction
BEDFORD STREET	0	100	Reconstruction
Gravel Re-Sheet			
Road Name	Start	End	Treatment Type
AUGUSTINI ROAD	0	1300	Reconstruction
CHEDARING ROAD	1660	3040	Reconstruction
CHINGANNING ROAD	6000	7110	Reconstruction
LEAVER ROAD	0	2000	Reconstruction

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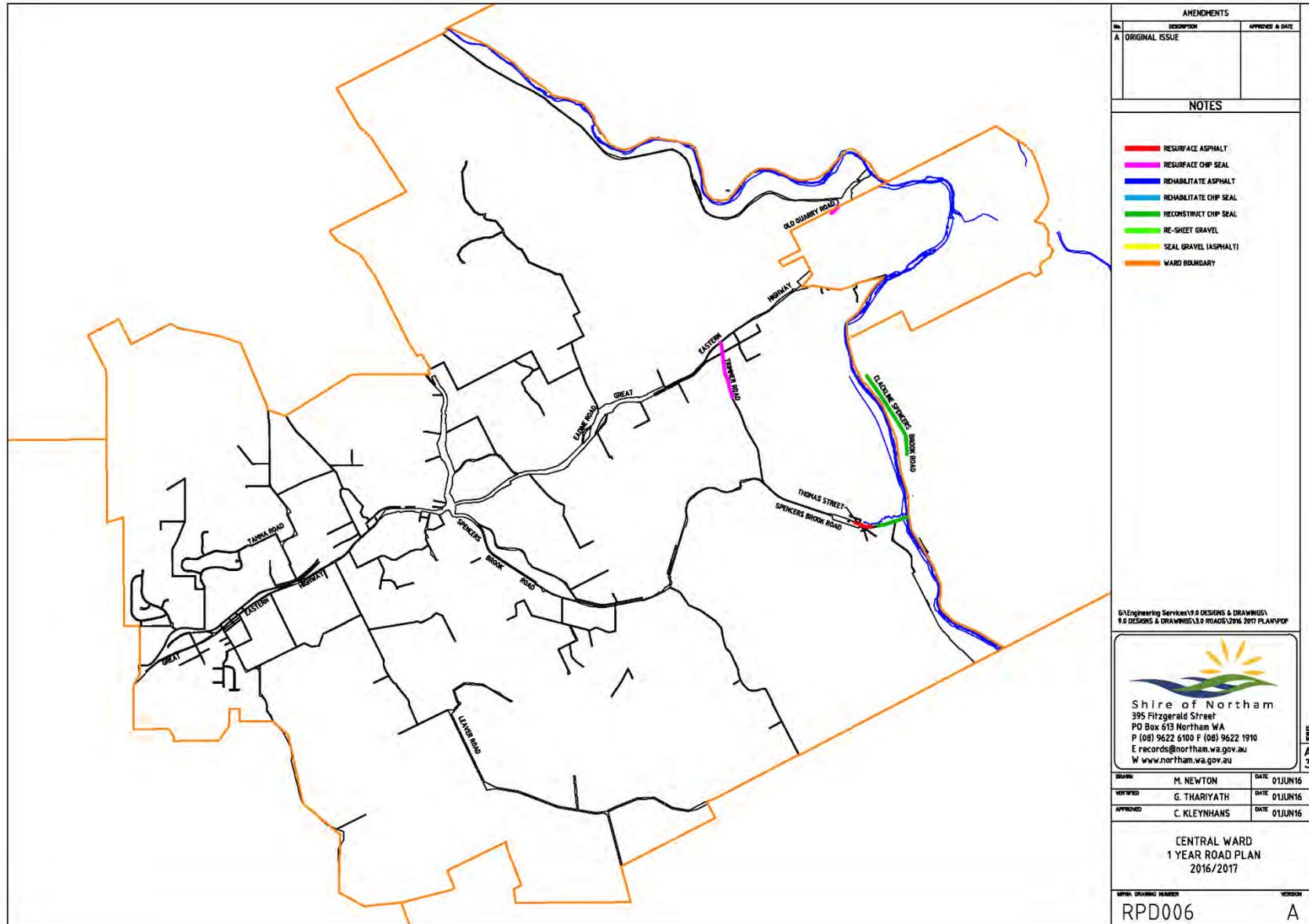
SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016



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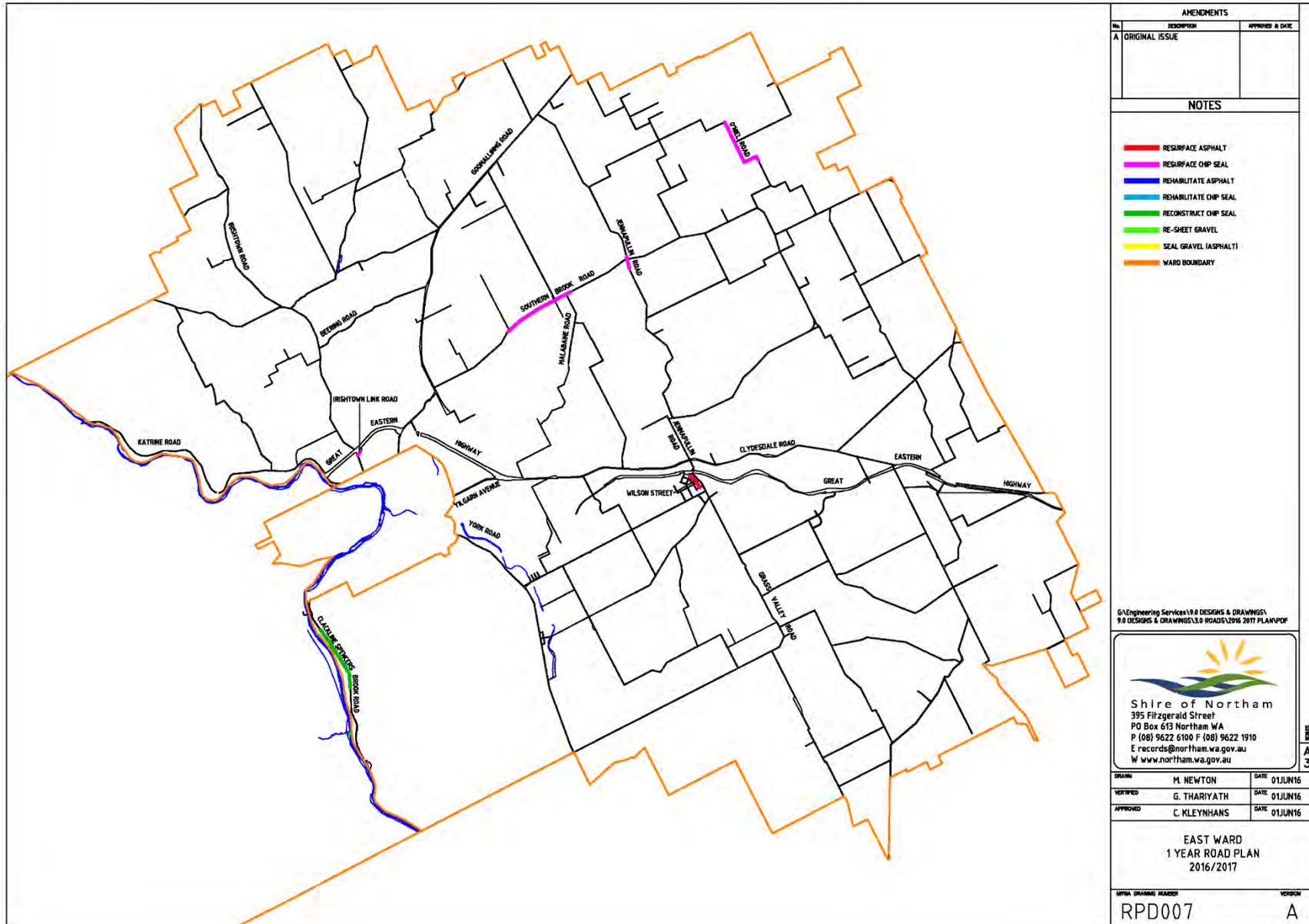
SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016



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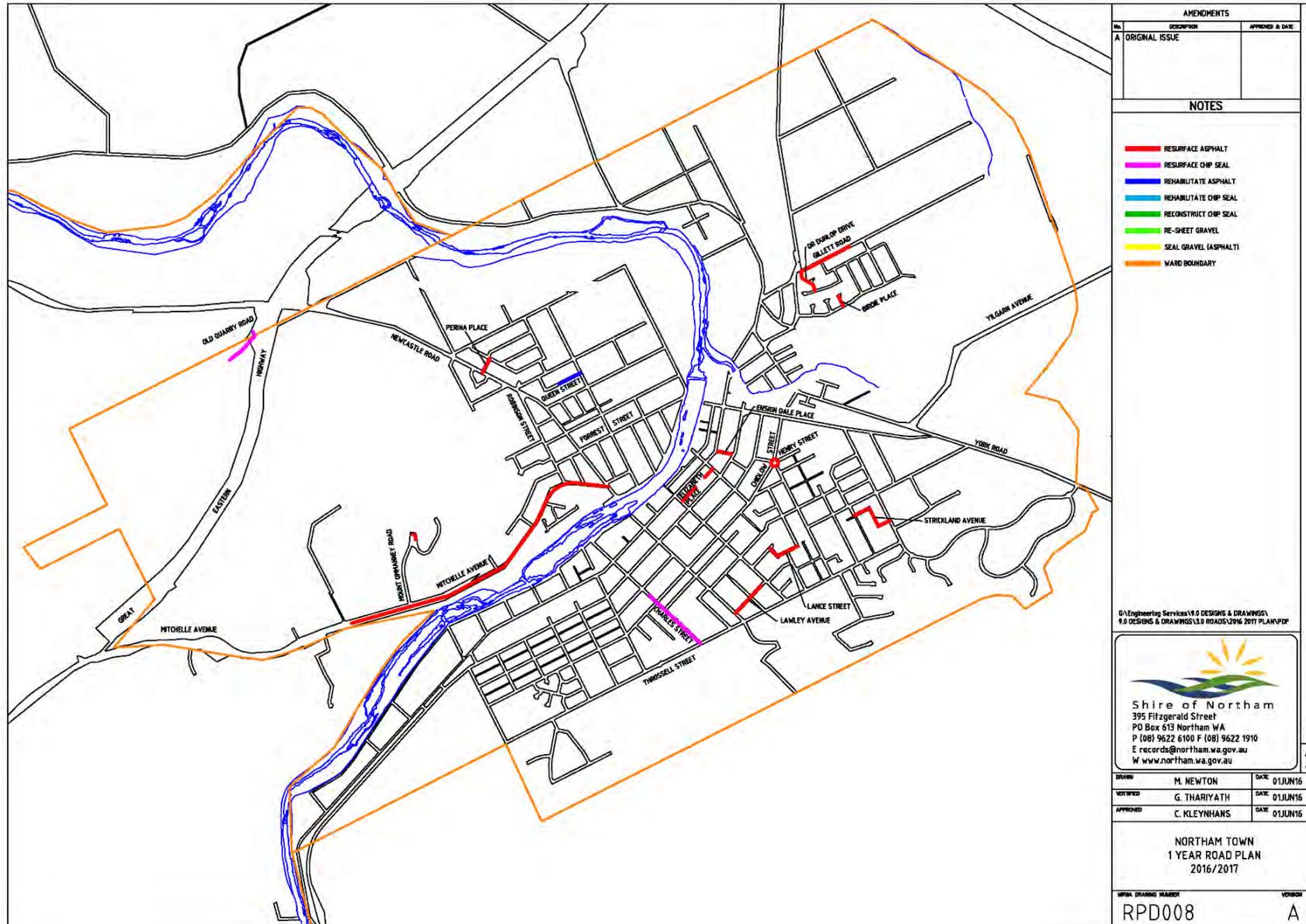


AMENDMENTS	
No.	DESCRIPTION
A	ORIGINAL ISSUE
APPROVED & DATE	
NOTES	
<ul style="list-style-type: none"> █ RESURFACE ASPHALT █ RESURFACE CHIP SEAL █ REHABILITATE ASPHALT █ REHABILITATE CHIP SEAL █ RECONSTRUCT CHIP SEAL █ RE-SHEET GRAVEL █ SEAL GRAVEL (ASPHALT) █ WARD BOUNDARY 	
G:\Engineering Services\1.0 DESIGNS & DRAWINGS\9.0 DESIGNS & DRAWINGS\3.0 ROADS\2016 2017 PLAN\PDF	
 Shire of Northam 395 Fitzgerald Street PO Box 613 Northam WA P (08) 9622 6100 F (08) 9622 1910 E records@northam.wa.gov.au W www.northam.wa.gov.au	
DRAWN	M. NEWTON
DATE	01JUN16
VERIFIED	G. THARIYATH
DATE	01JUN16
APPROVED	C. KLEYNHANS
DATE	01JUN16
EAST WARD 1 YEAR ROAD PLAN 2016/2017	
MPWA DRAWING NUMBER	VERSION
RPD007	A

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AMENDMENTS	
No.	DESCRIPTION
A	ORIGINAL ISSUE
APPROVED & DATE	
NOTES	
<ul style="list-style-type: none"> — RESURFACE ASPHALT — RESURFACE CHIP SEAL — REHABILITATE ASPHALT — REHABILITATE CHIP SEAL — RECONSTRUCT CHIP SEAL — RE-SHEET GRAVEL — SEAL GRAVEL (ASPHALT) — WARD BOUNDARY 	
6/1 Engineering Services V1.0 DESIGNS & DRAWINGS 9/0 DESIGNS & DRAWINGS V3.0 ROADS 2016 2017 PLAN/PDF	
 Shire of Northam 395 Fitzgerald Street PO Box 613 Northam WA P (08) 9622 6100 F (08) 9622 1910 E records@northam.wa.gov.au W www.northam.wa.gov.au	
DRAWN	M. NEWTON
DATE	01JUN16
NOTIFIED	G THARIYATH
DATE	01JUN16
APPROVED	C. KLEYNHANS
DATE	01JUN16
NORTHAM TOWN 1 YEAR ROAD PLAN 2016/2017	
DRAWING NUMBER	RPD008
VERSION	A

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Resurface/Rehabilitate												YEAR 1
Priority No.	Road Name	Start	End	Treatment Type	Notes	Priority	Length	Treatment Cost	Labour	Material	Surface Material	Comments
	OTHEL ROAD	4910	6982	Resurface	Cracking(14.871 > 8)	High	2172	\$75,620.00	\$15,773.00	\$47,314.00	Single Seal	
	OLD QUARRY ROAD	4160	6983	Resurface	Cracking(14.061 > 8)	High	1624	\$16,710.00			Single Seal	
	STRICKLAND AVENUE	340	6927	Resurface	Cracking(14.412 > 8)	High	5067	\$7,557.00			Single Seal	
	MOUNT ODMANNY ROAD	580	6939	Resurface	Cracking(14.000 > 8)	High	6349	\$7,375.00			Asph/Bit (obsoleted)	
	PERINA PLACE	130	6945	Resurface	Cracking(13.626 > 8)	High	6575	\$7,846.00			Single Seal	
	LAWLEY AVENUE	110	6981	Resurface	Cracking(13.462 > 8)	High	1571	\$1,916.00	\$9,250.00	\$1,500.00	Single Seal	
	TRIMMER ROAD	4160	7085	Resurface	Cracking(12.683 > 8)	High	2325	\$245,239.00	\$53,580.00	\$45,500.00	Single Seal	
	GILLET ROAD	420	6734	Resurface	Cracking(12.667 > 8)	High	6314	\$7,705.00			Asph/Bit (obsoleted)	
	THOMAS STREET	430	7075	Resurface	Cracking(12.083 > 8)	High	6245	\$5,740.00			Single Seal	
	WISHTOWN ROAD LINK ROAD	220	6976	Resurface	Cracking(11.522 > 8)	High	6158	\$2,510.00			Single Seal	
	CHARLES STREET	1070	6918	Resurface	Cracking(10.800 > 8)	High	5568	\$74,500.00			Single Seal	
	DR DUNLOP GROVE	190	6985	Resurface	Cracking(10.526 > 8)	High	4905	\$10,970.00			Asph/Bit (obsoleted)	
	GILLET ROAD	270	6733	Resurface	Cracking(10.817 > 8)	High	6963	\$3,220.00			Asph/Bit (obsoleted)	
	BRISON DALE PLACE	120	6906	Resurface	Cracking(10.000 > 8)	High	5585	\$25,530.00			Asph/Bit (obsoleted)	
	BIROE PLACE	180	6453	Resurface	Surface Age (115 > 15)	High	1373	\$13,030.00			Asph/Bit (obsoleted)	
	ELIZABETH PLACE	140	6902	Resurface	Surface Age (115 > 15)	High	1572	\$3,750.00			Asph/Bit (obsoleted)	
	ELIZABETH PLACE	220	6703	Resurface	Surface Age (115 > 15)	High	6963	\$20,375.00			Asph/Bit (obsoleted)	
	MITCHELL AVENUE	4160	6919	Resurface	Surface Age (115 > 15)	High	4729	\$216,275.00			Asph/Bit (obsoleted)	
	CHIDLOW HAWES/BURGOWNE	380	6643	Resurface	Surface Age (30 > 15)	High	6311	\$27,550.00	\$9,330.00	\$1,400.00	Res AC	
	COATES ROAD	4950	6676	Resurface	Surface Age (29 > 15)	High	2348	\$20,090.00			Single Seal	
	JENNAPOLLIN ROAD	6832	9240	Resurface	Surface Age (29 > 15)	High	2409	\$37,006.00			Single Seal	
	LARK STREET	240	6979	Resurface	Roughness (RI)(4.840 > 4.0)	Medium	6648	\$9,210.00			Single Seal	
	WILSON STREET	9	390	Rehabilitation	Patching(21.500 > 21)	Low	350	\$26,730.00			Single Seal	
	QUEEN STREET	210	380	Rehabilitation	Cracking(23.412 > 28)	Low	370	\$40,450.00				
								\$3,968,671.00	\$186,415.00	\$90,704.00		

Construction												
Priority No.	Road Name	Start	End	Treatment Type	Notes	Priority	Length	Treatment Cost	Labour	Material	Surface Material	Comments
51	SPENCERS BROOK ROAD	7300	9200	Reconstruction	Cracking(9.434 > 5)	High	840	\$1,720,660	\$4,818.76	\$1,732,344	Single Seal	Year 1 RRG Funded Blackstart Funded
52	SPENCERS BROOK ROAD	7100	5400	Reconstruction	Cracking(8.453 > 5)	High	2500	\$21,715.00	\$6,840.00	\$17,860.00	Single Seal	Year 1 RRG Funded
	SOUTHERN BROOK ROAD	3800	5400	Reconstruction	Surface Age (12 > 15)	High	2800	\$33,875.00	\$76,500.00	\$50,500.00	Single Seal	Year 2
	BURNHAM ROAD	300	300	Reconstruction		High	500	\$13,285.00	\$43,086.00	\$1,086.00	Single Seal	CARRY OVER
	YATES STREET	130	130	Reconstruction		High	350	\$30,365.00	\$30,555.00	\$1,080.00	Single Seal	CARRY OVER
	BEDFORD STREET	100	100	Reconstruction		High	350	\$3,649.00	\$37,880.00	\$1,980.00	Single Seal	CARRY OVER
								\$1,277,083.00	\$24,013.76	\$13,938.04		

Gravel Re-Sheet												
Priority No.	Road Name	Start	End	Treatment Type	Notes	Priority	Length	Treatment Cost	Labour	Material	Surface Material	Comments
	AUGUSTIN ROAD	5	1300	Reconstruction	Resheet	High	1300	\$11,452.00	\$31,222.00	\$12,426.00	Single Seal	CARRY OVER
	DEWBARING ROAD	5800	3000	Reconstruction	Resheet	High	1399	\$11,703.00	\$31,222.00	\$17,772.00	Single Seal	CARRY OVER
	CHRISTMAS BOND	6000	7100	Reconstruction	Resheet	High	1210	\$21,673.00	\$22,046.00	\$2,025.00	Single Seal	CARRY OVER
	LEAFER ROAD	9	2000	Reconstruction	Resheet	High	2000	\$10,878.00	\$33,460.00	\$25,464.00	Single Seal	CARRY OVER
								\$34,233.00	\$121,352.00	\$59,758.00		
								\$3,528,028.00	\$492,294.76	\$298,016.84		

Resurface												YEAR 2
Priority No.	Road Name	Start	End	Treatment Type	Notes	Priority	Length	Treatment Cost	Labour	Material	Surface Material	Comments
10	ROBINSON STREET D 2	0	450	Resurface	Cracking(12.292 > 8)	High	650	\$21,135.00			Single Seal	Year 2 AC Overlay
12	HERRING ROAD	0	400	Resurface	Cracking(12.000 > 8)	High	480	\$4,260.00			Single Seal	RRG A
14	CLYDEDALE ROAD	4540	3700	Resurface	Cracking(11.397 > 8)	High	4600	\$273,580.00			Single Seal	Year 2
22	SMITH ROAD	0	2050	Resurface	Cracking(10.377 > 8)	High	2080	\$228,950.00			Single Seal	Year 2
								\$728,925.00				

Construction												
Priority No.	Road Name	Start	End	Treatment Type	Notes	Priority	Length	Treatment Cost	Labour	Material	Surface Material	Comments
103	WELLINGTON STREET	5400	1700	Reconstruction	Surface Age (12 > 15)	High	40	\$9,500.00			Asph/Bit (obsoleted)	Year 3 RRG A
126	WELSHMAN ROAD	7230	6300	Reconstruction	Surface Age (20 > 15)	High	480	\$4,260.00			Single Seal	RRG A
106	WELSHMAN ROAD	12500	12150	Reconstruction	Surface Age (16 > 15)	High	680	\$42,150.00			Single Seal	RRG A
126	FITZGERALD STREET	1000	1420	Reconstruction	Surface Age (18 > 15)	High	330	\$41,679.00			Single Seal	RRG B
127	FITZGERALD STREET	1420	2000	Reconstruction	Surface Age (18 > 15)	High	580	\$15,740.00			Single Seal	RRG B
155	CLACKLINE TROODYS ROAD	3150	3000	Reconstruction	Surface Age (11 > 15)	High	150	\$24,100.00			Single Seal	RRG A
156	CLACKLINE TROODYS ROAD	4200	4220	Reconstruction	Surface Age (14 > 15)	High	30	\$1,850.00			Single Seal	RRG A
167	FITZGERALD STREET	0	1080	Reconstruction	Surface Age (11 > 15)	High	1090	\$76,300.00			Double Seal	RRG B
372	SPENCERS BROOK ROAD	11530	9150	Reconstruction	Surface Age (22 > 15)	High	520	\$40,040.00			Single Seal	RRG A
382	KONNERS STREET	0	200	Reconstruction	Surface Age (20 > 15)	High	210	\$2,090.00			Asph/Bit (obsoleted)	Year 5 RRG A
343	TALBOT WEST ROAD	3820	1910	Reconstruction	Surface Age (10 > 15)	High	2980	\$19,380.00			Single Seal	RRG B
345	BRISBANE ROAD	7750	7540	Reconstruction	Surface Age (19 > 15)	High	190	\$13,300.00			Single Seal	RRG A
363	SPENCERS BROOK ROAD	13970	13750	Reconstruction	Surface Age (13 > 15)	High	380	\$27,700.00			Single Seal	RRG A
392	SPENCERS BROOK ROAD	13750	2890	Reconstruction	Surface Age (19 > 15)	High	4220	\$22,609.00			Single Seal	RRG A
398	CHITTY ROAD	2980	3000	Reconstruction	Surface Age (18 > 15)	High	620	\$43,400.00			Single Seal	RRG B
374	SPENCERS BROOK - YORK RD	0	1850	Reconstruction	Surface Age (18 > 15)	High	1850	\$7,295,000.00			Single Seal	RRG A
275	TALBOT WEST ROAD	0	120	Reconstruction	Surface Age (19 > 15)	High	130	\$10,400.00			Single Seal	RRG B
383	SPENCERS BROOK ROAD	7950	8920	Reconstruction	Surface Age (17 > 15)	High	970	\$70,840.00			Single Seal	RRG A
386	SPENCERS BROOK ROAD	9140	11630	Reconstruction	Surface Age (17 > 15)	High	2490	\$11,730.00			Single Seal	RRG A
187	CLACKLINE TROODYS ROAD	0	1250	Reconstruction	Cracking(23.222 > 28)	Low	1240	\$25,570.00			Single Seal	RRG A
702	WELLINGTON STREET	1120	1180	Reconstruction	Cracking(22.000 > 28)	Low	50	\$38,620.00			Asph/Bit (obsoleted)	RRG A
706	SPENCERS BROOK ROAD	13150	13170	Reconstruction	Cracking(27.710 > 27)	Low	1020	\$15,530.00			Single Seal	RRG A
	WELSHMAN ROAD	7140	3720	Reconstruction		Low	6500	\$31,600.00			Single Seal	Request RRG A

List Eligible Roads for Commodity Route Funding (Refer Appendix B)												
Priority No.	Road Name	Start	End	Treatment Type	Notes	Priority	Length	Treatment Cost	Labour	Material	Surface Material	Comments
23	YILGANN AVENUE	2420	3120	Reconstruction	Cracking(15.671 > 8)	High	350	\$74,500.00			Single Seal	Year 3 Commodity Route A
33	KATHINE ROAD	80	10	Reconstruction	Cracking(10.000 > 8)	High	30	\$1,625.00			Asph/Bit (obsoleted)	Year 1 - 5 Commodity Route A
34	KATHINE ROAD	2390	1210	Reconstruction	Cracking(10.000 > 8)	High	20	\$1,550.00			Single Seal	Year 4 Commodity Route A
51	NITCHELL AVENUE	2720	2940	Reconstruction	Cracking(22.222 > 28)	High	220	\$7,280.00			Single Seal	Year 5 Commodity Route A
123	KATHINE ROAD	2210	2930	Reconstruction	Surface Age (40 > 15)	High	320	\$24,450.00			Single Seal	Commodity Route A
120	KATHINE ROAD	2930	2840	Reconstruction	Surface Age (48 > 15)	High	10	\$750.00			Single Seal	Commodity Route A
126	FITZGERALD STREET	2000	2010	Reconstruction	Surface Age (28 > 15)	High	10	\$850.00			Single Seal	Commodity Route B
127	FITZGERALD STREET	2010	2730	Reconstruction	Surface Age (28 > 15)	High	720	\$11,000.00			Single Seal	Commodity Route B
130	PEEL TERRACE	0	150	Reconstruction	Surface Age (18 > 15)	High	140	\$25,050.00			Asph/Bit (obsoleted)	Year 4 Commodity Route B
316	PEEL TERRACE	150	300	Reconstruction	Surface Age (23 > 15)	High	150	\$31,750.00			Asph/Bit (obsoleted)	Year 5 Commodity Route B
219	KATHINE ROAD	7530	8110	Reconstruction	Surface Age (22 > 15)	High	780	\$47,900.00			Single Seal	Commodity Route A
228	GLASS HOLE	0	20	Reconstruction	Surface Age (22 > 15)	High	20	\$650.00			Single Seal	Commodity Route B
338	NEWCASTLE ROAD	380	400	Reconstruction	Surface Age (10 > 15)	High	20	\$7,450.00			Asph/Bit (obsoleted)	Commodity Route B
339	NEWCASTLE ROAD	400	1430	Reconstruction	Surface Age (10 > 15)	High	1430	\$1,165,500.00			Single Seal	Commodity Route B
296	KATHINE ROAD	2210	2920	Reconstruction	Surface Age (13 > 15)	High	980	\$5,300.00			Single Seal	Commodity Route A
377	KATHINE ROAD	3450	4150	Reconstruction	Surface Age (10 > 15)	High	610	\$10,950.00			Single Seal	Commodity Route A
358	KATHINE ROAD	2720	3730	Reconstruction	Surface Age (19 > 15)	High	1650	\$17,210.00			Single Seal	Commodity Route A
303	LINLEY VALLEY ROAD	0	810	Reconstruction	Surface Age (13 > 15)	High	810	\$36,700.00			Single Seal	Commodity Route A
271	KATHINE ROAD	4100	5770	Reconstruction	Surface Age (18 > 15)	High	1470	\$11,025.00			Single Seal	Commodity Route A
379	KATHINE ROAD	1342	1820	Rehabilitation	Roughness (RI)(4.061 > 4.0)	Medium	30	\$5,450.00			Single Seal	Commodity Route A
127												

SHIRE OF NORTHAM

MINUTES

SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

TAMM ROAD	6030	6070	Reconstruction	Shade (A > 4)	High	40	\$14,400.00	Reactive	ICSS5167
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Other Roads (Ranked within top 100)

Priority No.	Road Name	Start	End	Treatment Type	Notes	Priority	Length	Treatment Cost	Surface Material	Comments
12	MOORE STREET	0	730	Resurfaced	Cracking(12,055 > 8)	High	730	\$19,640.00	Single Seal	
13	BRASS VALLEY SOUTH ROAD	5870	6280	Resurfaced	Cracking(11,951 > 8)	High	410	\$73,860.00	Single Seal	
16	SOUTHERN BROOK ROAD	1930	2030	Resurfaced	Cracking(11,845 > 8)	High	100	\$17,160.00	Single Seal	
20	EDMONSON STREET	0	250	Resurfaced	Cracking(10,053 > 8)	High	250	\$9,260.00	Asphalt (obsolete)	Needs to be coated in total When and seal Contractor AC Overlay
23	YREKARR AVENUE	2820	3120	Resurfaced	Cracking(10,371 > 8)	High	300	\$25,500.00	Single Seal	Completely Road-A
25	ROCKETT STREET	0	220	Resurfaced	Cracking(10,455 > 8)	High	220	\$14,520.00	Single Seal	
26	DUMBLARTON ROAD	4080	5200	Resurfaced	Cracking(10,422 > 8)	High	1120	\$13,660.00	Single Seal	
28	BRASS VALLEY SOUTH ROAD	0	3180	Resurfaced	Cracking(10,281 > 8)	High	3180	\$12,160.00	Single Seal	
29	BROOKME TERRACE	0	360	Resurfaced	Cracking(10,300 > 8)	High	360	\$860.00	Single Seal	
30	EAST STREET	0	70	Resurfaced	Cracking(10,000 > 8)	High	70	\$950.00	Single Seal	
32	HULL STREET	870	890	Resurfaced	Cracking(10,300 > 8)	High	20	\$1,420.00	Single Seal	
34	KATHMERE ROAD	1630	2030	Resurfaced	Cracking(10,200 > 8)	High	400	\$1,560.00	Single Seal	
35	LOWEY AVENUE	0	50	Resurfaced	Cracking(10,300 > 8)	High	50	\$3,750.00	Single Seal	Connectivity Road-A
36	MCMILLAN PLACE	0	230	Resurfaced	Cracking(10,000 > 8)	High	230	\$11,500.00	Single Seal	Very poor condition AC Overlay
37	MUDALLA WAY	0	100	Resurfaced	Cracking(10,200 > 8)	High	100	\$1,800.00	Single Seal	
39	ZIMMO TERRACE	0	400	Resurfaced	Cracking(10,500 > 8)	High	400	\$49,860.00	Single Seal	
40	BRASS VALLEY SOUTH ROAD	7280	8000	Resurfaced	Cracking(9,582 > 8)	High	720	\$63,860.00	Single Seal	
41	BURN STREET SOUTH	0	500	Resurfaced	Cracking(9,521 > 8)	High	500	\$42,200.00	Single Seal	
42	CARPER ROAD	4590	5510	Resurfaced	Cracking(9,888 > 8)	High	920	\$11,500.00	Single Seal	
43	BRASS VALLEY SOUTH ROAD	9260	9500	Resurfaced	Cracking(9,523 > 8)	High	240	\$19,460.00	Single Seal	
45	LEAKE STREET	0	120	Resurfaced	Cracking(9,751 > 8)	High	120	\$11,240.00	Single Seal	
46	DOCKERS DRIVE	0	250	Resurfaced	Cracking(9,750 > 8)	High	250	\$18,000.00	Single Seal	
47	NODDIEY STREET	0	250	Resurfaced	Cracking(9,162 > 8)	High	240	\$12,660.00	Single Seal	
48	TRIMMER ROAD	1020	2780	Resurfaced	Cracking(9,162 > 8)	High	1760	\$17,720.00	Single Seal	
49	ROCKVALE ROAD	3950	4000	Resurfaced	Cracking(9,211 > 8)	High	50	\$3,350.00	Single Seal	
50	DE CASTILLA ROAD	0	390	Resurfaced	Cracking(9,330 > 8)	High	390	\$152,856.00	Single Seal	
52	BROOME TERRACE	0	350	Resurfaced	Cracking(8,257 > 8)	High	350	\$27,480.00	Single Seal	
53	OLD YORK ROAD	3060	3230	Resurfaced	Cracking(8,284 > 8)	High	170	\$39,670.00	Asphalt (obsolete)	
54	HULL STREET	410	870	Resurfaced	Cracking(8,200 > 8)	High	460	\$19,260.00	Single Seal	
56	MULKERRIE ROAD	1600	7230	Resurfaced	Cracking(8,384 > 8)	High	5630	\$394,127.00	Single Seal	
57	MITCHELL AVENUE	3720	3840	Resurfaced	Cracking(8,333 > 8)	High	120	\$21,600.00	Single Seal	
58	DURBIN STREET	0	220	Resurfaced	Cracking(8,192 > 8)	High	220	\$16,720.00	Single Seal	Connectivity Road-A
59	FLY STREET	0	480	Resurfaced	Cracking(8,111 > 8)	High	480	\$6,240.00	Single Seal	
60	LEEMING ROAD	0	2750	Resurfaced	Cracking(8,219 > 8)	High	2050	\$83,860.00	Single Seal	
61	BRASS VALLEY SOUTH ROAD	3160	3870	Resurfaced	Patching(9,131 > 4)	High	710	\$109,270.00	Single Seal	
62	TRICK ROAD	0	140	Resurfaced	Patching(7,308 > 4)	High	130	\$4,220.00	Single Seal	
63	HADFIELD ROAD	0	360	Resurfaced	Patching(6,220 > 4)	High	360	\$22,382.00	Single Seal	
64	MITCHELL AVENUE FRONT 184	3840	4070	Resurfaced	Patching(6,761 > 4)	High	230	\$29,700.00	Single Seal	
65	MOUNT O'MANNEY ROAD	0	100	Resurfaced	Patching(4,550 > 4)	High	100	\$5,550.00	Single Seal	
66	QUELELLING ROAD	0	220	Resurfaced	Patching(4,318 > 3)	High	220	\$15,708.00	Single Seal	
67	BEST VIEW	0	110	Resurfaced	Surface Age(115 > 15)	High	110	\$6,860.00	Single Seal	
68	BESWICK PLACE	0	80	Resurfaced	Surface Age(115 > 15)	High	80	\$300.00	Single Seal	
70	CHRISTMAS ROAD	4000	4160	Resurfaced	Surface Age(115 > 15)	High	160	\$6,400.00	Single Seal	
71	COLLEGE STREET	0	50	Resurfaced	Surface Age(115 > 15)	High	50	\$6,100.00	Single Seal	
72	COLLEGE STREET	50	180	Resurfaced	Surface Age(115 > 15)	High	130	\$16,230.00	Single Seal	
73	DUFFERIN CLOSE	0	130	Resurfaced	Surface Age(115 > 15)	High	130	\$5,390.00	Single Seal	
75	ENFRANCE AVENUE	0	120	Resurfaced	Surface Age(115 > 15)	High	120	\$7,200.00	Single Seal	
76	HARRIET STREET	0	170	Resurfaced	Surface Age(115 > 15)	High	170	\$25,500.00	Asphalt (obsolete)	
78	REAL COURT	0	50	Resurfaced	Surface Age(115 > 15)	High	50	\$3,900.00	Single Seal	
79	HEATHER GLADE	0	220	Resurfaced	Surface Age(115 > 15)	High	220	\$11,860.00	Single Seal	
80	HEATON DRIVE	0	120	Resurfaced	Surface Age(115 > 15)	High	120	\$18,500.00	Asphalt (obsolete)	
81	HEATON DRIVE	130	350	Resurfaced	Surface Age(115 > 15)	High	220	\$33,000.00	Asphalt (obsolete)	
82	HASLAVAR DRIVE	0	180	Resurfaced	Surface Age(115 > 15)	High	180	\$27,000.00	Asphalt (obsolete)	
83	HASLAVAR DRIVE	180	920	Resurfaced	Surface Age(115 > 15)	High	740	\$43,400.00	Single Seal	
84	KIMBERLEY ROAD	370	970	Resurfaced	Surface Age(115 > 15)	High	600	\$3,060.00	Single Seal	
85	LEEMING ROAD	2740	3750	Resurfaced	Surface Age(115 > 15)	High	1010	\$80,860.00	Single Seal	
86	LOCKER ROAD	120	590	Resurfaced	Surface Age(115 > 15)	High	470	\$41,998.00	Single Seal	
87	LOCKER ROAD	590	770	Resurfaced	Surface Age(115 > 15)	High	180	\$13,880.00	Single Seal	
88	LODGE STREET	140	320	Resurfaced	Surface Age(115 > 15)	High	180	\$12,674.00	Single Seal	
89	MARKHAM PLACE	0	910	Resurfaced	Surface Age(115 > 15)	High	830	\$132,800.00	Asphalt (obsolete)	
90	MARKHAM PLACE	0	220	Resurfaced	Surface Age(115 > 15)	High	220	\$10,760.00	Asphalt (obsolete)	
91	MARKHAM DRIVE	220	320	Resurfaced	Surface Age(115 > 15)	High	100	\$18,900.00	Asphalt (obsolete)	
92	MITTAWAY DRIVE	0	120	Resurfaced	Surface Age(115 > 15)	High	120	\$7,200.00	Single Seal	
93	RIVERSIDE OUTLOOK	0	300	Resurfaced	Surface Age(115 > 15)	High	300	\$18,000.00	Single Seal	
94	SCOTT ROAD	0	150	Resurfaced	Surface Age(115 > 15)	High	150	\$13,500.00	Single Seal	
95	SHMS ROAD	3920	3930	Resurfaced	Surface Age(115 > 15)	High	10	\$7,400.00	Single Seal	
96	STROMPF ROAD	0	720	Resurfaced	Surface Age(115 > 15)	High	720	\$25,860.00	Single Seal	
97	TAMM ROAD	240	300	Resurfaced	Surface Age(115 > 15)	High	60	\$6,000.00	Single Seal	
98	TAMM ROAD	1250	1290	Resurfaced	Surface Age(115 > 15)	High	40	\$3,600.00	Single Seal	
99	TAMM ROAD	2030	2040	Resurfaced	Surface Age(115 > 15)	High	10	\$12,000.00	Single Seal	
100	WARRER ROAD	320	250	Resurfaced	Surface Age(115 > 15)	High	130	\$9,900.00	Single Seal	

11. CONFIRMATION OF MINUTES OF PREVIOUS MEETINGS

11.1 RECEIPT OF MINUTES OF THE REGIONAL CENTRES IMPLEMENTATION COMMITTEE

RECOMMENDATION / COUNCIL DECISION

Minute No: C.2742

Moved: Cr Williams

Seconded: Cr Hughes

That Council receives the minutes of the Regional Centres Implementation Committee Meeting held 13 June 2016.

CARRIED 10/0

11.2 ADOPTION OF THE RECOMMENDATIONS OF THE REGIONAL CENTRES IMPLEMENTATION COMMITTEE

RECOMMENDATION / COUNCIL DECISION

Minute No: C.2743

Moved: Cr Pollard

Seconded: Cr Beresford

That Council;

- 1. Not take any further action with regard to the proposed dredging at this time due to the significant costs involved without grant funding being in place**
- 2. Prepare a business case for funding from the State/Federal Government for funding to assist with the dredging of the Avon River between the weir and the current Avon Bridge;**
- 3. Undertake investigations and actions with regard to the securing of a suitable site for sediment disposal for any proposed future dredging activities;**
- 4. Continues to make an annual allocation to the Dredging Reserve Fund;**
- 5. Undertake detailed planning to improve the environmental and aesthetic amenity of the Avon River; and**
- 6. Accepts the update as provided noting that business case funding allocated in the 2016/17 budget is to be progressed for the following;**
 - 1. Planning for social housing areas redevelopment.**
 - 2. Recreation Centre Stage 2; and**
 - 3. CBA/D Development.**

CARRIED 10/0

SHIRE OF NORTHAM
MINUTES
SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016



Shire of Northam
Heritage, Commerce and Lifestyle

SHIRE OF NORTHAM

MINUTES

REGIONAL CENTRES IMPLEMENTATION COMMITTEE
MEETING

HELD

MONDAY

13 JUNE 2016

SHIRE OF NORTHAM
MINUTES
SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

SHIRE OF NORTHAM
MINUTES
REGIONAL CENTRES IMPLEMENTATION COMMITTEE MEETING HELD ON 13 JUNE 2016

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SHIRE OF NORTHAM
MINUTES
SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

SHIRE OF NORTHAM
MINUTES
REGIONAL CENTRES IMPLEMENTATION COMMITTEE MEETING HELD ON 13 JUNE 2016

**Minutes of the Regional Centres Implementation Committee meeting held in the
Council Chambers on MONDAY, 13 June 2016 at 1.00pm.**

DISCLAIMER

No responsibility whatsoever is implied or accepted by the Shire of Northam for any act, omission or statement or intimation occurring during Council/Committee meetings or during formal/informal conversations with staff. The Shire of Northam disclaims any liability for any loss whatsoever and howsoever caused arising out of reliance by any person or legal entity on any such act, omission or statement or intimation occurring during Council/Committee meetings or discussions. Any person or legal entity who acts or fails to act in reliance upon any statement does so at that person's or legal entity's own risk.

In particular and without derogating in any way from the broad disclaimer above, in any discussion regarding any planning application or application for a licence, any statement or limitation of approval made by a member or officer of the Shire of Northam during the course of any meeting is not intended to be and is not taken as notice or approval from the Shire of Northam. The Shire of Northam warns that anyone who has an application lodged with the Shire of Northam must obtain and only should rely on **WRITTEN CONFIRMATION** of the outcome of the application, and any conditions attaching to the decision made by the Shire of Northam in respect of the application.

SHIRE OF NORTHAM
MINUTES
SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

SHIRE OF NORTHAM
MINUTES
REGIONAL CENTRES IMPLEMENTATION COMMITTEE MEETING HELD ON 13 JUNE 2016

1. OPENING AND WELCOME

The Presiding Member, Cr S B Pollard declared the meeting open at 1.01pm.

2. DECLARATION OF INTEREST

Parts of Division 6 Subdivision 1 of the Local Government Act 1995 requires Council members and employees to disclose any direct or indirect financial interest or general interest in any matter listed in this agenda.

The Act also requires the nature of the interest to be disclosed in writing before the meeting or immediately before the matter being discussed.

NB A Council member who makes a disclosure must not preside or participate in, or be present during, any discussion or decision making procedure relating to the disclosed matter unless the procedures set out in Sections 5.68 or 5.69 of the Act have been complied with.

3. ATTENDANCE

President	S Pollard
Councillors	D Hughes
	D Beresford
	J Williams
Northam Chamber of Commerce	A Marshall
Avon Community Development Foundation	P Tomlinson
Community Representative	C McConnell

EX-OFFICIO MEMBERS

Shire of Northam	
Executive Manager Development Services	C Hunt
Chief Executive Officer	J Whiteaker
Executive Assistant – CEO	A Maxwell

4. APOLOGIES

EX-OFFICIO MEMBERS

Mia Davies MLA Office	
RDA Wheatbelt	J Grist
Community Representative	R Bristow-Stagg

SHIRE OF NORTHAM
MINUTES
SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

SHIRE OF NORTHAM
MINUTES
REGIONAL CENTRES IMPLEMENTATION COMMITTEE MEETING HELD ON 13 JUNE 2016

5. CONFIRMATION OF MINUTES OF PREVIOUS MEETINGS

RECOMMENDATION / COMMITTEE DECISION

Minute No: RCI.17

Moved: Cr Hughes
Seconded: Cr Williams

That the minutes of the Regionals Centres Implementation Committee Meeting held on 3 September 2015 be confirmed as a true and correct record of that meeting.

CARRIED 6/0

5.1 Update on progress of Outstanding Committee Decisions

- 5.1.1 That Council accepts the update on the progress against the Growth Plan performance indicators as provided and request the Chief Executive Officer to investigate the cost of 'custom modelling' as outlined in the growth plan performance indicators.**

The following advice was received from Technical Director - Economics
RPS Australia Asia Pacific;

Custom modelling of sub-sections of the economy to understand changes in Gross Regional Product can be undertaken however this modelling for areas with fewer than 50,000 residents is reliant on employment data which is only current to the 2011 Census of Population and Housing. Modellers such as ourselves and REMPLAN would have to make some assumptions regarding the change in the workforce since this period which would limit the accuracy of the outputs.

Therefore, given the 2016 Census is due to be held later this year, I recommend that the modelling be undertaken from mid-2017 when updated and accurate information is available

As a consequence no further action will be taken until late 2017.

- 5.2 Invite the Aboriginal Elders to participate in the Regional Centres Implementation Committee**

This is proving to be challenging given the range of 'elders' within the community. The Aboriginal community are being widely consulted through the Aboriginal & Environmental Interpretive Centre which it is hoped will result in a more aligned Aboriginal Community, which may then assist in identifying an appropriate representative. Matter is therefore in hold.

SHIRE OF NORTHAM
MINUTES
SPECIAL COUNCIL MEETING TO BE HELD ON 29 JUNE 2016

SHIRE OF NORTHAM
MINUTES

REGIONAL CENTRES IMPLEMENTATION COMMITTEE MEETING HELD ON 13 JUNE 2016

6. AGENDA ITEMS

Ms C McConnell entered the Council Chambers at 1.03pm.

6.1 MANAGEMENT OPTIONS FOR NORTHAM TOWN POOL (AVON RIVER)

Name of Applicant:	Internal Report
File Ref:	7.2.3.1
Officer:	Chadd Hunt/Jason Whiteaker
Officer Interest:	N/A
Policy:	Local Government Act 1995
Voting:	Simple Majority

PURPOSE

For the Committee to review the most appropriate methodology for the future management and ongoing maintenance of the Northam Town Pool section of the Avon River.

BACKGROUND

The Committee recommended to Council the following at its meeting held on 3rd September 2015 –

That Council request the Chief Executive Officer to;

- 1. Call for tenders to undertake sediment removal from the Avon River between the Avon Bridge and Avon Weir;*
- 2. Structure the tender so as not to preclude any of the dredging options including (dredging of current channel, dredging of entire water body, dredging of two channels, dredging of pool area downstream of Peel Street Bridge);*
- 3. Structure the tender to allow it to go over multiple years if required;*
- 4. Undertake community consultation in accordance with the provided communication strategy in order to formulate a view on what the community would like its river to be in coming years;*
- 5. Explore the opportunity to utilise nitrate to assist in controlling smell which emanates from the Avon River from time to time; and*
- 6. Be in a position to report back to the Committee the outcomes of the above no later than November 2015.*

Council resolved at its meeting held on 16 September 2015 also endorsed the above recommendations.

Since the above resolution Council staff have undertaken further investigation with respect to the dredging options and engaged the services of a company specialising in dredging

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advice and tendering. The reason for the additional work was to ascertain the likely costs associated with each of the above options for the tender as well as the logistics involved in the storage and disposal of the extracted sediment. This information was required in order for the Committee and Council to make a fully informed decision. Following the submission of the preliminary report the consultants were further engaged to provide additional information on an alternate site for sediment disposal and storage. A copy of the final report is attached to this agenda.

In addition advice was sought from both Matt Giraudo (Consulting Hydrologist) and Department of Water on the reports submitted. A copy of these reports are also attached to the Agenda.

Community consultation was also undertaken with regard to the Avon River and Town Pool with the results of which are attached to this report.

STATUTORY REQUIREMENTS

The Shire of Northam has a funding agreement in place with the Department of Regional Development requiring the Council to finalise this project to the detailed design stage.

The statutory framework associated with the Town Pool is complex and involves Rights in Water Irrigation Act 1914, Statewide Policy No 5 – Environmental Water Provisions Policy for Western Australia, Environmental Protection Act and Aboriginal Heritage Act 1972.

It is understood that because the Town Pool is an “artificial” waterbody responsibility for remedial actions (such as dredging) has historically been the responsibility of the local authority, notwithstanding that approvals from other government agencies are required to undertake those works.

CONFORMITY WITH THE COMMUNITY STRATEGIC PLAN

OBJECTIVE N2: Enhance the health and integrity of the natural environment

STRATEGY N2.1: Identify vulnerable environments or areas in need of protection

STRATEGY N2.2: Protect the integrity of the ecosystems of our rivers and waterways

STRATEGY N2.3: Employ risk management strategies and measures to protect natural assets from natural disasters, including fire and flood.

BUDGET IMPLICATIONS

The Funding agreement with the Department of Regional Development and Lands indicates a total remaining budget of approximately \$161,000 for this component of the project associated with the Avon River improvements.

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Council allocated a figure of \$273,600 listed in the 2015/16 Budget for dredging with a figure of \$223,600 being offset by a transfer from Reserve. This leaves a remaining residual amount of \$67,000 within that reserve.

Depending on the option proposed to be undertaken the cost of the dredging can range from \$600,000 to \$1,500,000.

OFFICER'S COMMENT

A concern that has been raised by the Department of Water is with regard to the proposed dredging of the western channel as follows –

In dredging the western channel, there may be a risk to the integrity of the islands. i.e. increasing the risk of them being subject to erosion. I believe there is already some erosion of some islands occurring, hence the rocks deposited around the edges by Peter Wheatherly in recent years. Although Matt Giraudo's Dec 2013 paper on sediment analysis looked at bathymetry and sediment makeup, depths and deposition rates, it didn't include proper hydrodynamic modelling to show what effect the proposed channel dredging would have on deposition/scour areas. Looking at Fig. 22 in that document, the downstream-most island on the western side looks like it could be impacted by a channel excavated between it and the bank. It may be prudent to have proper hydrodynamic and sediment deposition/scouring numeric modelling done if the western channel is to be dredged.

It is also staff's contention that at some stage dredging will need to be undertaken in the Town Pool and that it is not reasonable for the State Government to expect that the total cost is met by Local Government. As mentioned within the previous reports the Avon River and the town pool is a highly altered and complex system. What is also clear is that there is no single solution to the issues associated with the river system and particularly the town pool. The most recent correspondence from Matt Giraudo confirms this fact –

The cause of poor water quality is important in understanding the likely success or otherwise of potential intervention strategies, including dredging. The following issues are critical in understanding the management intervention strategies:

- *Most of the sediment deposition into the Northam Town Pool is associated sediment flow within the river itself, and therefore does not come from the Town of Northam.*
- *The key driver impacting water quality is not nutrient input from the town but organic matter contained within sediments.*
- *Phosphorus contained within the sediment appears largely inactive – in that it is likely to be bound to the sediment and not readily bioavailable.*
- *The primary source of N is from agricultural land.*

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In staff's opinion a primary question for the Committee and Council is if the current expenditure highlighted within the attached report will provide the Community with value for the investment required. There is some concern that the cost of expenditure will not match the communities' expectations for the appearance and use of the Town Pool. The recent comments from Matt Giraudo are relevant with respect to the potential benefits of dredging –

Given these management drivers it follows, that:

- *Investment in nutrient reduction activities in the Town of Northam is unlikely to result in a significant improvement in water quality in the Town Pool.*
- *Water quality improvement within the Town of Northam should concentrate on reducing organic matter reaching the Town Pool to reduce BOD particularly during summer storm events.*
- *Partial excavation of sediment from the Town Pool will in itself probably have a limited impact on overall water quality of the Town Pool. This is because there will likely be sufficient organic matter remaining in sediments after excavation to drive anoxic conditions during summer months, particularly during years of limited summer flow in the river.*

Dredging (particularly the western channel) will however have an aesthetic improvement to the river in that the additional water in the river for longer periods and hence the exposed banks will not be as prevalent. This is also dependent on a number of other factors including summer rainfall events, climatic condition and seasonal variations.

If dredging is to be undertaken a major concern and cost is with respect to the storage, ongoing treatment and disposal of the sediment once extracted. The original scoping study looked at areas under the direct control of Council however it is apparent that the sites selected were not suitable and significant restrictions on the amount of dredge material that could be stored and treated. There was also significant costs in building the storage structure due to the fact that all materials had to be brought into the site. The revised report looked at alternatives that provided both a greater area and reduced construction costs. Given the above comments on the fact that at some stage dredging will need to occur it is recommended by staff that access to the identified land be secured on a long term basis (either purchased or leased). Further details will be provided verbally at the meeting.

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RECOMMENDATION

That it be recommended to Council that it ;

1. Not take any further action with regard to the proposed dredging at this time due to the significant costs involved without grant funding being in place
2. Prepare a business case for funding from the State/Federal Government for funding to assist with the dredging of the Avon River between the weir and the current Avon Bridge;
3. Undertake investigations and actions with regard to the securing of a suitable site for sediment disposal for any proposed future dredging activities.
4. Continues to make an annual allocation to the Dredging Reserve Fund.

COMMITTEE DECISION

Minute No: RCI.18

Moved: Paul Tomlinson

Seconded: Cr Des Hughes

That it be recommended to Council that it;

1. Not take any further action with regard to the proposed dredging at this time due to the significant costs involved without grant funding being in place
2. Prepare a business case for funding from the State/Federal Government for funding to assist with the dredging of the Avon River between the weir and the current Avon Bridge;
3. Undertake investigations and actions with regard to the securing of a suitable site for sediment disposal for any proposed future dredging activities.
4. Continues to make an annual allocation to the Dredging Reserve Fund.
5. Undertake detailed planning to improve the environmental and aesthetic amenity of the Avon River

CARRIED 7/0

COMMITTEE DISCUSSION

- In relation to funding sources, it was raised that Council must have a clear course of action and proposed solution.
- It was suggested that monitoring post dredging be utilised to monitor the water quality and other associated outcomes.

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ATTACHMENT 1 – COMMUNITY FEEDBACK



AVON RIVER REVITALISATION

The aim of the Avon River Revitalisation community consultations is to define some of the issues that the local community feel are important to them concerning the Avon River between the Avon Bridge and the Avon weir, and identify potential strategies to improve the health, appearance and use of the river.

81 people completed the feedback forms.

Is the Avon River important to our community? Why?

100% of the people who completed a survey indicated that the river is important to the community. Reasons:

- It is the only piece of remnant vegetation left in the Shire.
- It is a meeting point. (x2)
- It is a place of relaxation.
- It is a major feature of the town, both for locals and to attract visitors.
- It is a big tourist attraction. (x6)
- It is home to a lot of wildlife.
- It should be important to more people but it isn't.
- It is the focal point of the community and encourages people to visit (e.g. Avon Descent).
- It is the origin of the Swan River.
- It provides habitat and last refuge for native species that have had their habitat destroyed elsewhere.
- Our kids share the river and the stories of the river and it is important to our culture.
- It is a natural resource for the town. (x5)
- It is the main thoroughfare to Northam.
- The town was built around the river and as such it forms a focal point. (x2)
- The river is the heart of our town.
- It is a quiet place to meet, BBQ, exercise, play and just enjoy living in the country.
- The river is important to our environmental tourism, quality of life and the overall wellbeing of our town.
- It is central and an easily accessible area of beauty which provides light recreation and leisure for a wide range of users.
- It is a vital part of the Avon Valley history and an integral part of our history.
- It should be retained and revitalised for the sake of future generations.
- Aesthetically and ecologically it is important and the community should be able to use it more.
- It allows people to interact with wildlife. It gives travellers a reason to stop in our town to have the experience.
- Great for photography.
- It is a focal point for the town. (x5)

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What DO you like about the Avon River, between the Avon Bridge and Avon Weir?

- I like the walk around that section of the river and looking at the water birds. (x10)
- I like the swinging bridge and the islands in the middle.(x4)
- Wildlife. The Swans are an asset of Northam. (x7)
- I like the open community area.
- I like the bird life and it is a very enjoyable spot. (x2)
- I like the history and wildlife.
- Interacting with the Swans. (x8)
- I love how it looks. (x3)
- The parks surrounding the river are great. (x3)
- It brings a calming serenity to Northam and the birdlife is lovely.
- I love the tall trees and the cooling breeze that skips off the river.
- I like the fact that you can go there and enjoy the surrounds.
- Not much as it is. When it rains it is full, clean and beautiful.
- It is a quiet and peaceful area.
- It is a hell of an asset.
- I don't like much about it as it is at present. (x3)
- The footpaths are really well done.(x5)
- I find it aesthetically pleasing and relaxing.
- I like its beauty. I like how it is kept green and pretty. The convenient walk way is great.
- I like the information signs which give me details about the birds etc.
- I like the sculptures in the park and the fact that the giant trees have been retained.
- I like the wildlife and the views. The reflections are stunning.

What DON'T you like about the Avon River, between the Avon Bridge and Avon Weir?

- The vandalism of descriptive plaques is terrible.
- Smell and algae in summer. (x8)
- The rubbish that people are leaving around the river. (x14)
- It is stagnant, dirty, messy and full of rubbish.
- It looks unloved. (x3)
- It is dirty, polluted and unhealthy. (x5)
- It is underutilised.
- The water fountains don't work anymore.
- Salinity is destroying the river.
- The weir is a disgrace. (x3)
- There should be more shelter around the river.
- Lack of community activities. Should have more open air concerts and movies.
- That you cannot touch it because it is so contaminated.
- Should be healthy so it can be used by the community for recreation.
- Broome Terrace side is nothing. There should be more to do on this side.
- It needs more vegetation. It is barren and dry looking.
- The lack of upkeep.
- The river has been abused for too long. The natural state of the river has been abused. The lack of plants is the cause of the salinity and this is why it is so unhealthy.
- The bridge which is the entry to the town ... the thing people first see and this needs urgent redesigning and building.

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- The river is not deep enough. Not at any time of the year.
- I don't like the security of the area near the river.
- Minson Avenue with the back of the shops facing the river is a complete eyesore. Something needs to be done to hide this because it takes away from the whole area.
- Crossing the Peel Street Bridge can be very dangerous.
- The old swan enclosure area does not meet the beauty of the rest of the river. It has potential to join seamlessly with the rest of the area.
- Apart from the footpath there is nothing else to draw people to the area.
- When dry it is depressing. It needs aeration.
- We need to do a litter pick up. (x9)
- Don't like the presence of sea gulls. They have to go. They are robbing the native bird life of valuable food. (x3)
- Domestic ducks should not be on our river. They should be in a backyard or relocated through the RSPCA.
- Lack of footpaths and crossovers.

What would make the Avon River more enjoyable and appealing to you and your family?

- More careful policing of the area and cleaning up of the park and the river regularly.
- Regular cleaning out of rubbish. (x6)
- Pump in more water over summer. (x8)
- Walk trails, York to Toodyay.
- Fish in the river and if we made the river usable.
- A cleaner river with more shops near it (coffee vans, hire bikes, hire canoes, etc.). (x2)
- Remove the levy banks and find a better way to draw people to the river.
- Bring back the natural look.
- Improve how it looks.
- BBQ areas, small shop to buy coffee and cake with alfresco set up, paddle boats (let the people aerate the river).
- Ensure there are no mosquitoes
- More shaded picnic areas, water you can touch that is not polluted and kayaks.
- We want to be able to swim in the river again. (x4)
- More vegetation! It used to be so green and beautiful.
- Make it healthy.
- Clean it! Do the work now and enjoy it forever.
- Install a large properly designed fountain to circulate the water. Solar powered. With under water lights!
- Make it deeper, cleaner and make it a permanent pool.
- Better lighting and more picnic tables. (x2)
- Aerate it. (x3)
- Outdoor exercise equipment along the river would be great. (x6)
- Revegetation on the banks would beautify and attract more birds.
- More river focused activities and not just the once per year Avon Descent.
- Canoes and paddle boat hire. (x5)
- Walk an underwater tunnel.
- Water from underground bores to replenish the water levels during summer.
- Get rid of the sea gulls.
- Signage encouraging water activities.
- Improved footpaths (in bits).
- Less litter and more bins.

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What do you believe are the main threats to the health of the Avon River?

This was a very close rank. They are ranked 1 to 4 with 1 being perceived as the most important threat.

Types of Threats	Importance
Changes to the natural water flows - unnaturally high or low flows caused by drought or human intervention such as weirs.	3
Loss of plant life - removing plants from a riverbank makes it more likely to erode, reduces habitats for other wildlife, affects the river's natural temperature and reduces the soil's ability to filter polluted water entering the rivers.	2
Climate change - predictions suggest there will be longer intervals between rainfall but more intense storms, altering a river's natural state and creating poor living conditions for wildlife.	4
Pollutants and litter - these can cause poor water quality which threatens wildlife and affects everyone's enjoyment of the river.	1
Other threats: <ul style="list-style-type: none"> • Weeds and excessive grating • Hydrology • Humans • Doing nothing • Deep agricultural drains • Domestic ducks and sea gulls 	

How do you currently use the river and its surroundings and how would you like to use it in the future?

- Walking around the river/exercise. (x14)
- Feed the ducks. (x5)
- Only to attend the markets.
- I don't use it as it is. I would like to see it cleaned.
- Circuit racing for the power dingy racing team who compete in the Avon Descent. We would like to practice locally and want permission to do circuits in this area.
- Kayak and BBQ with family.
- Would like to see water sports.
- Concerts in the park are awesome. (x2)
- The park is family friendly. Would love to see a skate park right there at Bernard Park to involve the teenagers within the community.
- I don't use it but would like to see it opened up to non-powered boats.
- For picnics and have canoed in there. Seems to be a rare sight for the community to see a canoe in the river and people enjoy seeing this.
- Virtual audio tours of the healthy river in the Visitor Centre would be good too.
- Accessing the waterpark and playground. (x5)
- Would like to use it more for recreation (kayak, canoe and paddle boats). (x9)
- For BBQs and picnics. (x6)

What can the Shire of Northam do to improve the health of the Avon River, between the Avon Bridge and Avon Weir?

Litter and Debris

- Clean up the rubbish regularly (x18)
- Create a volunteer group within the community so people can care for the river,
- Remove the debris from the river banks.
- Remove the shopping trolleys.

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Parks and Buildings

- Improve and maintain the parks. If only they cared for this area as meticulously as Jubilee Oval.
- More shops, water fountains and bins.
- Beautify the back of the shops. They look terrible.
- Place a BBQ by the Sound Shell.
- BBQs are dirty and toilets are shocking.
- More gardens and more tables and chairs. (x3)
- Tidy up the area and put in more attractive and comfortable seating.
- Put seating in the playground enclosure.
- Toilets are not accessible with a pram.
- Bike racks.
- Giant games in Bernard Park (like checkers).

Dredging

- Dredge the river pool every couple of years. (x8)
- Not dredging as it is only a temporary fix. Revegetation.
- Install an adjustable weir to retain the water for longer. Work upstream to prevent silt.

Odour

- Deal with the smell.
- The smell would go away if the water was moving.

Water

- Try to keep more of a volume of water in the town pool area in the warm months.
- Put a weir at Burlong pool and use it as a water supply.
- Clean the river out.
- Water filtering.
- Storm water filters, remove the litter on the water with an electric dinky and more aerators which can form a feature in its self.
- Check where the stormwater goes and redirect it to the river.
- Check where the underground water is (up river). Plant millions of trees upstream and get an expert in. We need to create an asset.
- Keep the water at the level of the weir. Possible floating bird hide. Fringing vegetation.
- Aerate and improve the water flow. (x5)
- In summer pump the water out for one season. Do the earth works that are required. Rejuvenate it and enjoy it from that time on. The community will be thankful long term and have a whole season of no smell. You can't say this will kill the fish and stuff because it is all dead anyway.
 - Water sprayers are broken down more than they are used. Invest in better ones.
 - Allowing people to use boats will aerate the water.
 - I'd like to see the river sprinklers operating again.
 - Create more movement of the water.
 - Water needs to be made deeper in sections.

Vegetation

- More trees and vegetation. (x11)
- Not dredging as it is only a temporary fix. Revegetation.
- The lawn needs to be removed from the river bank. And it needs to be heavily planted. We have a salinity problem.
- Adjustable weir.
- Continue to liaise with community environmental groups and get expert advice.

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- The rivers edge needs attention. Dead tree removals and suitable plant replacements.
- I would like to see less concrete and more trees. Leaves are not mess, they are compost. Stop blowing them away and burning them. Let them decompose into food for our sick environment.

Do you have any additional comments that will assist the Shire of Northam to improve the health and look of the Avon River, between the Avon Bridge and Avon Weir?

- The river and surrounds could be much more of a tourism feature for the town.
- Renew the information boards about the history and wildlife.
- It is good to see the Shire doing something about the river.
- Excessive grading of Tankard Street makes the river unhealthy.
- The river needs more plant life. More shelter. Fish.
- Watch what water is going into the river. Look to river specialists about what is best to do. River flow is important to the health of the river. Remove the weir???
- Get rid of the small and improve the look of the river. Improve the health of the water.
- It is a beautiful view from the main street where the Avon Mall is. Leave the Fitzgerald site as public open space.
- Clean the paths and widen the bridge.
- Stop releasing balloons at public events unless they are biodegradable. They get mistaken for food and kill our wildlife.
- I would love to be involved as a local contractor. I am experienced in this field - Geoff Hicks PO Box 457, York.
- Education! Have a public forum "Back from the Brink" and make the community a part of the solution.
- It is urgent.
- The new works on the footpath of the Avon Bridge is disgusting. What an unsafe eyesore. 90% of people come to Northam via this bridge.
- We should promote the river and the surrounding areas. So much area is wasted. New shops in the town should be encouraged to front the river and enhance the streetscape.
- Do not repeat previous decisions to install sprinklers on the river. This does not work. It is more about education.
- Create a group and coordinate it so we can all work together to make the river better.
- Would like to see a better enclosure for the Swans.
- Make a picnic area on the flour mill side of the bridges.
- Shire needs to inflict harsher litter fines. Signage so people know how to report people littering.
- Need to improve the condition of the islands and riverbanks urgently.

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ATTACHMENT 2 – SCHOOL STUDENT FEEDBACK



Shire of Northam
Heritage, Commerce and Lifestyle

AVON RIVER REVITALISATION

The aim of the Avon River Revitalisation community consultations is to define some of the issues that the local community feel are important to them concerning the Avon River between the Avon Bridge and the Avon weir, and identify potential strategies to improve the health, appearance and use of the river.

Avonvale Primary School - Year 4 and 5 (completed October 2015) 36 kids
West Northam Primary School - Year 5 and 6 (completed October 2015) 27 kids
Clontarf - Year 7, 8 and 9 (completed October 2015) 24 kids
St Josephs School - Year 3 and 7, Davinchi Club (High School)
Northam Primary - Year 2 and 4

I really like having the river in Northam because ...

- It tells us stories that are indigenous. (Picture of Aboriginal spirits around the river)
- It has white swans and long necked turtles. (x6)
- It tells our stories.
- I love the colours it brings through our town.
- I love the animals it brings.
- I like the wildlife. (x13)
- We are the only place with long neck turtles.
- I love the Avon Descent. (x8)
- I love the swinging bridge.
- It is so beautiful to look at. (x4)
- I love to see the ducks and swans and turtles.
- The wildlife is so interesting and gives people something else to do.
- I love to watch the Avon Descent.
- It makes me feel calm and nice.
- It is a great river and if it was clean we could use it.
- It is an attraction and brings people to the town.
- Makes the town look non-dry.
- The view is alright.
- You can swim in it for free.
- There are ducks and you can feed them. (x2)
- I like the river because of the park and trees.
- It is very beautiful and great for picnics and feeding the ducks. (x2)
- Because it encourages wildlife to live here too.
- It is a nice view.
- Wildlife. (x3)
- It is nice having living creatures in our town.
- My ancestors fished here and swam in the Avon River and this makes it special. I like to feed the ducks and watch the Avon Descent. It is wonderful having the river in Northam.
- The ducks are nice and you can feed them but you get chased by the swans.



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- I love going to our river to be by nature.
- It is a good place for you to walk along.
- You can feed the ducks and when it is hot the water evaporates and it flows with the wind to give you a cool breeze.
- It is a lovely habitat for swans and other creatures.
- It is something nice to see.
- We have lots of good events by the river and I go there to feed the ducks.
- I like the river because it pretty much runs through the middle of the town and it looks nice.
- I really like having the river in Northam because sometimes I like going to the riverside to feed the ducks and swans. (x3)
- It is beautiful in the sunset and it reminds me of my ancestors.
- I love to see the wildlife.
- The water is cool and natural.
- It is a wonderful place to go with your family and we admire the ducks and just walk around it. The two parks are great and it is such a nice place to have family time.
- It is an amazing view and it is useful (swimming and games).
- It makes the town look relaxing and good for people to gather there. The Avon descent is great too.
- It is refreshing, it stands out and it is beautiful.
- The river has been the highlight of Northam for many years.
- The river has been around for a long time in Northam.
- Families can enjoy the river and all that it offers.
- Elders used to swim in it and younger aboriginals can pass it on to their younger family members.
- It is very important to our community because of the Ballardong Aboriginal people and the swans are a part of our community.
- Because it is a heritage site it is important to our community and our culture.
- It provides an important centre piece to our town.
- It is important to indigenous people like we used to be able to swim in it and meet near it for corroboree.
- It is a part of our community.
- It represents our town.
- It holds a connection to the Ballardong people.
- It is the biggest tourist attraction in town which brings people from all over.
- It is a tourist attraction.
- It is a great place to run around the bridges and brings more fun to the community.
- It is important to indigenous people.
- It was a meeting place for years.
- It is culturally important to the Ballardong people. (x4)
- It is a place for wildlife to drink.
- It is bad long.
- It is a nice centrepiece to the town and the start of the Avon descent is great.
- There is a little pool where people can swim sometimes.
- When it flows it is clean and we love to swim in it.
- I love the big pool in there. This part can be an entertaining area.
- The water pool is great. When the pool is closes me and my mates swim in it.
- You can do activities in it and other stuff like environmental stuff.
- That my ancestors used to swim in there.
- It is nice having water all year round.
- It is a nice big open pool for the aboriginal people and we love swimming in it.

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- I don't really like it.
- It is a good sight to see.
- Walking across the bridge.
- It is nice during winter.
- It reminds me of the Balladong people who was here before us.
- I like the free WiFi at the river and the water park.
- The water playground in the park is great because we want to get wet and have fun.
- The wildlife.
- I like it because of the Swans.
- It is good to look at and also to see the ducks.
- I like to walk around the bridges and swim at the weir.
- I use the river to exercise. We walk around it. (x2)
- I like the free WiFi. (x2)

I think we could use the river for ...

- BBQ, picnic and a fire to sit around.
- Art, nature watching, sharing stories, canoeing and swimming.
- Art.
- Canoeing (x2)
- Boating, canoeing and swimming. (x5)
- A wildlife park. (x3)
- An inland beach, with white sand and no big edges. (x5)
- Rowing
- Stand up paddle boarding.
- A pool for swimming all year with rope swings and a water slide. Also a gondola would be a great attraction.
- Swimming. (x13)
- Fishing, for tours and swimming.
- Growing the swan population. (x4)
- A marine park.
- Different activities during the year.
- Shows.
- A place for fish to stay alive.
- Fish and fishing.
- Swimming. (x18)
- Would be good to do swimming lessons in the river and water fights.
- Kayaking and canoeing. (x3)
- Avon Descent (x2)
- Fishing (x2)
- I am now big enough to swim in there but the water is dirty.
- For breeding some fish and other animals. (x2)
- Swimming, fishing and using it as an attractive tour stop.
- Doing more things like swimming and fishing. (x3)
- A variety of different races, swimming and kayaking. (x2)
- Have \$10 canoe rides. It would bring more people in the community there.
- A picnic area and a rope swing into the water.
- If the river was flowing all year round we could swim in it.
- Beautified river banks.
- A new footbridge and extend the walking tracks upstream.

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- We want to be able to swim in it more. (x11)
- Swimming. We need a big water slide.
- We need a big water park and packs of slides.
- Kayak hire and some telescopes to watch the wildlife.
- Our families like to swim in the water holes. Make a few bigger water holes.
- Make a designated swimming area.

I don't like the river when ...

- People litter. (x5)
- It is dry. The duck poo, the smell and the rubbish make it look and feel dirty.
- People hurt the animals. (x2)
- They kill the ducks with their rubbish. (x2)
- People hurt the animals and steal the eggs.
- It is dirty and stinky. (x15)
- It is dirty and disgusting.
- I fall in or when it smells.
- All of the time it is dirty and it smells and some of the ducks are evil.
- It stinks, the water is green and it is too dry most of the time.
- People be mean to the ducks.
- It is summer because it always dries up and smells in summer. (x2)
- I always like it.
- It is not nice when it smells.
- It is dirty and smells. (x7)
- It stinks only when it is low or empty.
- It has moss and algae.
- When visitors come past the Avon River it is a shame to Northam.
- It is so dirty and uncared for that you can't use it for anything.
- I don't like the river when it is dirty as it is not safe to go swimming in there. (x3)
- It kills the wildlife in it when it is dirty.
- When it is polluted and there is no fish and other animals because the river is so dirty that fish can't even live there.
- When the swans are not there.
- When it is dried up it is terrible.
- It is all polluted and smelly.
- Litter (x2)
- It is raining because it rises and it could flood.
- People litter because they are destroying the environment around the river.
- It is not deep enough.
- When the river stops flowing it smells (x5).
- Not being able to swim in it in summer.
- The bird poo around the edges, the bad smell and people chuck rubbish in there.
- The environment is bad and things are dying in the river.
- The water is stagnant and stinks over summer.
- I wish it was always clean.
- It gets pretty bad in the summer.
- The river is dirty with heaps of rubbish in it.
- The smell and the rubbish. (x5)

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- I don't like the trolleys in the river. (x3)
- It is dirty and unhealthy.
- It should be clean so the animals have a better chance of living.
- I don't like the little islands in the river and when it dries up it stinks.
- People chuck trolleys and glass in the river.
- The poop in there.
- The poo is bad. Clean out the poo. (x6)

I think we could make the river healthier by ...

- Helping the animals and cleaning the river.
- Pick up the rubbish. Respect the animals and put more signs up so people know to do this.
- Pick up the rubbish. (x7)
- Not littering. (x3)
- Clean it up. (x15)
- Keep watch of what is under the bridges.
- Let people use it for swimming and canoeing because this will aerate the water.
- Place a net under the bridges from one side to the other to catch the rubbish and drain the water. The net needs to be cleaned out regularly but. This will also keep the swans in.
- Clean out the dirty water and put some fresh water in there.
- Use a net under the bridges.
- Clean it ... this is pretty self-explanatory! (year 5)
- Suck all of the watch out and put some cement in the bottom and then put fresh water in it.
- Filter the water. (x2)
- Put some fish in the river to clean it up.
- Pump some extra fresh water into it.
- Put fences along the footpath. (x2)
- Not running out sewer pipes into the river.
- Clean it, educate people, get people together and get cleaning as a community.
- Put clean dirt around it.
- Remove the trolleys and rubbish from the river.
- Clean it up. (x10)
- Sort the pollution out.
- Not rubbishing the view.
- More plants, more care.
- Try putting more trees in and use a few cleaning machines before it gets so bad.
- Make sure there is no animal poo in there as it turns bad.
- Plant more plants and trees and clean out the litter. (x2)
- Can we please have a day when we all clean up together?
- Growing more trees by the river and try to get more animals living there.
- The river would be healthier if we planted along the river banks.
- Send the schools to the river like every second or third week and make us clean it.
- Plant. More. Trees.
- Stop the birds from poohing in it.
- Flowing water to wash the smell out. (x6)
- More water!
- Get rid of the domestic ducks and geese and leave the white swans in there. All of the domestic birds are adding to the problems.
- Make it clean.
- Take away all of the non-native animals.
- Improve the flow.

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- Clean it up (x6)
- Purify our local waste water and inject it back into the river.
- There were never domestic ducks and geese when the river was healthy. Get rid of them.
- Drag the shopping trolleys and bikes out of the river. This will make it safer for everyone.
- Make it deeper in the middle.
- Recirculate the water and pump it from the weir back up stream.
- Make an artificial beach.

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ATTACHMENT 3 – DREDGING NOTES



**NOTES – DREDGING OF THE
NORTHAM TOWN POOL**

Shire of Northam

[Abstract](#)

Advice – dredging of the Northam Town Pool.

Prepared by Matt Giraudo
Feb 2016

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1 Background

A number of studies (including the BMT scoping document) have concluded that poor water quality in the Northam Town Pool is caused by eutrophic pool sediments. They conclude that eutrophic sediments cause in high concentrations of phosphorous in the water column which in turn leads to excessive algal growth and ultimately anoxic conditions in the river pool.

Documented evidence suggests that anoxic conditions occur in the Northam Town Pool in the absence of eutrophic conditions and associated algal blooms (Giraud 2013a). Dissolved oxygen levels in the town pool decline rapidly after the cease-to-flow caused predominately by organic carbon contained in sediments. The anoxic conditions in the pool are the cause of the poor water quality and offensive smell experienced during summers, particularly during extended periods of little or no flow in the river.

Anoxic conditions are exacerbated by local stormwater inflow in summer which increases the biological oxygen demand (BOD) in the town pool, triggering a rapid reduction in dissolved oxygen (DO) within the water column.

Release of phosphorus from sediments appears to be muted due to slow accumulation rates of phosphorous and high concentrations of Al and Fe within sediments. As a result, phosphorous appears largely bound to the sediment and is not released during anoxic conditions.

The cause of poor water quality is important in understanding the likely success or otherwise of potential intervention strategies, including dredging. The following issues are critical in understanding the management intervention strategies:

- Most of the sediment deposition into the Northam Town Pool is associated sediment flow within the river itself, and therefore does not come from the Town of Northam.
- The key driver impacting water quality is not nutrient input from the town but organic matter contained within sediments.
- Phosphorus contained within the sediment appears largely inactive – in that it is likely to be bound to the sediment and not readily bioavailable.
- The primary source of N is from agricultural land.

Given these management drivers it follows, that:

- Investment in nutrient reduction activities in the Town of Northam is unlikely to result in a significant improvement in water quality in the Town Pool.
- Water quality improvement within the Town of Northam should concentrate on reducing organic matter reaching the Town Pool to reduce BOD particularly during summer storm events.
- Partial excavation of sediment from the Town Pool will in itself probably have a limited impact on overall water quality of the Town Pool. This is because there will likely be sufficient organic matter remaining in sediments after excavation to drive anoxic conditions during summer months, particularly during years of limited summer flow in the river.

Annual accumulation of sediments in the Northam Town Pool is estimated at between 2,300 – 3,000 m³/yr (Giraud 2013b). If no dredging is undertaken, then the Town Pool will eventually completely fill with sediment.

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Natural scouring of the Northam Town Pool currently appears to occur only during flows exceeding 100 m³/s (Giraudó 2014), which occurs infrequently. Since 2000 flows have exceeded the threshold of 100 m³/s on just two (2) occasions.

Increased frequency of the scouring of the town pool could be enhanced by the construction of a variable crest weir (Giraudó 2014). In the absence of a change to the weir, regular dredging of the Town Pool will be required to keep it free of sediment.

2 Pre-feasibility

Most of the analysis required for prefeasibility for dredging of the pool has already been undertaken, including:

- Estimation of the volume of sediment and rate of accumulation (Giraudó 2013a).
- General composition of the sediment (WRC 1996, Giraudó 2013 a & b).
- Type of dredge required – small cutter section dredge – similar to that used in 2000.

The key outstanding issues that need to be explored are associated with treatment and disposal of the sediment. Facts informing treatment and disposal of sediment include:

- Rate of accumulation of sediment: 2,500 - 3,000 m³/yr – dredging will likely be an important medium – long term management strategy for managing sediment in the pool.
- Limited capacity of the netball courts to contain sediment (~5,500 m³). It is assumed that the disused tennis courts are unsuitable as a long term treatment area for various reasons, including proximity to residential areas.
- Sediments are relatively benign, however will require treatment with lime for acidity (approximately 50 kg lime /m³ sediment).
- Significantly dredging will be required to change the environment / character of the Town Pool. Excavation of the western channel will require removal of 30,000 m³.
- Sediment composition is unlikely to be suitable for land fill or have any other commercial value, so an alternative cost-efficient disposal mechanism is required.

The key decision-critical factor impacting the feasibility of the dredging of the Town Pool is the treatment and disposal of the sediment, and in particular the limited size of the treatment site.

Excavation of the western channel will require multiple dredging operations. Maintenance dredging to account for the estimated 2,300 - 3,000 m³/yr of sediment accumulating in the pool would also require regular dredging, assuming a treatment area storage capacity of 5,500 m³ (disused netball courts).

In terms of pre-feasibility, it is recommended that further assessment of the identified treatment sites be undertaken, including:

- Site survey.
- Geotech assessment and drilling.
- Consideration of the land surrounding / adjacent to the disused netball courts.

The prefeasibility assessment should also consider if dredged material can be effectively used to construct the bund wall, potentially with the addition of a fixing material such as 'claycrete'.

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Assuming a bund wall 2m high and 2:1 side slopes as indicated in the BMT report and a 5-6 m top width surrounding the 380m perimeter of the disused netball courts, it is estimated that the bund wall will be approximately 5,500 – 6,000 m³.

3 Approvals

Given the relatively benign nature of the dredged material and assuming the development of an effective environmental management plan (EMP), it is considered that a pre-referral to the OEPA is unlikely to be necessary. However, it is recognised that the previous referral in 1996 did result in an "Informal Review and Public Advice". Further advice from DER is recommended in the first instance.

The nature of the approval process is ultimately determined but the nature of environmental risk associated with the project and the potential for environmental harm. In this instance, preliminary sediment analysis has concluded that there is limited contamination of the sediments.

The sediment contained within the Northam Town Pool is essentially the same as the other 300,000 m³ of sediment that traverses the Northam Weir each year. No significant quantities of heavy metals, hydrocarbons or pesticides have been identified in the sediments. Phosphorous contained within the sediment appears largely bound to the sediment itself and is unlikely to be bio-active.

The key issue surrounding the environmental risks will be the frequency and timing of the dredging of the sediment, which in large part will be dictated by the nature and size of the treatment site (refer Section 5).

4 Sediment Sampling and Analysis

Preliminary chemical analysis of sediments was undertaken in 2013 (3 samples) in addition to nine (9) samples taken in 1996. Of the 12 samples tested only 2 provided any indication of contamination with pesticides and heavy metals, and these were in very low concentrations.

Additional sample analysis will be required to support the development of the environmental management plan and to inform the treatment and disposal of dredged material. However, available data indicates that the dredged material is largely benign, and reflective of the underlying sediment present in river flow. The reason for this is that the vast majority of the sediment accumulating in the river pool is deposited sediment flow from upstream river flow.

The primary risk associated with excavation of sediment is the development of acid forming compounds due to drying and subsequent oxidation of dredged sediments. Previous analysis has indicated that sediments will need to be treated with 50 kg/m³ of lime to neutralise dredged sediments. Further sampling at 50 m intervals is recommended to better assess the rate at which lime will need to be added to excavated sediment, as outlined in the BMT report.

Further analysis of pesticides and heavy metals is recommended however at a lower frequency than that identified in the BMT report, due to the high cost of analysis a low probability of encountering contaminants.

There is no evidence of hydrocarbons being present in the town pool, or in samples collected from the Swan Enclosure. Samples collected in 2014 indicate moderate levels of Pyrene, a simple hydrocarbon, which occur as a result of contamination and/or as a result of natural processes. If it is associated with anthropogenic contamination, then Pyrene typically occurs in association with other hydrocarbons. In the case of the Northam Town Pool, the lack of associated hydrocarbons suggests

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that the presence of Pyrene is as a result of natural processes. Limited further testing for hydrocarbons is recommended.

The BMT report suggests testing for the presence of tributyltin. This compound is associated with antifouling paint and although a common contaminant in mariners and harbours is extremely unlikely to present in the Northam Town Pool.

Analysis of samples for TOC, nutrients metals, bulk density and cation exchange is recommended as presented in the BMT report.

5 Environmental Impact Assessment

There are two key environmental impacts that will need to be managed as a result of dredging:

- Management of acid forming component of dredged sediment material.
- Management of the sediment plume during dredging.

Acidic sediments can be neutralised through the application of lime, most effectively undertaken at the time of dredging in the treatment area prior to removal of dried sediment from the treatment area.

Management of the impact of the plume created as a result of dredging will require further consideration. The sediment plume will contain nutrients, and in particular N and P, although most of the P will be bound to the sediment and is unlikely to be bioactive. The dredging plume will also contain a portion of organic carbon and will potentially add to downstream turbidity.

The timing, period and frequency of dredging will be important factors influencing downstream environmental impacts. If dredging is undertaken during the winter flow period, then there is likely to be an associated spike in nutrient concentration downstream, however nutrients are likely to be sediment bound and present a relatively minor environmental hazard. Organic carbon contained with the dredging plume may lead to anoxic conditions, however the risk of this occurring during the winter flow period is relatively minor due to the high underlying oxygen content of river flow during the winter flow period.

If dredging is undertaken during summer, then the impact on the Northam Town Pool itself is likely to be high, principally due to the release of organic carbon into the water column leading to the anoxic conditions within the pool.

The social impacts of undertaking the dredging during summer would also be likely to be significant. Dredging in summer will result in significant odour issues due to extended anoxic conditions in addition to potential exposure of sediments as a result of reduced water level in the Town Pool itself.

Given the limited capacity of the treatment area, it is considered that dredging will need to be undertaken at regular intervals, and for relatively short periods of time. This will further impact the potential risk of environmental harm, but will allow effective monitoring of the downstream impacts can be undertaken and alternative management responses to be implemented.

It is likely that the impact of the dredging plume will be significantly influenced by the flow conditions during the period of dredging. As a result a relatively high degree of flexibility will be required to minimise downstream impacts.

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Development of the environmental management plan (EMP) will be best undertaken using an adaptive management approach. The EMP will need to identify the environmental risk, and effective strategies for downstream monitoring and decision trees and thresholds for assessing impacts.

6 Dredging Strategy

The dredging strategy used will ultimately be driven by two key drivers. The limitations associated with the treatment area and the potential downstream environmental impacts associated with the dredging plume.

It is assumed that dredging will need to be undertaken during the flow period, due to the high environmental and social impacts stemming from the alternative summer dredging program. It is likely that dredging will need to be undertaken during a relatively narrow window of suitable flow conditions in the river.

The limited capacity of the treatment area, need for ongoing dredging, uncertainty regarding disposal of sediment and adaptive approach to manage downstream environmental impacts, are all factors that call for a high degree of flexibility in dredging operation.

Maintaining flexibility in operation will be the key factor influencing the underlying feasibility of the project. In identifying potential management responses, one of the options that the Shire of Northam may consider is the purchase of a small cutter dredge and manage the operation of the dredging itself.

7 References

BMT Consultants 2015. Shire of Northam Avon River Dredging Scoping Study. Prepared for the Shire of Northam. December 2015.

Giraud (2013a) Northam Town Pool – Water Quality Assessment and recommendations for Management. Prepared by Matt Giraud for the Shire of Northam, Perth, Western Australia, October 2013

Giraud M (2013b), Northam Town Pool – Sediment Analysis. Shire of Northam, North Western Australia, December 2013

Giraud M (2014), Northam Town Pool – Water Quality Assessment and Recommendations. Shire of Northam.

WRC (1996) Northam Town Pool – Samples. Prepared by Water and Rivers Commission Internal memorandum, Perth, Western Australia, July 1996.

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ATTACHMENT 4 – DRAFT AVON RIVER DREDGING SCOPING STUDY

Alysha Maxwell

From: IMMS Brendan <Brendan.Imms@water.wa.gov.au >
Sent: Thursday, 25 February 2016 4:47 PM
To: Chadd Hunt
Subject: I56929 - RE: Avon River Dredging Report
Attachments: 2015 - (Draft) Avon River Dredging - Scoping Document - with comments.pdf

Hi Chadd,

In general the document appears sound in its coverage of options, technical aspects, required approvals and other considerations. I have attached the draft with my comments in it. Below are some more general comments:

Time of year for dredging.

Dredging during winter flow would have the benefit of dilution/flushing of returned water from DMCP or geotube, (otherwise if it is high in nutrients there may be a bloom in downstream pool). You would need to take into account Avon Descent though. Dredging outside of flow, on the other hand, would mean any sediment stirred up would be able to resettle on the pool bottom quicker, thereby minimising its time in the water column and having a more localised impact. Performing the dredging just prior to anticipated commencement of flow (i.e. late Autumn) would probably be the ideal time.

In dredging the western channel, there may be a risk to the integrity of the islands. i.e. increasing the risk of them being subject to erosion. I believe there is already some erosion of some islands occurring, hence the rocks deposited around the edges by Peter Wheatherly in recent years. Although Matt Giraudo's Dec 2013 paper on sediment analysis looked at bathymetry and sediment makeup, depths and deposition rates, it didn't include proper hydrodynamic modelling to show what effect the proposed channel dredging would have on deposition/scour areas. Looking at Fig. 22 in that document, the downstream-most island on the western side looks like it could be impacted by a channel excavated between it and the bank. It may be prudent to have proper hydrodynamic and sediment deposition/scouring numeric modelling done if the western channel is to be dredged.

In terms of approvals required from this department, a licence under the *Waterways Conservation Act* will be needed, as the document correctly states. The need for a Bed and Banks permit, which are issued under the *Rights in Water and Irrigation Act* is generally negated by having the former licence, as is the case at Burlong Pool.

Let me know if you have any further queries.

Regards,

Brendan Imms
Natural Resource Management Officer
Department of Water - Swan Avon Region
7 Ellam St Victoria Park WA 6100
Phone: 08 62508053
Email: brendan.imms@water.wa.gov.au



Government of Western Australia
Department of Water

From: Chadd Hunt [mailto:emds@northam.wa.gov.au]
Sent: Friday, 5 February 2016 10:36 AM

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To: IMMS Brendan
Subject: Avon River Dredging Report

Hi Brendan

Trust things are going well in 2016 for you! Just thought I would touch base with you regarding the Avon River project which is progressing, albeit quite slowly at the moment. At this point in time we have engaged BMT JFA Consultants to provide some preliminary advice on the options for dredging the pool, including indicative costings. It would be appreciated if you could provide some advice with regard to the "technical" aspects of the BMT report with regard to the methodology and approvals process. I have attached a copy of the draft report and would appreciate any feedback that you can give so that I can get the report finalised and presented to Council.

Again I would appreciate your advice on this matter and if you have any queries please do not hesitate to contact me to discuss.

Regards,

Chadd Hunt
Executive Manager Development Services, Shire of Northam
e: emds@northam.wa.gov.au
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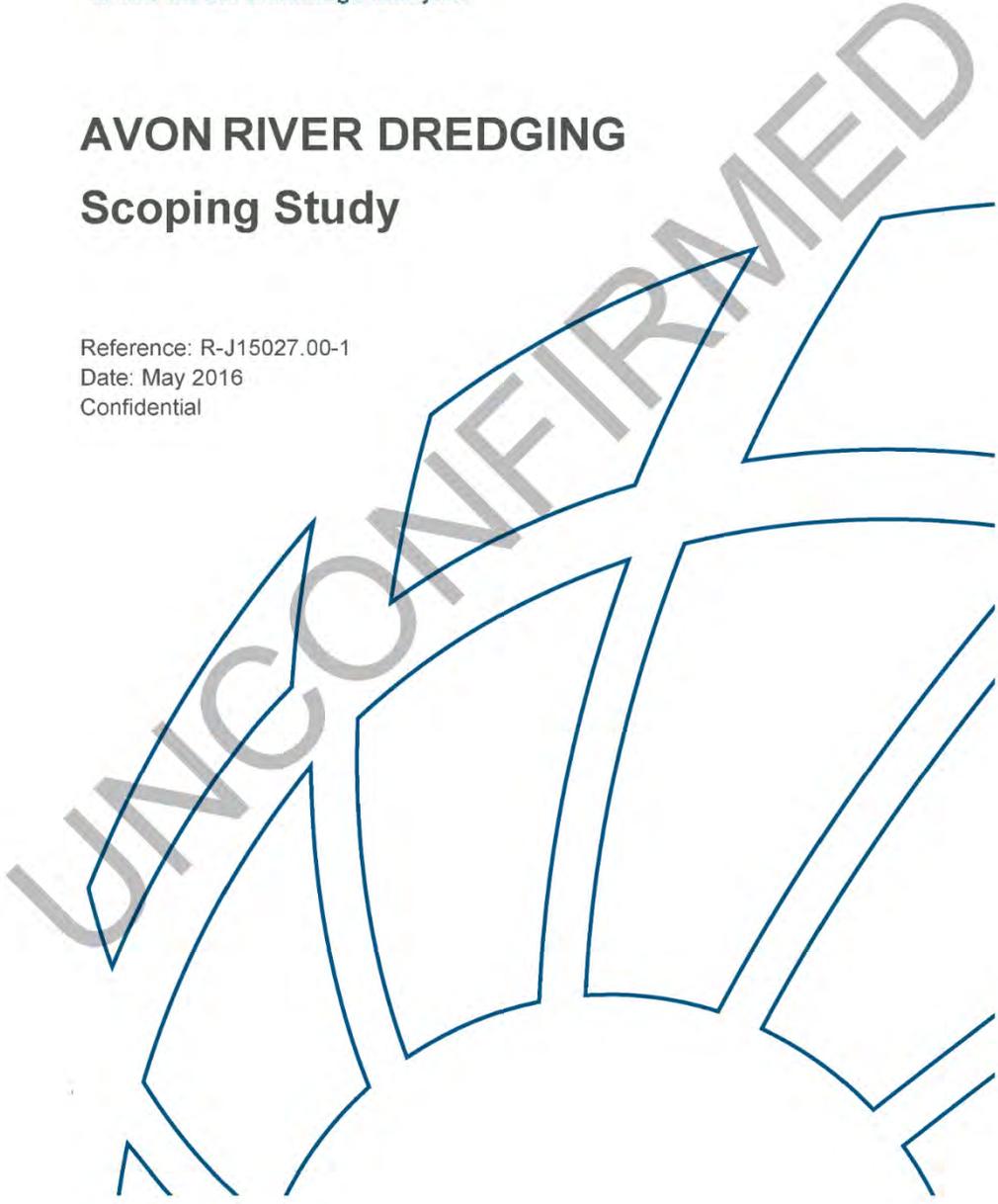
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"Where will our knowledge take you?"

AVON RIVER DREDGING
Scoping Study

Reference: R-J15027.00-1
Date: May 2016
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Avon River Dredging
 Scoping Study



SHIRE OF NORTHAM
AVON RIVER DREDGING
SCOPING STUDY

Prepared for



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Rev	Issue	Prepared by	Submitted to	Date	Copies
A	Draft – Internal Review	H Sunarko	T Green	2/12/15	1 elec.
B	Draft for Client Review	H Sunarko	C Hunt	4/12/15	1 elec.
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EXECUTIVE SUMMARY

The Northam Town Pool (hereafter referred to as 'the Pool') is located in the centre of the town of Northam. The Pool is one of the town's major attractions providing a valuable recreational resource. However, the Pool suffers from poor environmental and aesthetic conditions due to multiple factors.

Recent studies commissioned by the Shire of Northam (here after referred to as 'the Shire') had identified a number of possible management actions that can be taken to improve the Pool amenity. One of the management options is to dredge the sediment accumulated in the Pool. The removal of accumulated sediment will help in improving the condition of the Pool by extraction of the organic-rich sediment, which causes depletion of Dissolved Oxygen and providing higher concentrated flow, which may result in a reduced rate of future sedimentation, as sediment is kept in suspension.

To enable dredging works to be performed in the Pool, approvals are required to be obtained by the Shire from the relevant regulatory authorities such as Environmental Protection Agency (EPA), Department of Environment Regulation (DER) and others. This approval process will include the required sediment sampling and analysis to understand the physical and chemical characteristics of the dredged material.

In this initial scoping study, the following contributing elements have been assessed to determine the best path forward:

- Dredging volume (based on three options, which include: eastern channel (5,500m³), western channel (30,000m³) and combination of the two (35,500m³))
- Capacity of the placement site options (particularly the storage capacity in the disused netball court at various bund heights, and its comparison with the Gun Club site).

Based on this assessment, it has been found that the Netball site limits the dredging scope due to the small area available. Upon re-visiting the site to inspect the suitability of the Gun Club site for dredged material placement, the Dredged Material Containment Pond (DMCP) option was re-assessed and given the larger area, and the availability of insitu fill material for the construction of the pond, the Gun Club site offers a more practical and economical material placement solution. The estimated project cost for dredging of 35,500m³ of sediment and placing them in the Gun Club site is \$1.5 million, which equates to \$42/m³.

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1 INTRODUCTION

The Avon Catchment is a large catchment, which covers more than 120,000km². Following major flooding from a cyclonic front in early 1955 many towns along the Avon River suffered severe flooding. This led to the adoption of the River Training Scheme (RTS), which aimed to alleviate the perceived flood risk by straightening the river, removing vegetation and braided channels, and deepening the channel. The RTS program continued until the early 1970s and has changed the morphology of the river system.

The town of Northam is located 96km north-east from Perth with an estimated population of about 11,730 (ABS, 2014). The Pool is located in the centre of the town of Northam. The Pool is one the town's major attraction providing a valuable recreational resource. However, the Pool is experiencing poor environmental and aesthetic conditions due to multiple factors, such as:

- Accretion of sediment in the Pool caused by the reduction in the frequency of large flows (flow exceeding 100m³/s), which is required to move the unconsolidated sediment (Giraud, 2014)
- Poor water quality caused by high concentration of nutrients and organic matter contained within the sediments, which leads to high density of phytoplankton and causes Dissolved Oxygen depletion (anoxic condition) in the Pool (Giraud, 2013a).

Recent studies commissioned by the Shire have identified a number of possible management actions that can be taken to improve the Pool amenity, one of the management options is to dredge the sediment accumulated in the Pool. The removal of accumulated sediment will help in improving the condition of the Pool by:

- Extraction of the organic-rich sediment, which causes depletion of Dissolved Oxygen
- Providing higher concentrated flow, which is likely to result in a reduced rate of future sedimentation as sediment is kept in suspension.

Following a Council meeting in September 2015, the Council resolved to request the CEO to:

- Call for tenders to undertake sediment removal from the Pool
- Structure the tender so as not to preclude any of the dredging options, including dredging of current channel, dredging of entire water body, dredging of two channels, dredging of the Pool area downstream of Peel Street Bridge
- Structure the tender to allow it to go over multiple years if required.

To meet the Council's request, it is proposed for the work to be undertaken in a staged approach via the completion of an initial scoping and methodology development study. This scoping study aims to understand the dredging scope, material placement and management options and to understand the regulatory requirements for the project. This study aims to allow the Shire to make an informed decision with a better understanding of the project requirements, schedule, costs and risks.

This report has been prepared jointly by BMT JFA and BMT Oceanica. The report structured as follows:

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- Chapter 2 – Scope of Works – Provides a description of the project aims and scope of works to be addressed by the BMT Team in this report
- Chapter 3 – Site Visits – Provides a brief commentary on the dredging and dredged material placement options
- Chapter 4 – Data Review – Review of available and provided information
- Chapter 5 – Preliminary Options Assessment – Provides options assessment in terms of dredging scope, dredged material placement site selection and management methods
- Chapter 6 – Relevant Approvals and Legislation – Provides information regarding relevant approvals and legislation
- Chapter 7 – Sampling and Reporting Requirements – Provides information regarding the requirements to characterise the dredged material
- Chapter 8 – Project Delivery Program – Provides indicative project delivery program
- Chapter 9 – Project Cost Estimate – Provides indicative project cost estimates
- Chapter 10 – Project Risks and Opportunities – Provides high level near term risks and opportunities
- Chapter 11 – Recommendations – Provides recommendations for the next step of the project
- Chapter 12 – References.

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2 PROJECT AIMS

2.1 Aims

The aims of the scoping study are as follows:

- To assess the available historical information
- To assess the dredging and dredged material management options
- To assess the approval requirements including environmental site investigation requirements
- To identify and assess the project schedule, costs and risks
- To provide a recommendation to the Shire.

2.2 Scope of Work

The works included under the Scoping Phase are as follows:

- Site visit to assess dredging and dredged material placement site, meet the Shire of Northam Project Team and collect or view any additional data pertaining to the Pool and/or historic dredging activities (e.g. the dredging in 2000)
- Review data for suitability for approvals and/or further design works and advise if further data is required
- Provide advice on the preferred design (widths and depths) for the various dredging/excavation options based on the previously achieved levels in the RTS and works performed by Girardo (2014)
- Review dredged material placement options and assess approvals processes, programs and budget costs
- Preliminary stakeholder and regulatory consultation regarding the proposed dredging to determine the relevant environmental approvals required
- A preliminary assessment of the pre-, during, and post- campaign monitoring requirements for inclusion in the contractor Project Execution Plan (PEP)
- Prepare a single scoping and recommendation report for the Shire to consider prior to proceeding to the next phase
- Follow up site visit to assess additional dredged material placement options
- Revise scoping and recommendation report to account for additional dredged material placement options.

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3 SITE VISITS

The project kick off meeting and site visit were held on 5th November 2015 and were attended by representatives from BMT JFA and the Shire. An additional site visit occurred on 22nd April 2016 to inspect the Gun Club land. The site visits and kick off meeting provided an opportunity for the project team to meet and discuss the project's goals and objectives. In the kick off meeting, additional data was also provided by the Shire. A list of the additional data is provided in Appendix A.

The following sites were inspected during both site visits:

- Avon river from swing bridge
- Northam Weir
- Disused netball courts
- Disused tennis courts
- Gun Club available land

Photos taken during the visits are shown in Figure 3-1 to Figure 3-14.



Figure 3-1: Aerator Near Newcastle Bridge



Figure 3-2: Avon River from Broome Tce



Figure 3-3: Dredging Equipment Launching Pad



Figure 3-4: Northam Weir

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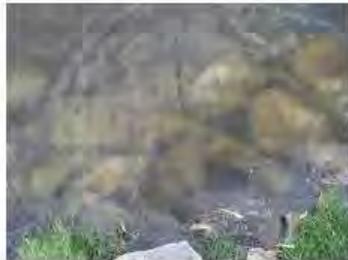


Figure 3-5: Avon River Water Visibility



Figure 3-6: Disused Netball Court



Figure 3-7: Fence Opening at the Netball Court



Figure 3-8: Existing Drainage Adjacent to the Netball Court



Figure 3-9: Pedestrian Pathway Over the Drainage



Figure 3-10: Disused Tennis Court

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Figure 3-11 Gun Club Land



Figure 3-12 Avon River (downstream of weir)



Figure 3-13 Fence line between Gun Club and Avon River (downstream of weir)



Figure 3-14 Public walkway between Gun Club land and weir.

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4 REVIEW OF EXISTING INFORMATION

4.1 Environmental Condition in the Northam Town Pool

The Pool, amongst several other Avon River pools, provides important breeding and refuge areas for waterbirds and water related fauna. However, the number of pools remaining as viable refuge sites has been reduced due to sedimentation.

The seagrass *Ruppia* sp. is estimated to cover ~75% of the Pool bed due to tolerance of the brackish nature of the Pool water. These plants are an important nutrient sink in the Pool, provide stability to the Pool floor and are an important food source for waterbirds that reside in the vicinity of the Pool (WC 1995).

High concentrations of nutrients and organic matter within the sediments have led to correspondingly high nutrient concentrations in the water column within the Pool, leading to a high density of phytoplankton (WC 1995; Davies et al. 1996; cited in DoW 2007). A large percentage of the phytoplankton is blue-green algae and as a result, algal blooms commonly occur in summer due to poor flushing rates. This leads to reduced dissolved oxygen concentrations due to the increase in benthic oxygen consumption (WC 1995, DoW 2007, Giraudo 2013a).

The high biomass of the Pool bed has resulted in a high organic content of the surface sediments which has led to the production and release of hydrogen sulfide gas. Acid sulfate soils (ASS) have also previously been identified within the Pool sediments (Giraudo 2013a).

4.2 Previous Sediment Sampling and Analysis

Sediments were sampled at nine sites along the length of the Pool in 1995 (WC 1995). Total phosphorus and total nitrogen concentrations in the sediments were found to be low to moderate; however, under specific conditions these sediment nutrients can be released into the water column and contribute to algal blooms (WC 1995). Pesticides and heavy metals were measured in two of the nine samples and were found to be present in low concentrations. Particle size distribution (PSD) was analysed in samples below the swing bridge. Sampling indicated that the sediments were a combination of silts and sands with the surface-most horizon comprising dark homogenous ooze with a high organic content (WC 1995).

Sediments within the Pool were sampled again in 1996 (GA 1996; WRC 1996). Nine samples were collected from the Pool and analysed for settling times, sand to fines ratios and PSD. Based on the PSD test, the samples were found to be predominantly clay and silt with up to 45% clay and 27% silt, with some sand present (GA 1996). Upon further observation, it was noted that a large proportion of the sand sized material broke down into fine clay when manually handled, suggesting that the proportion of sand was much lower than measured (WRC 1996).

Further sediment sampling and analysis in the Pool was completed in 2013 (Giraudo 2013a). Samples were collected at two sites along the proposed western dredge channel and one site along the proposed eastern dredge channel. Low to moderate concentrations of nutrients were found in the sediments. High sediment concentrations of iron and aluminium were observed. Analyses for ASS found all samples to have positive net acidity (see Section 7).

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4.3 Previous Dredging

The Pool was previously dredged in 1914, 1952/53, 1954/56, 1974 and 2000. The dredging campaign in 2000 removed 50,000 m³ of sediment from the Pool to deepen and improve the health and aesthetics of the Pool. Sediment was removed from the eastern channel between the Avon Bridge and the Peel Street Bridge and from the entire channel width between the Peel Street Bridge and the weir. The sediment was disposed to an offsite stockpile at the Gun Club site ~500m north of the dredging site (DoW 2007). The final volumes dredged during the other campaigns are unknown.

4.4 Previous Approvals

In 1996, the removal of accumulated sediment from the Pool was referred to the Western Australian (WA) Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986* (EP Act) and the EPA set the Level of Assessment for the proposal as "Informal Review with Public Advice".

4.5 Management Measures Identified

The following management options have been identified in the "Water Quality Assessment and Recommendations for Management" Report, (Giraud, 2013a):

Table 4-1: Potential Management Options

Option No.	Name	Description	Remarks
1.	Increased Water Level	Adding water into the Pool to provide dilution is unlikely to yield any significant environmental benefits, because the concentration of nutrients in the water column is not the key factor causing the rapid reduction in the Dissolved Oxygen within the water column	Not a recommended option
2.	Phosphorus Binding	Phosphorus is the limiting factor influencing biological production, but most of the Phosphorus contained within the sediment is bound and therefore inactive. Adding phosphorus binding agent is unlikely to yield significant benefits	Not a recommended option
3.	Artificial Oxygenation	Oxygenation of benthic layers will alleviate hypoxic and anoxic conditions within the Pool. However, oxygen needs to be delivered to benthic layers over a large area of the Pool after the cease-to-flow period to be successful. Oxygenation of the shallow, warm waters that occur in the Pool during summer and autumn presents a significant challenge. Costs and technical difficulties make this option largely impractical in this instance	Not a recommended option

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Option No.	Name	Description	Remarks
4.	Harvesting of Aquatic Weed	Physical removal of aquatic weed and/or filamentous algae can reduce the rate of accumulation of organic matter within the Pool sediments, but it won't reduce the organic matter already present within the sediment. Harvesting of aquatic weeds and filamentous algae will not stop the production of the offensive smelling hydrogen sulphide because the organic rich sediment is the primary cause of the oxygen depletion within the water column and the production sulphur dioxide.	Not a recommended option
5.	Aerobic digestion of organic sediment	Aerobic decomposition of organic matter within sediments using commercial products utilising large populations of bacteria and peroxide compounds to aerate benthic water will potentially remove the source of the problem – organic matter contained within sediments. This is a relatively new technology and products currently available have not been tested in this environment, with examples typically restricted to wastewater treatment and commercial applications with small volumes of sediment with higher concentration of organic matter. A trial in the Swan Enclosure, located adjacent to the Pool, is recommended to better assess the potential application within the Pool.	Recommended by Giraudo, but is not part of this Scope of Work
6.	Dredging	Dredging of sediment will in part provide a short to medium term solution by removal of the organic rich sediment and to provide higher concentration flow to mobilise the sediments There are multiple options for dredging scopes, which are discussed in a later section in this report	Recommended option and part of this Scope of Work
7.	Variable Crest Weir	Further accumulation of organic-rich sediments in the Pool will occur unless there is a change to the existing hydraulic conditions of the Pool. Scouring of the Pool does occur, but only during large flows events (>100 m ³ /s). Hydrologic analysis of the Avon River indicates that the observed reduction in the frequency of scouring flows over the last 3 decades is likely to continue into the future. Hydraulic modelling indicates that the construction of a variable crest weir will assist in controlling future accumulation of sediment in the Pool by reducing the threshold of flow required to result in scouring of sediments to 20 – 30 m ³ /s	Recommended option but is not part of this Scope of Work

4.5.1 Geotechnical Characteristic of Dredged Material

Sediment sampling was undertaken within the Pool in April 1996 prior to the previous dredging campaign in 2000. According to Giraudo (2013) a relatively high proportion of fine sand was present within the Pool.

Results from the sampling undertaken in 1996 have been summarised and assessed in Table 4-2 below. The percentage of fines ranges between 21% and 50% with an average of

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30%. The percentage of coarse material ranges between 50% and 79%, with an average of 70%.

Table 4-2: Sampling Results Within the Pool Previously Undertaken By Golders and Associates (1996)

Sample #	% Clay (< 0.002mm)	Silt % (< 0.006mm)	Sand + Gravel (>0.006 mm)
1.	45.00%	5.00%	50.00%
2.	19.00%	12.00%	69.00%
3.	21.00%	27.00%	52.00%
4.	19.00%	12.00%	69.00%
5.	11.00%	10.00%	79.00%
6.	17.00%	7.00%	76.00%
7.	17.00%	7.00%	76.00%
8.	14.00%	14.00%	72.00%
9.	9.00%	12.00%	79.00%
Average	19.11%	11.78%	69.11%

4.5.2 Dredged Material – Anticipated Bulking Factor

In order to sufficiently design the Dredged Material Containment Pond (DMCP) facility to meet the requirement of the potential dredge volumes, the representative particle size distribution (PSD) described in Table 4-2 was analysed with other key geotechnical properties in order to best estimate the likely bulking factors and material volumes entering the DMCP (for details of these conditions refer Appendix B). The PSD results were grouped to incorporate fine materials (clays and silts) and coarse (sands and gravels). The anticipated bulking factor of dredged material is provided in Table 4-3.

Table 4-3 Estimated Bulking Factor and Volumes of Discharged Dredge Materials

Material	Fines (< 0.75mm)	Coarse (>0.75mm)	Overall
Bulking Factor	2.2	1.1	1.42-1.44

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5 PRELIMINARY OPTIONS ASSESSMENT

This options assessment consists of the following considerations:

- Dredging volume
- Dredged material placement site selection
- Dredged material management options.

5.1 Dredging Scope Options

There are four dredging scope options considered in this initial study, these options are outlined in Table 5-1. The dredging volumes provided below are taken from the Sediment Analysis report by Giraud (2013b), which are based on 2011 bathymetric survey by RM Surveys.

Table 5-1: Dredging Scope Options

Option No.	Option Name	Estimated Dredging Volume (m ³)	Estimated Bulked Volume (m ³)	Description
1.	Dredging of Existing (Eastern) Channel Only	5,500	7,900	This option consists of dredging the existing eastern channel, which is typically 0.2 – 0.6m in depth
2.	Dredging of Western Channel Only	30,000	42,700	This option would reinstate a second channel to complement the previously dredged (eastern) channel. The estimated quantity required would be approximately 30,000m ³ in order to remove all overlying sediment from the existing bed level (approximately 1.0-1.5m in depth)
3.	Dredging of Western and Eastern Channels	35,500	50,500	This option consists of the combination of western and eastern channel dredging. The total volume of the works is approximately 35,500m ³
4.	Dredging of Entire Water Body Dredging	120,000	170,800	This option consists of the removal of all sediment loads in the entire area of the Pool including the proposed western and eastern channels. The total volume of the works is in the order of 120,000m ³ . This option is NOT recommended due to the following factors: <ul style="list-style-type: none"> • Significant cost • Large size of material placement area required • Inconsistent with natural morphology within the area and unsustainable in the long term

In this study Options 1, 2, and 3 have been selected for further assessment.

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5.2 Dredging Equipment

It is envisaged that dredging work will be undertaken by a small cutter suction dredger (CSD), which is similar to the 2000 dredging campaign. The CSD is stationary dredger which is equipped with a cutter head and dredge pump. The soil is mobilised by the mechanical rotation of the cutter head, then transported hydraulically by the flow of the dredge pump. During its operation, a CSD moves around a spud pole by pulling and slacking on the two fore sideline wires. A picture showing a small CSD is provided below.



Figure 5-1: Example of a Small CSD

Hydraulically transported dredged material typically consists of a solid/water mixture with 10% – 20% solid and 80% – 90% water. By matching the delivery rate to the size of the dredged material containment pond and installing suitable tail water outlet, a large proportion of the water can be drained from the placed material.

5.3 Dredged Material Management Options

There are a number of engineering techniques that can be used to drain the water out of the dredged material. These options are as follows:

5.3.1 Dredged Material Containment Pond

A dredged material containment pond (DMCP) is a facility, which is designed to receive, settle and store dredged material. A figure showing a typical DMCP design is provided in Figure 5-2. The DMCP typically configured to the needs of the Avon River Dredging would consist of the following key components:

- Dredged material inlet
- Primary Pond, which is allow for settlement of coarser material
- If required, a Secondary Pond, which will allow for further settlement of fine material
- Tail water outlet structure (e.g. weir-box)
- Spillway directing the latent water back into the Avon River.

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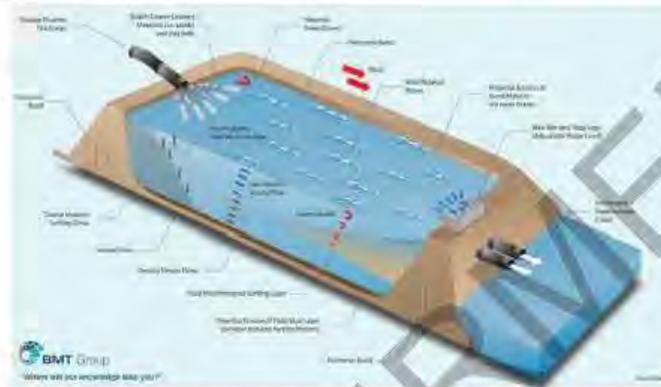


Figure 5-2: Dredged Material Containment Pond

5.3.2 Geotextile Tube

Where site area constraints exist it may be possible to utilise geotextile tubes and reduce the area required to separate the water from the fines. A geotextile tube (hereafter referred to as "geotube") is a tube-like container made out of woven polypropylene filaments. The filaments are woven into a pre-engineered pattern such that the water can escape from containment while the sediment being kept within. Figure 5-3 shows a geotube being used for dewatering of dredged material.



Figure 5-3: Dewatering of a Geotube

The dredged slurry is pumped directly from the dredger to the infill port of the geotube. During the filling, pressures start to build up inside the geotube, where it forces the water to escape from the pores between the woven fabrics. When water is drained and the height of the geotube reduces, then a second cycle of filling can begin. The process is repeated until the maximum capacity of the geotube is reached and the geotube is full of sediments. Settlement of suspended particles inside the geotube typically requires the application of a

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chemical (flocculation) agent, which neutralises the particle surface charges, allowing the particles to settle faster. The selection and application of the flocculation agent has to be done with care to ensure that it will not adversely affect the ecology. When full, the geotube can either be cut open to air dry the sediments or be transported away as a unit for disposal.

5.4 Dredged Material Management and Placement Site Selection

The potential dredged material placement sites identified during the site visits are outlined in Table 5-2 below. Drawing # 1254_00_001_01A depicts each of these material placement sites and is provided in Appendix F.

Table 5-2: Dredged Material Placement Site

Option No.	Option Name	Description	Remarks
1.	Disused Netball Court	The disused netball court is approximately 8,000m ² in size. The required pipeline work ranges from 350m to 1350m. It is located in a relatively isolated area away from the neighbourhood. A photo of the disused netball court is provided in Figure 3-6	<ul style="list-style-type: none"> • 8,000m² footprint of land available • 350-1350m of pipe work required • No risk of material returning to the Pool • Relatively isolated
2.	Disused Tennis Court	The disused tennis court is approximately 7,000m ² in size. The required pipeline work ranges from 400m to 1400m. It is located adjacent to residential properties. A photo of the disused tennis court is provided in Figure 3-10	<ul style="list-style-type: none"> • 7000m² footprint of land available • 400-1400m of pipe work required • Risk of material returning to the Pool • Very close to residential area
3.	Sun Club Land	The vacant land is approximately 61,000m ² in size. The required pipeline work ranges from 350m to 1350m. This land was used for material placement in the previous dredging campaign. Photos of the land available are provided in Figure 3-11 and Figure 3-13	<ul style="list-style-type: none"> • 61,000m² footprint of land available (30,000m² expected for DMCP use) • 350m-1350m of pipe work required • No risk of material returning to pool • Relatively isolated

5.4.1 Disused Netball Court

Pictures showing the disused netball court are provided in Figure 3-6. The court is rectangular in shaped (approximately 80m x 100m) with an area of approximately 8,000m².

5.4.1.1 DMCP Option

It is anticipated that material will be borrowed from an external site in order to build the external and internal DMCP bunds. Given the limited footprint available to build the reclamation at this site, the allowable bund height will drive the amount of insitu dredged material that can be suitably placed at the netball court site.

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In order to estimate the required DMCP sizing required, containment bund height must incorporate sediment settling (ponding) and freeboard in addition to the height required for solids retention. In this preliminary calculation, the bund design has been based on the following parameters:

- Bund crest width of 1m
- Side slope ratio of 1 Vertical: 2 Horizontal
- Typical reclamation allowances of 0.5m ponding and 0.3m for freeboard.

This design may change and may be subject to environmental specifications on discharged water quality at the DMCP outlet and may require sediment settling testing and DMCP detailed design studies. The relationship between bund height's effect on available reclamation capacity and volume required for bund construction is detailed Appendix C and is illustrated in Figure 5-4.

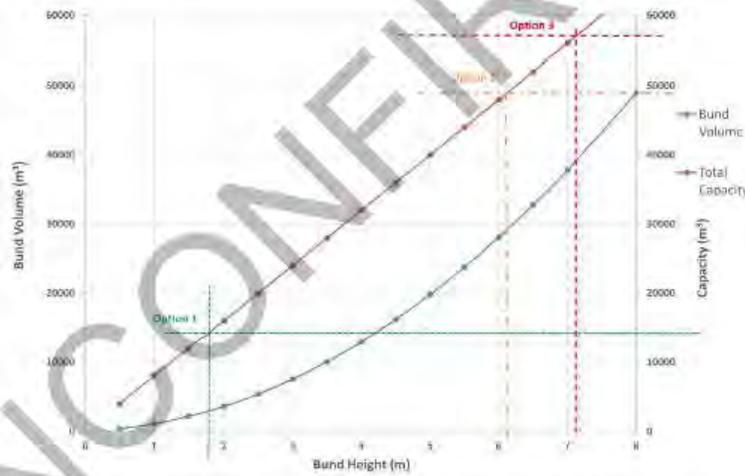


Figure 5-4: Disused Netball Court – Relationship between Bund Height, Bund Fill Volume and Storage Capacity

Based on the three options considered in this study, the bund height requirements and fill volume required to construct the DMCP bund at the Netball Courts are provided in Table 5-3.

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Table 5-3: Preliminary DCMP Sizing and Bund Height and Volume Required for Placement at Netball Court Site

Option No.	Insitu Dredged Volume	Bulk Dredged Volume	Bund Height (m) (excl. freeboard and ponding)	Bund Height (m) (incl. freeboard and ponding)	Bund Volume (m ³)	Total DCMP Capacity (m ³)
1.	5,500	7,900	1.79	2.6	2,950	14,300
2.	30,000	42,700	6.14	6.9	29,350	49,100
3.	35,500	50,500	7.12	7.9	39,060	56,900

As can be seen in the table above, in order to provide sufficient capacity for options 2 and 3 in a single campaign a significant bund height and volume is required. This is considered to be impractical and cost prohibitive to construct and thus staging or use of geotubes should be considered.

5.4.1.2 Geotube Option

The disused netball court can accommodate a certain number of geotubes at the same time. Table 5-4 and Table 5-5 below show the calculation to determine the most suitable geotube size for the disused netball court and the quantity of geotube required for the three dredging options. Based on this calculation, the 27m (circumference) geotube provides the maximum storage capacity within the constraint of the site.

Table 5-4: Geotube Option Assessment

Geotube Size ¹	Width required ²	Storage Capacity per lineal metre (m ³ /lm)	Max. Number of Tube in Row	Linear Length of Tube	Storage Capacity ³
13.5	16.5	8.2	5	70	2,870
18	21	13.4	4	70	3,752
27	30	21.7	3	70	4,557
36	39	31.5	2	70	4,410

Note:

¹ size in metre of geotube circumference

² width including 3m space allowance between tubes for safe access

³ storage capacity within the constraint of the site

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Table 5-5: Indicative Geotube Quantity Required

Option No.	Dredging Volume (m ³)	Estimated Bulk Volume (m ³)	Length of Tube Required (m) *
1.	5,500	7,810	~360
2.	30,000	42,600	~1964
3.	35,500	50,410	~2324

Note: *27m circumference with 21.7m³/linear metre capacity

5.4.2 Disused Tennis Court

As outlined in Table 5.2, the disused tennis court is located upstream from the Pool. This site has not been further assessed and is not the preferred side due to the following reasons:

- Located adjacent to residential area
- Smaller footprint than the netball courts (already shown to be constrained), which means a larger fill volume and bund height are required to store the dredged material.

A photo showing the disused tennis court is provided in Figure 3-10.

5.4.3 Gun Club Land

Pictures showing the Gun Club land are shown in Figure 3-11 and Figure 3-13. The land is approximately 61,000m² in area however it is envisaged that 30,000m² will be directly utilised for the purpose of the DMCP. This will allow for a significant buffer around the perimeter of the proposed DMCP. Approximately 20,000 m² of this land was used in the previous dredging campaign undertaken in 2000.

5.4.3.1 DMCP Option

It is anticipated that material will be borrowed onsite from existing insitu material in order to build the external and internal DMCP bunds.

In order to estimate the required DMCP sizing required, containment bund height must incorporate sediment settling (ponding) and freeboard in addition to the height required for solids retention. In this preliminary calculation, the bund design has been based on the following parameters:

- Bund crest width of 1m
- Side slope ratio of 1 Vertical: 2 Horizontal
- Allowances of 0.3m ponding (reduced from previous option due to large area) and 0.3m for freeboard.

This design may change and be subject to environmental specifications on discharged water quality at the DMCP outlet. This will warrant in-situ sediment settling testing and DMCP detailed design studies. The relationship between bund height's effect on available reclamation capacity and volume required for bund construction is detailed Appendix C and is illustrated in Figure 5-5.

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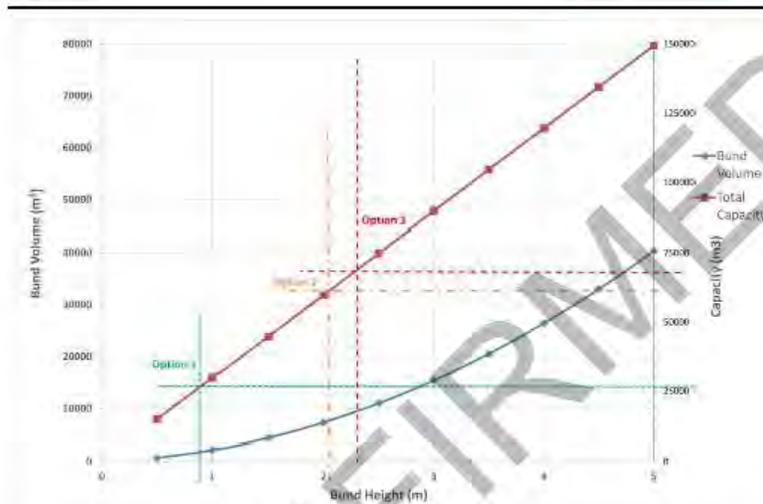


Figure 5-5: Gun Club Land – Relationship between Bund Height, Bund Fill Volume and Storage Capacity

Based on the three options considered in this study, the bund height requirements and fill volume required to construct the DMCP on the Gun Club land are provided in Table 5-6.

Table 5-6: Preliminary DCMP Sizing and Bund Height and Volume Required for Placement at Gun Club Site

Option No.	In situ Dredged Volume	Bulk Dredged Volume	Bund Height (m) (excl. freeboard and ponding)	Bund Height (m) (incl. freeboard and ponding)	Bund Volume (m ³)	Total DCMP Capacity (m ³)
1.	5,500	7,900	0.26	0.86	1,720	25,700
2.	30,000	42,700	1.42	2.02	7,460	60,400
3.	35,500	50,500	1.683	2.28	9,300	68,100

As shown in the table above, the extra footprint of land available at the Gun Club provides significant opportunity when compared to the smaller placement site alternatives. The extra land minimises the required bund height and volume and allows the ability to dredge a larger quantity of material in a given campaign.

During this preliminary design assessment, the footprint of land to be used for the construction of the DMCP on the Gun Club Land has remained constant throughout all of the 3 dredging scenarios (30,000m²). It is expected that if a smaller dredging campaign is undertaken a footprint smaller than 30,000m² would be utilised and dredging costs per m³ may be reduced.

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5.4.4 Decommissioning of Dredged Material Placement Site

The options associated with the decommissioning of the dredged material placement site will be dependent upon the Shire's plan for the future use of the site. Dredged material can either be left onsite or if appropriate, be transported to other location for beneficial reuse.

For the purpose of this scoping study and cost estimation, the following assumptions have been made:

- If placed in the disused netball court site, dredged material will be transported to nearby landfill. The cost estimate provided in Section 9 includes haulage costs, but excludes landfill charges.
- If placed in the Gun Club site, dredged material will be spread across the site to an acceptable profile.

5.5 Option Assessment Conclusion

Based on this assessment, the dredging project scope is limited by the size of the material placement site chosen, particularly in relation to the following:

- Acceptable cost per cubic metre of dredged material considering the cost associated with the placement solution
- Maximum bund height acceptable by the Shire, key stakeholders and community
- Risk associated with construction of higher/larger bunds.

The considerably larger footprint of land available at the Gun Club site, and the ability to source bund material onsite reduces the risk associated with DMCP construction and offers a more adaptable solution to varying dredge volumes.

Based on these factors the Gun Club site offers significant advantages over the other sites.

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6 RELEVANT APPROVALS AND LEGISLATION

The proposed dredging campaign falls under several Acts due to the nature and location of the works and the nature of the sediment to be dredged. The relevant Acts which will require consideration are listed and summarised below, together with the relevant regulatory authorities requiring consultation.

6.1 Relevant Legislation

- *Aboriginal Heritage Act 1972 (WA)*
- *Environmental Protection Act 1986 (WA)*
- *Contaminated Sites Act 2003 (WA)*
- *Waterway Conservation Act 1976 (WA)*
- *Swan and Canning Rivers Management Act 2006 (WA)*

6.1.1 *Aboriginal Heritage Act 1972 (WA)*

The WA Department for Aboriginal Affairs (DAA) maintain a register of over 22,000 Aboriginal Heritage sites (which can include artefacts, engravings, paintings, mythological or ceremonial places) which have been defined under the *Aboriginal Heritage Act 1972 (AH Act)*. The AH Act applies to any registered Aboriginal site. The Pool lies within a registered Aboriginal site (DAA 2015), and as such, liaison with the DAA is required (Section 6.2.1).

6.1.2 *Environmental Protection Act 1986 (WA)*

The Environmental Protection Act (EP Act) is the key legislation governing environmental protection and management in WA, including assessment of the impacts of any proposed new works. The EP Act (mainly Part IV), together with its subsidiary Environmental Impact Assessment Administrative Procedures 2012 (EPA 2012), specifies the objectives and requisite procedures for an environmental impact assessment (EIA) of proposed works that must be complied with by all stakeholders including the proponent, the EPA and any other relevant party.

Under Section 38(1) of the EP Act (Part IV), where a proposed project development is likely to have a significant effect on the environment, the proponent must refer the proposal to the EPA for a decision on whether it requires a formal environmental impact assessment, and if so, at what level of assessment. When referring a project, it is necessary to submit a referral pro-forma (obtained from www.epa.wa.gov.au). The referral form outlines the project details and likely environmental impacts, management and consultation commitments. Typically the referral form is appended and references a detailed EIA document.

6.1.3 *Contaminated Sites Act 2003 (WA)*

The disposal of dredged material to land has the potential to create a contaminated site, dependent on the nature of the material to be dredged. The identification, management and remediation of contaminated sites are covered by the WA *Contaminated Sites Act 2003 (CS Act)*. The Contaminated Sites Guidelines (DER 2014) provide guidance on the assessment

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and management of contaminated sites under the CS Act, and are discussed in further detail in Section 7.1.1.

6.1.4 Waterways Conservation Act 1976 (WA)

Dredging projects occurring within the WA Department of Water's (DoW) jurisdiction (Waterway Management Areas) require a Licence to Dredge under the *Waterways Conservation Act 1976 (WC Act)*. The WC Act applies to the waters and associated land within five declared management areas:

- Albany waterways and catchment (Princess Royal Harbour, Oyster Harbour, King George Sound and associated rivers)
- Wilson Inlet and associated rivers
- Leschenault Estuary and associated rivers
- Peel-Harvey Estuarine System including Serpentine, Murray and Harvey Rivers
- Avon River inner catchment.

As the Pool falls within the Avon River inner catchment, dredging will require the necessary approvals as defined under the WC Act (Section 6.2.4).

6.1.5 Swan and Canning Rivers Management Act 2006 (WA)

The Pool falls within the Swan-Avon Catchment Boundary, and as such is subject to the *Swan and Canning Rivers Management Act 2006 (SCR Act)*. The objectives of the SCR Act are principally aimed at the restoration and protection of development control areas and the Riverpark, and to provide for the management of activities that affect the ecological and community benefits and amenity of the development control area and the Riverpark. The Pool does not lie within the boundaries of the development control area, however it does fall within the boundaries for the Riverpark. As such, activities at the Pool, such as dredging, will need to be completed in accordance with the SCR Act.

6.2 Regulatory Consultation

Due to the number of Acts applying to the proposed dredging campaign, consultation with a number of regulatory authorities will be required to:

- Determine the most appropriate sampling and analysis program and monitoring and management program
- Apply for the relevant approvals
- If necessary, report the results of sampling and any monitoring during works.

The below sections describe the relevant regulatory authorities that will require consultation prior to dredging.

6.2.1 Department of Aboriginal Affairs

The DAA's role under the AH Act is to protect and manage places of significance listed on the Register of Aboriginal sites. Approval from the DAA may need to be sought under the AH Act for dredging of the Pool due to its location within a registered Aboriginal site (DAA 2015). Applications are reviewed by the Aboriginal Cultural Material Committee before being

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referred to the Minister for Indigenous Affairs for determination. It is recommended that a heritage consultant is contracted for approvals from the DAA. The costs associated with this have not been included in Section 9.

6.2.2 Environmental Protection Agency

Although referral to the EPA for dredging within the Pool has been completed previously (Section 4.3), it is suggested that a pre-referral meeting with the EPA is held again to determine whether a formal referral and/or assessment is required. This is due to the length of time that has passed and the subsequent results of sediment sampling obtained since the EPA's previous decision not to formally assess the project. It is suggested that the pre-referral meeting involves the Shire, the EPA and BMT Oceanica. The meeting will be an opportunity to provide the EPA with as much information as possible to allow them to make an informed decision on whether the project requires referral. The meeting would need to occur prior to the commencement of any dredging and preferably before sampling and analysis to ensure the EPA are satisfied with the sampling and analysis program proposed.

6.2.3 Department of Environment Regulation

Due to the presence of ASS and elevated levels of aluminium and iron within the area to be dredged (Section 4.4, Giraud 2013a), dredging and disposal of the sediments should be managed under the CS Act. This will require further sampling to sufficiently characterise the sediments within the Pool. If it is determined that the sediments within the Pool are contaminated (as defined in the CS Act), the disposal of sediments may result in the creation of a contaminated site at the disposal site. The Department of Environmental Regulation (DER) is the relevant regulatory authority for contaminated sites and ASS. Extensive liaison with the DER will be required to ensure that sediments are sufficiently sampled and managed and the impacts of dredging are monitored appropriately. Preliminary consultation with the DER has also indicated that due to the location of the Pool and the area through which the Avon River has passed prior to the Pool, assessment for the presence of asbestos may be required.

6.2.4 Department of Water

Disturbing or interfering with the bed or banks of a watercourse has the potential to alter its flow regime, cause erosion and adversely impact reliant vegetation, fauna or other uses. Under the WC Act, a permit to authorise interference or obstruction of the bed and banks of a watercourse will be required. These permits are obtained from the DoW, and are free of charge.

Additionally, a licence to carry out dredging or reclamation on waterways will also be required under the WC Act. This licence is required for dredging or reclamation within the waters and waterways of a declared management area, within which the Pool is located.

6.2.5 Department of Parks and Wildlife and Swan River Trust

Previously, the Swan River Trust (SRT) was a statutory authority defined by the SCR Act. In July 2015, the SRT was merged with the Department of Parks and Wildlife (DPaW). The statutory functions of the SCR Act are now divided between the SRT and DPaW. Principally, approvals are required from DPaW if works are occurring within a development control area (DCA), or if works are likely to impact DCAs. As the Pool is not located within a DCA, and

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liaison with DPaW has indicated that they do not anticipate that the proposed dredging will impact a DCA, no approvals are required from DPaW. However, DPaW have requested that they be included during stakeholder consultation.

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7 SAMPLING AND REPORTING REQUIREMENTS

To sufficiently characterise the material, further sediment sampling will be required. This will allow for the determination of current contaminant levels within the sediment, and will also determine the location of ASS and inform the treatment options required for the disposal of ASS (e.g. liming). Prior to sediment sampling and analysis, liaison will be required with regulators to ensure sampling is completed with due regard to relevant guidelines. Results gained through sediment analysis will act to inform environmental impact assessments and management plans (Section 7.2).

7.1 Sediment Sampling and Analysis

7.1.1 Relevant Guidelines

The following guidelines will inform the sampling program design, and provide guideline values against which contaminant levels in the sediments can be compared:

- National Assessment Guidelines for Dredging (NAGD; CA 2009)
- Contaminated Sites Guidelines (DER 2014)
- Acid Sulfate Soils Guideline Series (DEC 2013)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC & ARMCANZ 2000)
- Guidelines for the Assessment Remediation and Management of Asbestos-Contaminated Sites in WA.

The below sections provide further detail on each of the guidelines.

National Assessment Guidelines for Dredging

The National Assessment Guidelines for Dredging (NAGD; CA 2009) provide a framework for the review and assessment of ocean disposal of dredged material. Although ocean disposal is not proposed for the Pool dredging, the guidelines can provide a useful reference for the assessment and management of dredging operations. The guidelines include information on:

- Assessing sediment quality
- Assessing dredging and disposal sites
- Determining management and monitoring requirements.

Contaminated Sites Guidelines

The Contaminated Sites Guidelines (DER 2014) provide guidance on the assessment and management of contaminated sites under the CS Act. While land disposal of dredged material is not dealt with specifically in the guidelines, the dredging would still fall under the CS Act and potential human and environmental impacts must be subject to a risk assessment.

Assessment involves a preliminary disposal site investigation and the comparison of dredge sediment contamination levels against the National Environment Protection (Assessment of Site Contamination) Measure guidelines (NEPC 2013; as referenced in the Contaminated

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Sites Guidelines, DER 2014) to assess the ecological and human health risks associated with the material once it has been disposed to land.

Acid Sulfate Soils Guideline Series

Acid sulfate soils have previously been identified in the Pool (Giraud 2013a). The disturbance of ASS can decrease pH levels and cause mobilisation of metals into the water column. The Acid Sulfate Soils Guidelines Series (DEC 2013) contains guidance on how to identify ASS risk areas and the subsequent assessment methods, including sampling and reporting for material intended for land reclamation purposes. These guidelines complement the Contaminated Sites Management Series (DEP 2001) and outline a risk assessment approach for ASS under the CS Act.

Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Interim Sediment Quality Guidelines

The disturbance of material during dredging has the potential to release contaminants within the sediments into the water column and impact aquatic organisms in the Avon River. Therefore it is appropriate to assess the sediments against the ANZECC & ARM CANZ (2000) interim sediment quality guidelines to determine the environmental impact of the proposed dredging.

Water Quality Guidelines

Dredging causes the release of sediment pore water into the water column and return water from the disposal site is proposed to be returned to the Avon River. The impact of these discharges may be reviewed by comparing the water quality parameters (of elutriate sample concentrations of the proposed material prior to dredging and/or of the tail water concentrations during dredging) with the ANZECC & ARM CANZ (2000) trigger values for physical and chemical stressors and toxicants.

Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in WA

The Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in WA recommends the completion of a preliminary site investigation (DoH 2009). It is recommended that a terrestrial environmental consultant with experience in asbestos sampling and analysis is utilised for this task.

7.1.2 Sampling and Analysis Plan

The recommended sediment sampling program should be outlined in a sediment sampling and analysis plan (SAP). The SAP should be designed in accordance with the Acid Sulfate Soils Guidelines (DEC 2013) and the Contaminated Sites Guidelines (DER 2014) with guidance from the NAGD (CA 2009), providing a risk-based approach to the sampling and analysis protocol. The SAP should contain information on:

- Previous and forecasted dredging and disposal
- Review of potential contaminants of concern
- Sediment sampling locations and depths
- Fieldwork operations including equipment and personnel
- Field procedures for sediment sample collection, processing, transport and storage

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- Sediment data analysis, assessment and management.

It is recommended that relevant regulatory authorities are consulted during the preparation of the SAP to ensure that the proposed sampling and analysis satisfies their requirements. The number of sampling locations will be based on the proposed dredge footprint and dredging volumes using guidance from the Contaminated Sites Guidelines (DER 2014), the Acid Sulfate Soils Guidelines (DEC 2013) and the NAGD (CA 2009).

Based on the site history and the previous sediment sampling and analysis results, it is recommended that the proposed dredge material be analysed for the following analytes:

- Total organic carbon
- Total and elutriate nutrients
- Total and elutriate metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc, aluminium and iron)¹
- PSD
- Acid sulfate soils
- Bulk density
- Hydrocarbons
- Total and elutriate tributyltin¹
- Pesticides²
- Asbestos
- pH
- Cation exchange capacity

The above list of analytes will be rationalised during preparation of the SAP.

In line with the Acid Sulfate Soils Guidelines (DEC 2013), and due to the linear nature of the proposed dredge footprint, sampling for ASS may involve sampling every 50m in each channel to characterise the presence and location of ASS within the Pool. As the channels are ~1km long, this equates to 20 sites per channel, which could result in up to 40 samples collected for ASS analysis. Sufficient analysis for ASS is required to allow accurate estimation of the liming required to neutralise the acid during the disposal of dredge material. Further liaison with the DER during the preparation of the SAP may indicate that a smaller number of sampling sites are required, however this should be determined following confirmation of the final scope.

For the remaining analytes, it is expected that a minimum of 10 sites will require sampling and analysis. The number of sites requiring analysis may increase, and will be finalised following confirmation of the scope and further liaison with regulatory authorities.

¹ Note that elutriate analysis may only require if the total contaminant concentration exceeds the guidelines values (to be determined through further regulator consultation)

² Analysis for pesticides that have been phased out from agricultural practices (DSEWPoC 2011) is not required if there is existing data demonstrating the absence of these contaminants in the dredging area since May 2004 (the date Australia ratified the Stockholm Convention on Persistent Organic Pollutants).

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Soil sampling in the vicinity of the disposal site is also required for the determination of ambient background contamination concentrations. This allows the calculation of specific guidelines values in accordance with the Contaminated Sites Guidelines (DER 2014) and also provides information on any contamination already present at the disposal site prior to the disposal of dredged material. It is anticipated that a maximum of 10 sites are required to sufficiently characterise the sediments at the disposal site, however this should be determined following confirmation of the final scope and further liaison with the DER.

7.2 Post-Sampling Documentation and Management

Following receipt of the laboratory results, a Dredging Environmental Impact Assessment (DEIA) document will be required to identify key environmental and socio-economic issues that may arise from the proposed campaign (Section 7.2.1).

Based on the outcomes outlined within the DEIA, a Dredging Environmental Management Plan (DEMP) should then be prepared to ensure proper environmental management of the proposed campaign by explicitly defining the methods, actions and roles of the Proponent and contractor (Section 7.2.2).

Due to the presence of ASS at the site, an Acid Sulfate Soil Management Plan (ASSMP) will be required (Section 7.2.3). The ASSMP outlines management actions required to ensure minimal impacts to the environment from the disturbance of ASS, and will require submission to the DER for review. The ASSMP may be integrated with, or form a component of, the DEMP.

Following completion of the dredging campaign, results of the during- and post- campaign ASS monitoring should be documented for future reference (Section 7.2.4).

Further details on each of these reports are included in the sections below.

7.2.1 Dredging Environmental Impact Assessment

A DEIA will be required to identify the environmental and social issues relating to the proposed dredging. The DEIA should include the results of the sediment sampling and analysis. The potential environmental and social impacts associated with the proposed dredging and disposal activities should also be outlined with recommendations for appropriate monitoring and management measures. Potential environmental and social issues are detailed in Table 7-1, although it should be noted that these will be refined during preparation of the DEIA.

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Table 7-1: Key Environmental and Social Issues and Potential Impacts

Issue	Potential Impacts
Environmental	
Turbidity and sedimentation	<ul style="list-style-type: none"> • Light limitation to benthic flora • Smothering of benthic habitat • Abrasion of marine organisms
Direct damage to benthic habitats	<ul style="list-style-type: none"> • Impact to fauna that feed on seagrass • Reduction in water quality
Anoxia	<ul style="list-style-type: none"> • Deteriorating water quality • Impact to aquatic organisms
Nutrient release from sediment	<ul style="list-style-type: none"> • Nuisance algae growth
Mobilisation of contaminants	<ul style="list-style-type: none"> • Deteriorating water quality • Contamination of aquatic organisms
Release of hydrogen sulfide gas	<ul style="list-style-type: none"> • Deterioration of air quality
Acid sulfate soils	<ul style="list-style-type: none"> • Acidification of waters • Deoxygenation of the water column • Release of heavy metals
Sediment removal/alteration of local topography	<ul style="list-style-type: none"> • Change in river hydrodynamics
Hydrocarbon spill	<ul style="list-style-type: none"> • Contamination of aquatic organisms
Noise	<ul style="list-style-type: none"> • Disturbance of aquatic/terrestrial fauna • Impact on waterbirds
Vegetation disturbance	<ul style="list-style-type: none"> • Destruction of habitat • Reduction of environmental value' • Impact on waterbirds
Vessel movement	<ul style="list-style-type: none"> • Collision with fauna • Impact on waterbirds
Social	
Turbid plume	<ul style="list-style-type: none"> • Reduced aesthetics and recreational values
Unightly disposal site	<ul style="list-style-type: none"> • Reduced aesthetics
Exposure to contaminants in dredge material	<ul style="list-style-type: none"> • Reduced health of local community
Public safety/Restricted public access to dredge and/or disposal sites	<ul style="list-style-type: none"> • Restricted commercial and/or recreational values
Release of H ₂ S gas	<ul style="list-style-type: none"> • Reduced aesthetics and health of local community
Noise	<ul style="list-style-type: none"> • Reduced aesthetics and health of local community
Dust	<ul style="list-style-type: none"> • Reduced aesthetics and health of local community

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Issue	Potential Impacts
Aboriginal heritage	<ul style="list-style-type: none"> • Reduced historic values
Navigation hazards	<ul style="list-style-type: none"> • Reduced recreation values

7.2.2 Dredging Environmental Management Plan

A DEMP detailing the required monitoring and management actions should be prepared prior to the proposed dredging. The DEMP should contain all Proponent and Contractor environmental monitoring and management commitments. This is completed to minimise the environmental impact of the dredging and disposal. Based on the existing information it is anticipated that the main issues requiring monitoring and management will be the generation of ASS and the deterioration of water quality resulting from the disturbance of sediments and release of nutrients. Required monitoring may include:

- Turbidity monitoring
 - Daily plume sketches³
 - Daily site photographs
 - Aerial photography (at least once during the dredging campaign)
- Water quality monitoring
 - Up to daily pH, dissolved oxygen monitoring of water in the dredge plume and at the disposal site
 - Weekly nutrients and heavy metals analysis of water in the dredge plume and at the disposal site
 - Post-dredging water and/or sediment monitoring
- Sediment quality monitoring at the disposal site (post-dredging sampling may be required as well as during-dredging sampling)
- Seagrass monitoring

Required management actions may include:

- Turbidity management
- Water quality management
 - Treatment of acidic supernatant water with lime
 - Timing dredging works to coincide with favourable seasonal conditions
- Dust management
- Hydrocarbon spills management
- Odour management
- Noise management

³ A plume sketch is a sketch of the physical extent of the visible plume overlaid onto a map.

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- Waste management
- Public health and safety management
- Emergency procedures

These requirements are subject to revision based on the findings of the DEIA and advice/requirements of the relevant regulatory authorities. The DEMP may require submission to the regulatory authorities prior to the commencement of works.

7.2.3 Acid Sulfate Soils Management Plan

Due to the presence of ASS, the preparation of an Acid Sulfate Soil Management Plan (ASSMP) will be required in accordance the guidelines detailed in "Treatment and management of soils and water in acid soils landscapes" (DEC 2011). The monitoring and management actions in the ASSMP may be integrated with the DEMP and will include dredge spoil and supernatant water quality monitoring for pH and heavy metals, and the treatment of the dredge spoil and tail water with alkaline material (including materials, volumes, methods and timeframes) to minimise the risk of releasing acidic water into the terrestrial and aquatic environment. The ASSMP must be submitted to the DER for approval prior to the commencement of works.

7.2.4 Project Close-Out Report

During and after the proposed dredging, it is recommended that the environmental monitoring data is compiled and analysed, and included in an environmental management section of a project close-out report. Monitoring results may be required to be submitted to the regulatory authorities. Additionally, preparation and submission of an ASSMP closeout report will be required by the DER following completion of the proposed dredging.

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8 PROJECT DELIVERY PROGRAM

The table below details the approximate timings for the completion of near term tasks outlined in this scoping document. Note that these timings will be subject to change depending on the requirements of the relevant regulatory authorities.

Gantt charts showing the indicative project schedules for the three dredging options (all disposing to the Gun Club) are provided in Appendix D.

Table 8-1: Approximate timings for completion of all tasks associated with proposed dredging

Task	Approximate Time Frame (Weeks)
Pre-Feasibility Study and Conceptual Design	4-8
Regulator consultation	2-8
Referrals and approvals ¹	>8
Preparation of Sampling and Analysis Plan	3-4
Implementation of Sampling programme	1-2
Laboratory analysis	3-5
Detailed Feasibility Study and Design	4-8
Preparation of Dredging Environmental Impact Assessment	3-4
Preparation of Dredging Environmental Management Plan and Acid Sulfate Soil Management Plan	4-5
Procurement Services (Tender and Contract documentation preparation, tender period, evaluation and award)	10

Note:

1. The length of time required to complete referrals and approvals is heavily dependent on the outcome of further regulator consultation
2. Some tasks listed above may be completed concurrently, reducing the overall length of time required to complete all tasks

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9 PROJECT COST ESTIMATE

9.1 Pre-Construction Works Cost Estimate

The approximate costs for the completion of the near-term tasks outlined in this scoping document are detailed in Table 9-1. Please note these cost estimates may be subject to change as they are based on current rates and laboratory costs. The costs are also based on the currently proposed scope.

Table 9-1: Approximate Costs for the Completion of the Tasks Outlined in this Scoping Document

Item	Approximate cost (\$000)					
	Eastern channel		Western channel		Both channels	
	Lower	Upper	Lower	Upper	Lower	Upper
Pre-Feasibility Study						
Conceptual Design (incl. drafting)	8	10	8	10	8	10
Project Staging and Planning	5	8	5	8	5	8
Project Cost Estimate and Financial Analysis (Net Present Cost)	5	8	5	8	5	8
Project Risk Management (risk identification and mitigation)	1	2	1	2	1	2
Approvals						
Liaison with OEPA including pre-referral meeting	3	5	3	5	3	5
Preparation of referral document to OEPA	3	5	3	5	3	5
Liaison with DER	1	2	1	2	1	2
Liaison with DoW and application for Licence to Dredge and/or Permit to interfere with bed and banks	1	2	1	2	1	2
Sediment Sampling and Analysis						
Preparation of SAP	10	15	10	15	10	15
Sampling program	40	45	40	45	60	65
Laboratory analysis	10	15	20	25	25	30
Environmental Impact Assessment						
Preparation of DEIA	15	20	15	20	15	20
Detailed Feasibility Study and Design						
Detailed Design Development	8	10	8	10	8	10

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Item	Approximate cost (\$000)					
	Eastern channel		Western channel		Both channels	
	Lower	Upper	Lower	Upper	Lower	Upper
Detailed Project Staging and Planning	4	6	4	6	4	6
Project Cost Estimate and Financial Analysis (Net Present Cost)	2	4	2	4	2	4
Project Construction Risk Management (risk identification and mitigation)	1	2	1	2	1	2
Environmental Monitoring and Management						
Preparation of DEMP ²	7	10	7	10	7	10
Preparation and submission of ASSMP ²	10	15	10	15	10	15
Preparation of close-out report	5	10	5	10	5	10
Procurement Services and Management						
Preparation of RFT and Contract Documentation	8	10	8	10	8	10
Tender Support, Evaluation and Award	4	5	4	5	4	5
Total	146	199	156	209	181	234

Note:

1. Dependent on outcome of pre-referral document to OEPA
2. Note that costs associated with the implementation of the DEMP and ASSMP have not been included due to their reliance on the outcomes of sediment sampling and further regulator liaison

9.2 Indicative Project Cost Estimates

9.2.1 Netball Court

Details of the overall project cost estimates including the constructions costs involving the DMCP option and the Geotube option at the Netball court sites are provided in Appendix E and are summarised in Table 9-2 and Table 9-3.

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Table 9-2: Summary of Indicative Project Cost Estimates – DMCP Option – Netball Courts

Option No.	Dredged Volume (m ³)	Approximate cost (\$000)						Overall cost per m ³ dredged (\$)
		Planning Phase	DMCP Construction Costs	Dredging and Dredged Material Management	Decommissioning	Total Cost (excl. contingency and GST)	Total Cost plus: 30% contingency and GST	
1	5,500	\$199	\$184	\$165	\$62	\$610	\$872	158
2	30,000	\$209	\$1,481	\$595	\$289	\$2,574	\$3,661	123
3	35,500	\$234	\$1,950	\$698	\$340	\$3,222	\$4,608	130

Table 9-3: Summary of Indicative Project Cost Estimates – Geotube Option – Netballs Courts

Option No.	Dredged Volume (m ³)	Approximate cost (\$000)						Overall cost per m ³ dredged (\$)
		Planning Phase	Geotube Cost	Dredging and Dredged Material Management	Decommissioning	Total Cost (excl. contingency and GST)	Total Cost plus: 30% contingency and GST	
1	5,500	\$199	\$269	\$165	\$62	\$695	\$993	\$181
2	30,000	\$209	\$894	\$595	\$289	\$1,987	\$2,842	\$95
3	35,500	\$234	\$1,035	\$698	\$340	\$2,306	\$3,298	\$93

9.2.2 Gun Club

Details of the overall project cost estimates including the constructions costs involving the DMCP option at the Gun Club site are provided in Appendix E and are summarised in Table 9-4.

Table 9-4: Summary of Indicative Project Cost Estimates – DMCP Option – Gun Club

Option No.	Dredged Volume	Approximate cost (\$000)						Overall cost per m ³ dredged
		Planning Phase	DMCP Construction Costs	Dredging and Dredged Material Management	Decommissioning	Total Cost (excl. contingency and GST)	Total Cost plus: 30% contingency and GST	
1	5,500	\$199	\$17	\$165	\$19	\$400	\$573	\$104
2	30,000	\$209	\$71	\$595	\$31	\$907	\$1,297	\$43
3	35,500	\$234	\$85	\$698	\$36	\$1,053	\$1,506	\$42

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9.3 Value for Money

One of the means to measure value for money is to compare the estimated capital costs against time benefit in relation to the rates of siltation in the Pool. In other words, the capital spent on dredging works will buy time, and as siltation continues, the sediment load inside the Pool will eventually return to the pre-dredging volume.

Based on the rate of siltation of 2,300 – 3,000 m³/year, as estimated by Giraudo (2014), the capital cost per year of benefit for the three dredging options at the Netball courts and Gun Club sites are provided in Table 9-5 and Table 9-6 and are shown in Figure 9-1 and Figure 9-2.

Table 9-5: Value for Money Assessment – Netball Court

Option No.	Dredged Volume	Time Benefit		CAPEX/Time Benefit (\$/year)	
		Low - 2,300 m ³ /yr infill rate	Upper - 3,000m ³ /yr infill rate	Lower Estimate	Upper Estimate
1	5,500	2.39	1.83	\$364,547.24	\$475,496.40
2	30,000	13.04	10.00	\$282,217.47	\$368,109.74
3	35,500	15.43	11.83	\$298,532.78	\$389,390.58

Table 9-6 Value for Money Assessment – Gun Club

Option No.	Dredged Volume	Time Benefit		CAPEX/Time Benefit (\$/year)	
		Low - 2,300 m ³ /yr infill rate	Upper - 3,000m ³ /yr infill rate	Lower Estimate	Upper Estimate
1	5,500	2.39	1.83	\$239,420.32	\$312,287
2	30,000	13.04	10.00	\$99,444.08	\$129,709
3	35,500	15.43	11.83	\$97,551.23	\$127,240

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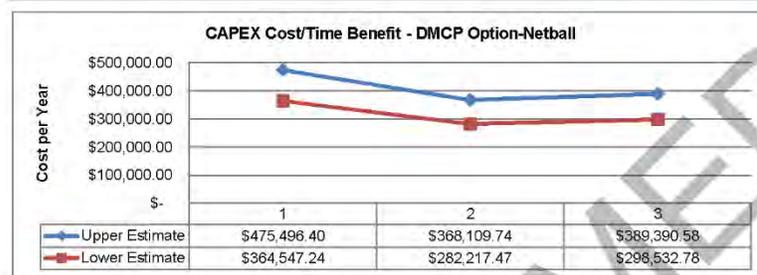


Figure 9-1: Preliminary Value for Money Assessment – Netball Courts

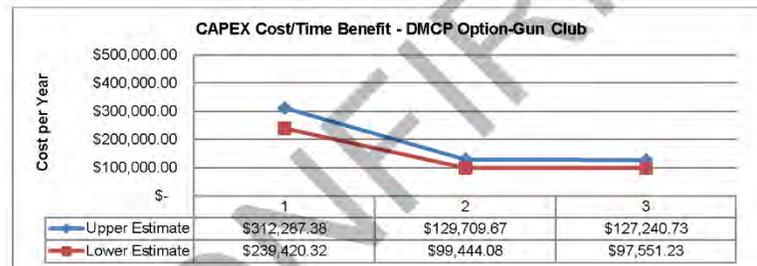


Figure 9-2 Preliminary Value for Money Assessment – Gun Club

9.4 Project Cost Estimate Observations

Based on the results outlined above, the most beneficial option based on CAPEX Cost/ Time Benefit analysis is to use the Gun Club land for the larger quantity of material (option 3).

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10 PROJECT RISKS AND OPPORTUNITIES

There are a number of engineering and environmental risks and opportunities associated with the proposed dredging and placement site due to the location of the works. These risks and opportunities are outlined in Table 10-1.

Table 10-1: Project Risks and Opportunities

Risks	Opportunities
Engineering & Technical	
<ul style="list-style-type: none"> • Suitability of insitu fill material for bund construction • Bund Stability and DCMP design for maximum settling of suspended sediment 	<ul style="list-style-type: none"> • Value engineering of bund construction which including geotechnical assessment and design • Establishment of long-term maintenance dredging strategy.
Environmental	
<ul style="list-style-type: none"> • Impact to surrounding environment due to release or disturbance of ASS and other contaminants • Higher regulator consultation hours than anticipated due to complexity of project • High level of monitoring and/or management due to regulator liaison • Longer approvals and referral process due to approvals being considered necessary for completion 	<ul style="list-style-type: none"> • Approval could be sought for multiple dredging projects to complete the dredging in a staged process or to allow for more regular maintenance dredging campaigns. However, the project would have to be taken to the EPA with that approach, and it may potentially (although not necessarily) require further management as a result of the surrounding environment being impacted on multiple occasions

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11 RECOMMENDATIONS

Based on this initial scoping study, it is recommended that the following to be considered by the Shire:

- Undertake a Feasibility Engineering Study (FES) to develop a DMCP design and to further assess the project cost. This FES study would typically include the following:
 - Assessment of insitu material properties for bund construction
 - DMCP design, which may include topographic survey of Gun Club site to determine cut/fill quantities available
 - Identification and management of project risks.
- Commence the approval process, which consists of the following:
 - Liaison with relevant regulatory agencies (OEPA, DER and DoW) and initiate a pre-referral meeting
 - Preparation of referral document
 - Prepare an application for Licence to Dredge and/or permit to interfere with bed and banks
- Commence Sediment Sampling and Analysis to better understand the physical and chemical characteristic of the dredging material
 - Preparation of Sediment Analysis Plan (SAP)
 - Undertake Sampling Program
 - Perform laboratory analysis on samples collected.
- Conduct hydrographic survey of Town Pool (to confirm campaign programme and volumes)

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APPENDIX A:
DOCUMENT LIST

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Item No.	Report No.	Report Title	Rev	Date	Author	Category
1		Hydrolic Assessment Northam Water		Feb-14	Mark Orlando	1
2		Northam Town Pool - Interim O & M Assessment and Recommendations for Management		Oct-13	Mark Orlando	1
3		Northam Town Pool - Sediment Analysis		Dec-13	Mark Orlando	1
4		The Pool - A Back to Front Review		Dec-13	M. Russell et al	2
5	WRM 11	Pool Water Management Programme		Aug-09		2
6	RRP 2	Water Pressure Plan - Sediment - Northam		Mar-09	Water and Water Commission and Pool Water Management Authority	2
7	WRM 4	Assessment of the Effect of the Pool in the Pool Catchment		Dec-07	Rebekah Ezzell	2
8	Ref 10388	Deep Environmental Protection Proposal Validation Letter		Dec-09	RJ Taylor	2
9	Contract No. 559	Ordering of Northam Town Pool Filter Document for Lump Sum Contract		1-Sept-09	Town of Northam	2
10	SR24025	Leakage Testing - Northam Town Pool		9-Sept-09	Fred Lakey - Geotech Associates	2
11	File 128	Memorandum - Northam Town Pool - Sampler		9-11-09	G Leake	2
12	Ref 5121	Northam Town Pool Dredging - Study		11-Mar-09	Bill Hill - Water and Water Commission	2
13	UTS32	Final and Northam Town Pool Sediment Management Plan		14-Dec-11	Geotech Associates Ltd RTO Correspondence and Report by Pool Water Management Authority Dated July 1998	2
14		Policy SR 1021			Shire Water Treat	2
15		Minutes - Meeting of Pool Water Advisory Committee		11-May-09		3
16		Schedule 10 - Community Amenities - Budget for the Year Ended 30 June 01		30-Jun-01		3
17		Schedule 10 - Community Amenities - Budget for the Year Ended 30 June 02		30-Jun-02		3
18		Pool Water Management Plan		20-Mar-01	Pool Water Advisory	3
19	2391	Minutes - Ordinary Meeting of the Council		13-Oct-09		3
20	2381	Minutes - Ordinary Meeting of the Council		28-Aug-09		3
21		Ordinary Council Meeting - Minutes		19-Nov-09		3
22	2431	Minutes of Ordinary Council Meeting		22-Mar-11		3
23		Photos				3
24	Ref 25A	Statement for Funding Letter		25-Apr-08	G Street - Town of Northam	3
25		Dredging of town pool awarded			Town of Northam	3

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APPENDIX B:
BULKING CALCULATION

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SEDIMENT PROPERTIES	Unit	Option 1	Option 2	Option 3	Reference
Water Density	(t/m ³)	1	1	1	Assumed value - fresh water
Sediment Particle Density	(t/m ³)	2.65	2.65	2.65	Assumed value
Moisture Limit	(%)	26.5%	26.5%	26.5%	Manually entered to achieve Dry Den. of 1.350t/m ³ determined from Van Rijn 1993
Degree of Saturation	(%)	100%	100%	100%	Assumed saturated conditions
Specific Gravity	-	2.65	2.65	2.65	
Void Ratio e	-	0.97	0.97	0.97	
Porosity n	-	0.49	0.49	0.49	
In situ Dry Density	(t/m ³)	1.35	1.35	1.35	1.350t/m ³ adopted based on Van Rijn 1993 - eqns. 3.2.4
In situ Bulk Density	(t/m ³)	1.84	1.84	1.84	
PSD CHARACTERISTICS					
Percentage of fines (< 75µm)	%	35.0%	35.0%	35.0%	Weighted average across 3 different samples (probab. 1.9%)
Percentage Clays (< 2µm)	%	20.0%	20.0%	20.0%	Weighted average across 3 in situ samples (probab. 1.9%)
Estimated percentage of trapped fines (as percent of fines)	%	20%	20%	20%	Assumed to account for flocculation
Effective Fines Percentage (percent of total mass)	%	28%	28%	28%	
Effective Coarse Percentage (coarse + trapped fines)	%	72%	72%	72%	
DREDGING INPUTS					
		Small CSO	Small CSO	Small CSO	
Total Dredging Volume (All areas)	(cubic m)	5,500	30,000	35,000	Dredging volume as per proposal, Dec 2017
Estimated Avg. Production Rate	(cubic m /hr)	100	100	100	Estimated production rate for small CSO
Avg. Slurry Solids Volume Concentration	(%)	15.0%	15.0%	15.0%	Typical of small CSOs
Inferred Average Dredging Efficiency	(%)	65%	65%	65%	Typical contractor downtime/efficiency incurred on similar jobs
Working hours per day	(hrs)	12	12	12	Typical contractor hours
INFLOW CHARACTERISTICS					
Inflow Dry Mass Flowrate (Avg. Prod. Rate)	(t/hr)	135	136	135	
Avg. Dry Mass Flowrate	(kg/s)	37	37	37	
Avg. Bulk Flowrate (per second)	(m ³ /s)	0.09	0.09	0.09	
Avg. Bulk Flowrate (per hour)	(m ³ /hr)	340	340	340	
Avg. Water Flowrate	(m ³ /s)	0.08	0.08	0.08	
Avg. Solids Concentration	(kg/m ³)	398	398	398	
Inflow fines concentration	(kg/m ³)	111.3	111.3	111.3	
Inferred Average Daily Dredging Rate	(cubic m /day)	780	780	780	
Inferred Average Weekly Dredging Rate	(cubic m /wk)	5,460	5,460	5,460	
Avg. Daily Dry Mass Flowrate	(t/day)	1,050	1,050	1,050	
Inferred Average Daily Dry Mass Flowrate	(kg/s)	12	12	12	
Avg. Bulk Flowrate (per hour)	(m ³ /hr)	110	110	110	
STORAGE REQUIREMENTS					
Avg. placed concentration of fines C _p	(kg/m ³)	600	600	600	Adopted value based on Van Rijn 1993 Table 11.4 (500-600kg/m ³)
Coarse material bulking factor	-	1.1	1.1	1.1	Assumed for sand/gravel
Avg. placed Void Ratio e _p	-	3.42	3.42	3.42	
Final placed volume of fines V _p	m ³	3,460	18,860	22,220	
Inferred fines bulking factor	-	7.7	7.7	7.7	
Required storage volume V (beds)	m ³	7,900	42,700	50,500	
Inferred total bulking factor	-	1.44	1.42	1.42	
Recommended Freeboard + Ponding Depth	m	0.80	0.80	0.80	preliminary height allowance based on previous experience & design @ 0.5m standing + 0.3m freeboard
Total Retention Capacity	m ³	14,300	49,100	56,900	Based on 0.5 ha footprint

Key:
 Input value
 Calculated value

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SEDIMENT PROPERTIES	Unit	Option 1	Option 2	Option 3	Reference
Water Density	(t/m ³)	1	1	1	Assumed value - fresh water
Sediment Particle Density	(t/m ³)	2.65	2.65	2.65	Assumed value
Moisture Content	(%)	26.5%	26.5%	26.5%	Manually entered to achieve Dry Dens of ~1.30 t/m ³ (Determined from Van Rijn 1994)
Degree of Saturation	(%)	100%	100%	100%	Assumed saturated conditions
Specific Gravity	-	2.65	2.65	2.65	
Void Ratio <i>v</i>	-	0.97	0.97	0.97	
Porosity <i>n</i>	-	0.49	0.49	0.49	
In situ Dry Density	(t/m ³)	1.35	1.35	1.35	1,350kg/m ³ adopted based on Van Rijn 1994 - eqns 3.2.4
In situ Bulk Density	(t/m ³)	1.84	1.84	1.84	
PSO CHARACTERISTICS					
Percentage of fines (< 75µm)	%	35.0%	35.0%	35.0%	Weighted average across 9 in situ samples (collected 1996)
Percentage Clays (< 2µm)	%	20.0%	20.0%	20.0%	Weighted average across 9 in situ samples (collected 1996)
Estimated percentage of 'bapped' fines (as percent of fines)	%	20%	20%	20%	Assumed to account for flocculation
Effective Fines Percentage (percent of total mass)	%	28%	28%	28%	
Effective Coarse Percentage (coarse + trapped fines)	%	72%	72%	72%	
DREDGING INPUTS					
Total Dredging Volume (All areas)	(m ³)	5,500	10,000	35,500	Dredging volume as per O'Rourke, Dec 2013
Estimated Avg. Production Rate	(m ³ /hr)	103	100	107	Estimated production rate for Small CSD
Avg. Slurry Solids Volume Concentration	(%)	15.0%	15.0%	15.0%	Typical of small CSDs
Inferred Average Dredging Efficiency	(%)	65%	65%	65%	Typical contractor downtime/throw incurred on similar jobs
Working hours per day	(hrs)	12	12	12	Typical contractor hours
INFLOW CHARACTERISTICS					
Hourly Dry Mass Flowrate (Avg. Prod. Rate)	(t/hr)	1.35	1.35	1.35	
Avg. Dry Mass Flowrate	(kg/s)	3.7	3.7	3.7	
Avg. Bulk Flowrate (per second)	(m ³ /s)	0.09	0.09	0.09	
Avg. Bulk Flowrate (per hour)	(m ³ /hr)	340	340	340	
Avg. Water Flowrate	(m ³ /s)	0.08	0.08	0.08	
Avg. Solids Concentration	(kg/m ³)	298	298	298	
Inflow Fines concentration	(kg/m ³)	111.3	111.3	111.3	
Inferred Average Daily Dredging Rate	(m ³ /day)	790	790	790	
Inferred Average Weekly Dredging Rate	(m ³ /wk)	5,460	5,460	5,460	
Avg. Daily Dry Mass flowrate	(t/day)	1,050	1,050	1,050	
Inferred Average Daily Dry Mass Flowrate	(kg/s)	1.2	1.2	1.2	
Avg. Bulk Flowrate (per hour)	(m ³ /hr)	110	110	110	
STORAGE REQUIREMENTS					
Avg. placed concentration of fines <i>C_p</i>	(kg/m ³)	600	600	600	Adopted value based on Van Rijn 1994 Table 11.4 (500-600kg/m ³)
Coarse material bulking factor	-	1.1	1.1	1.1	Assumed for sands/silts
Avg. placed Void Ratio <i>v_p</i>	-	3.42	3.42	3.42	
Initial placed volume of fines <i>V_f</i>	m ³	5,460	16,860	22,720	
Inferred fines bulking factor	-	2.2	2.2	2.2	
Required storage volume <i>V_f</i> (valid)	m ³	7,500	42,700	50,500	
Inferred total bulking factor	-	1.44	1.42	1.42	
Recommended Freeboard + Ponding Depth	m	0.60	0.60	0.60	preliminary height allowance based on previous experience & design 0.3m ponding + 0.3m freeboard
Total Reclamation Capacity	m ³	25,900	60,700	68,500	Based on 3 hr factor in

Key:
Input value
Calculated value

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APPENDIX C:
DMCP PRELIMINARY CAPACITY CHECK

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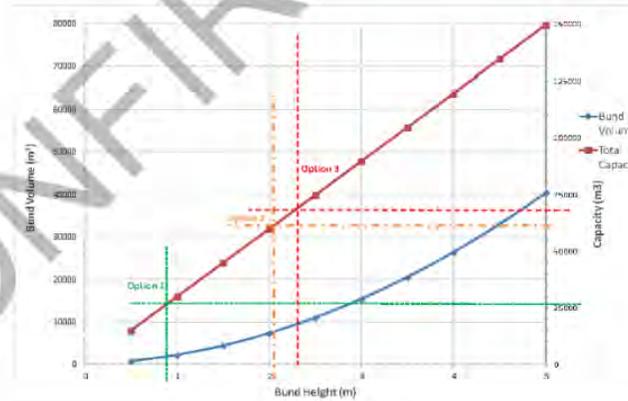
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Title: Gun Club - DMCP Preliminary Sizing - Assessment of Bund Height, Bund Fill Volume and Storage Capacity

h(bund)	Bund Volume	Total Pond Capacity (approximate)
0.5	734	14945
1	2202	29890
1.5	4404	44835
2	7340	59780
2.5	11010	74725
3	15414	89670
3.5	20552	104615
4	26424	119560
4.5	33030	134505
5	40370	149450
5.5	48444	164395
6	57252	179340
6.5	66794	194285
7	77070	209230
8	99824	239120
10	154140	298900

Assumptions	
Parameter	Value
Bund crest width (m)	1
Batter slopes (1 in X)	3
Pond Length	245
Pond Width	1.22



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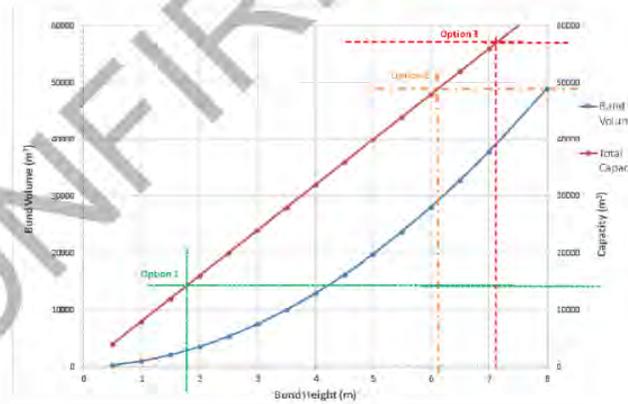


BMT JFA Consultants

Title: Disused Netball Court - DMCP Preliminary Sizing - Assessment of Bund Height, Bund Fill Volume and Storage Capacity

h(bund)	Bund Volume	Total Pond Capacity (approximate)
0.5	360	4000
1	1080	8000
1.5	2160	12000
2	3600	16000
2.5	5400	20000
3	7560	24000
3.5	10080	28000
4	12960	32000
4.5	16200	36000
5	19800	40000
5.5	23760	44000
6	28080	48000
6.5	32760	52000
7	37800	56000
8	48960	64000
10	75600	80000

Assumptions	
Parameter	Value
Bund crest width (m)	1
Batter slopes (1 in X)	2
Pond Length	80
Pond Width	100



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**APPENDIX D:
INDICATIVE PROGRAM**

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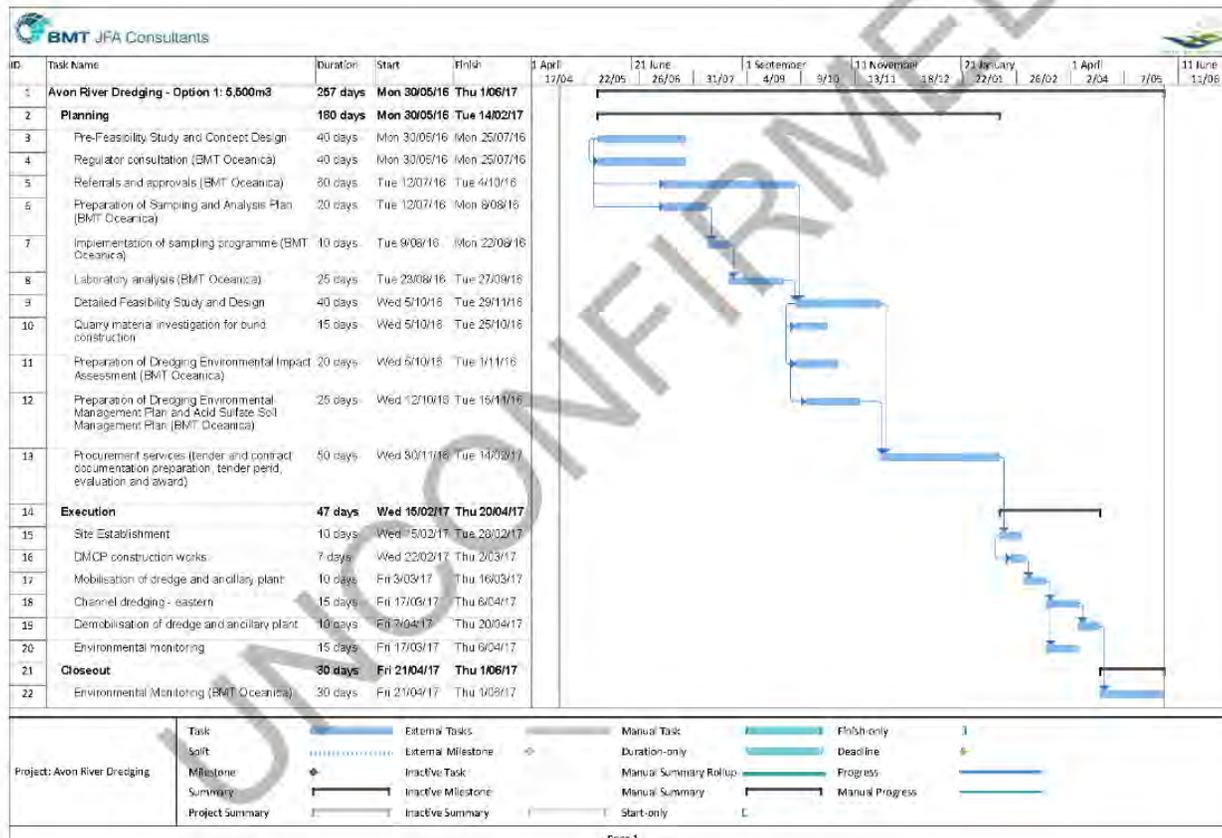
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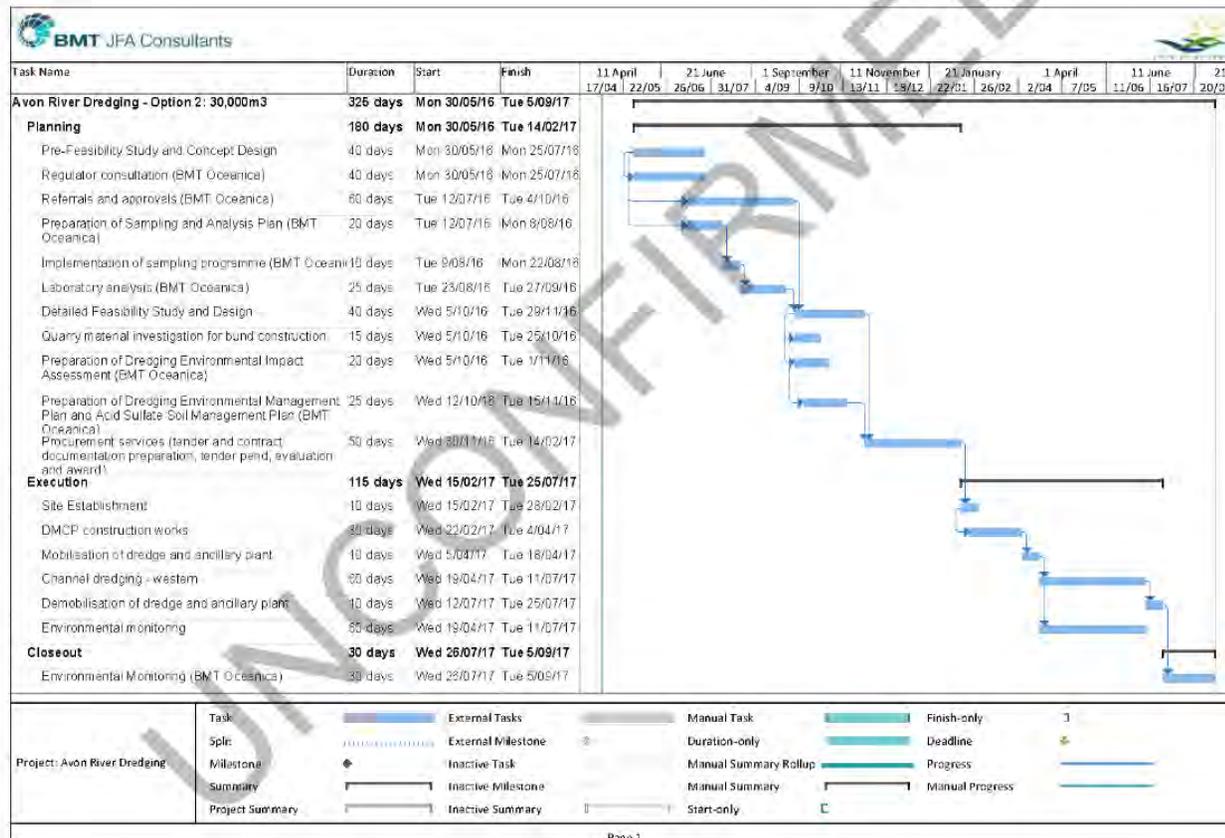
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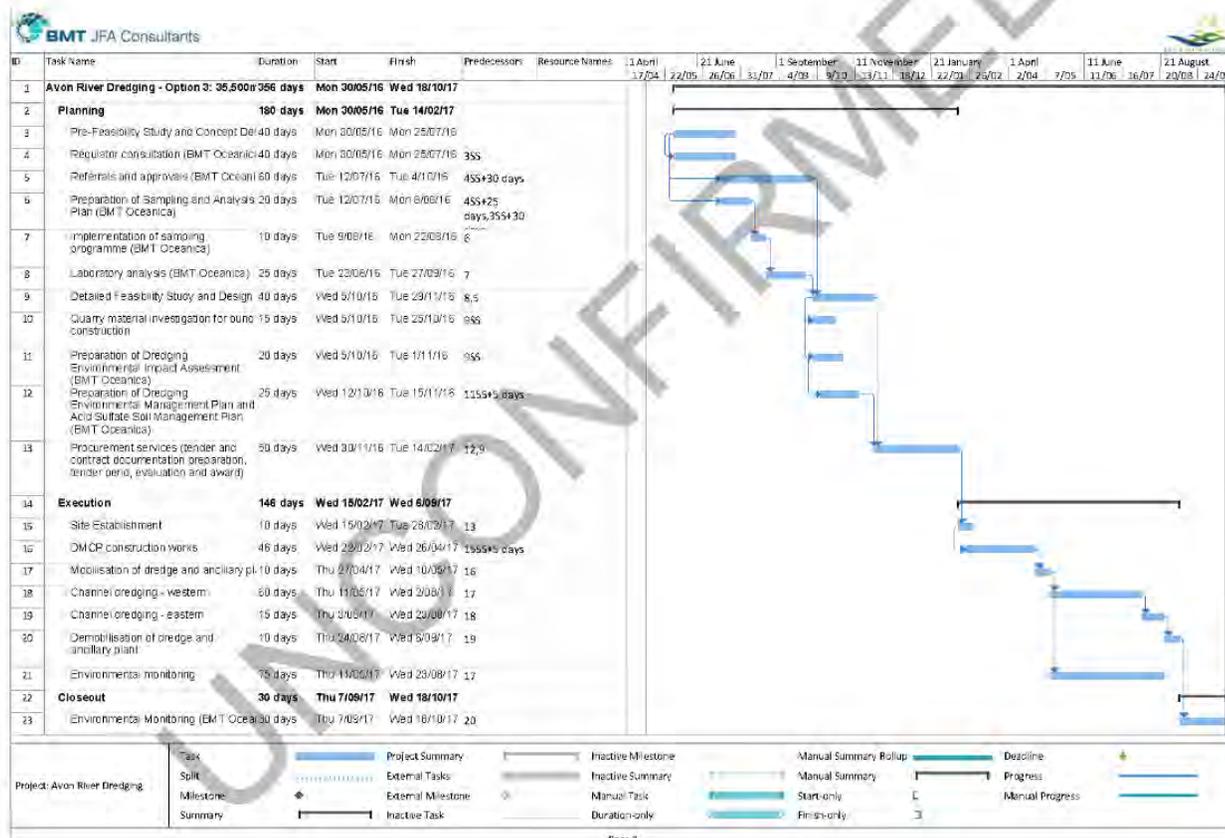
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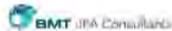


APPENDIX E:
PROJECT COST ESTIMATE

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Tab - Option 1a - Indicative Cost Estimate - Use Only

Item	Phase	Task	Quantity	Unit	Rate	Total	Comments
1 - Initial							
		Pre-Feasibility Study	1	Item	\$	26,000.00	Indicative estimate
		Approvals	1	Item	\$	12,000.00	Indicative upper estimate provided by BMT JPA
		Environmental Site Investigation	1	Item	\$	25,000.00	Indicative upper estimate provided by BMT JPA
		Strategic Impact Assessment	1	Item	\$	20,000.00	Indicative upper estimate provided by BMT JPA
		Outline Feasibility Study and Design	1	Item	\$	20,000.00	Indicative estimate
		Preparation of ESWP and ASSP	1	Item	\$	26,000.00	Indicative upper estimate provided by BMT JPA
		Procurement Services	1	Item	\$	25,000.00	Indicative estimate
2 - Construction/Implementation							
		Site Investigation	1	Item	\$	12,000.00	Indicative estimate
		Construction of concrete pad and equipment	1	Item	\$	2,000.00	Indicative estimate
		DCSP Installation - Clean Supply and Delivery	0	Equipment	\$	0.00	
		DCSP Installation - Filterworks	2	Day	\$	4,200.00	Indicative estimate
		Installation of Leaking and Absorption Unit	1	Item	\$	12,000.00	Indicative estimate
		Channel Grouting System	2	Day	\$	7,000.00	Indicative estimate
		Drill Rig Hire and Workman	2	Day	\$	4,200.00	Indicative estimate
		Installation of concrete equipment and associated site	1	Item	\$	2,000.00	Indicative estimate
		Construction of bridge and associated pile	1	Item	\$	25,000.00	Indicative estimate
		ASP Management	260	Hours (incl)	\$	18,000.00	Indicative estimate
		Construction Management Services	10	Hour	\$	2,000.00	Indicative estimate
3 - Other Capital Expenditure							
		Environmental Monitoring and Reporting	1	Provisional Set	\$	10,000.00	Indicative estimate
		Relief Pumps	1	Provisional Set	\$	10,000.00	Indicative estimate
						Subtotal	\$400,366
							Contingency (20%)
							\$80,073
							Total
							\$480,439

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Table 2a - Indirect Cost Estimate - Cap Ex

Item	Phase	Task	Quantity	Unit	Rate	Total	Comments/Estimate
	Planning	Feasibility Study	1	Item	\$25,000.00	25,000	Program estimated
		Appraisal	1	Item	\$10,000.00	10,000	Program app estimate provided by BMT JFA
		Environmental Impact Assessment	1	Item	\$10,000.00	10,000	Program app estimate provided by BMT JFA
		Environmental Impact Assessment	1	Item	\$20,000.00	20,000	Program app estimate provided by BMT JFA
		Local Community Study and Report	1	Item	\$20,000.00	20,000	Program estimate
		Preparation of EIS/ES/ES/ES	1	Item	\$25,000.00	25,000	Program app estimate provided by BMT JFA
		Environmental Services	1	Item	100,000.00	100,000	Program estimate
	Procurement/Construction	Site Establishment	1	Item	10,000.00	10,000	Program estimate & contractor quote
		Installation of infrastructure and equipment	1	Item	1,000.00	1,000	Program estimate & contractor quote
		Water Construction - Sanitary, pipe and Sewer	2	Item	50.00	100	Program estimate & contractor quote
		Water Construction - Sewerage	3	Item	4,000.00	12,000	Program estimate & contractor quote
		Installation of Infrastructure - Sewerage	1	Item	20,000.00	20,000	Program estimate & contractor quote
		Channel Protection - Erosion and Water Control	45	Item	7,000.00	315,000	Program estimate & contractor quote
		Channel Protection - Erosion and Water Control	4	Item	4,000.00	16,000	Program estimate & contractor quote
		Construction of road works associated with sewerage plant	1	Item	1,000.00	1,000	Program estimate & contractor quote
		Construction of roads and associated plant	1	Item	20,000.00	20,000	Program estimate & contractor quote
		ES/ES Management	300,000	Item	1.00	300,000	Program estimate & contractor quote
		Construction Management Services	20	Item	7,000.00	140,000	Program estimate & contractor quote
	Operational/Commissioning	Environmental Monitoring and Reporting	1	Item	\$10,000.00	10,000	Program estimate & contractor quote
		Construction	1	Item	\$25,000.00	25,000	Program estimate & contractor quote
		Subtotal				\$1,852,924	
		Contingency (30%)				\$316,877	
		DST				\$118,880	
		Total				\$1,808,682	

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Title: Planning Phase Cost Estimate

Item	Approximate cost (\$000)					
	Eastern channel		Western channel		Both channels	
	Lower	Upper	Lower	Upper	Lower	Upper
Pre-Feasibility Study						
Conceptual Design (incl. drafting)	8	10	8	10	8	10
Project Staging and Planning	5	8	5	8	5	8
Project Cost Estimate and Financial Analysis (Net Present Cost)	5	8	5	8	5	8
Project Risk Management (risk identification and mitigation)	1	2	1	2	1	2
Approvals						
Liaison with OEPA including pre-referral meeting	3	5	3	5	3	5
Preparation of referral document to OEPA ¹	3	5	3	5	3	5
Liaison with DER	1	2	1	2	1	2
Liaison with DoW and application for Licence to Dredge and/or Permit to interfere with bed and banks	1	2	1	2	1	2
Sediment Sampling and Analysis						
Preparation of SAP	10	15	10	15	10	15
Sampling program	40	45	40	45	60	65
Laboratory analysis	10	15	20	25	25	30
Environmental Impact Assessment						
Preparation of DEIA	15	20	15	20	15	20
Detailed Feasibility Study and Design						
Detailed Design Development	8	10	8	10	8	10
Detailed Project Staging and Planning	4	6	4	6	4	6
Project Cost Estimate and Financial Analysis (Net Present Cost)	2	4	2	4	2	4
Project Construction Risk Management (risk identification and mitigation)	1	2	1	2	1	2
Environmental Monitoring and Management						
Preparation of DEMP ²	7	10	7	10	7	10
Preparation and submission of ASSMP ²	10	15	10	15	10	15
Procurement Services and Management						
Preparation of RFT and Contract Documentation	8	10	8	10	8	10
Tender Support, Evaluation and Award	4	5	4	5	4	5
Total	146	199	156	209	181	234

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Title:	Geotube Option Assessment
Placement Site:	Dinosaur Netball Court

Option no.	Geotube Size (m circumference)	Width Required (3m space allowance)	Storage Capacity per linear metre (m ³ /m)	Max. Number of Tube in Row	Linear Length of Tube	Storage Capacity (within the constraint of the court)	Cost per Linear Metre
1	13.5	16.5	8.2	5	70	2870	150
2	18	21	13.4	4	70	3752	240
3	27	30	21.7	3	70	4557	390
4	36	39	31.5	2	70	4410	540

Option No.	Dredging Volume	Estimated Bulk Volume	Length of Tube Required	Estimated Cost (Daily Only)	Bundling Requirements (No. High performance bays)	Estimated Cost (Decommission - Haulage)	Total Costs
	(m ³)	(m ³)	(m) *				
1	5,300	7,818	310	\$ 140,400	\$ 128,188	\$ 51,813	\$ 192,013
2	10,000	12,600	193	\$ 285,900	\$ 128,188	\$ 278,973	\$ 1,044,933
3	15,200	18,410	122	\$ 407,940	\$ 128,188	\$ 329,933	\$ 1,236,293

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Title:	Decommissioning Cost Calculation - Netball		
Dredging Option	1	2	3
Dredged Volume (m3)	5,500	30,000	35,500
Bulked Volume (m3)	7,900	42,700	50,500
HAULAGE COST			
Semi Trailer Truck Load Capacity (m3)	20	20	20
Number of trucks required	395	2,135	2525
Travel Time to Landfill (return Trip in Hours)	1.33	1.33	1.33
Total Time Required to Cart Material to Landfill	526.67	2,846.67	3,366.67
Haulage cost (Wet Hire - Semi Trailer Truck (20m3) - \$98/Hr)	51,613.33	278,973.33	329,933.33
Indicative Cost per m3	6.53	6.53	6.53
LANDFILL COSTS			
Material in Tonnes	15010	81130	95950
Landfill charges (\$26/T)	390,260	2,109,380	2,494,700
TOTAL COSTS	441,873.33	2,388,353.33	2,824,633.33
Title:	Decommissioning Cost Calculation - Gun Club		
Dredging Option	1	2	3
Dredged Volume (m3)	5,500	30,000	35,500
Bulked Volume (m3)	7,900	42,700	50,500
Earthworks Cost - Reprofilling (Incl 1x 20T excavator and 1 Dozer)			
Days required	2	5	6
Day Cost	4,260	4,260	4,260
TOTAL COSTS	8,520.00	21,300.00	25,560.00

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APPENDIX F
SITE OVERVIEW
DRAWING # 1254_00_001_01

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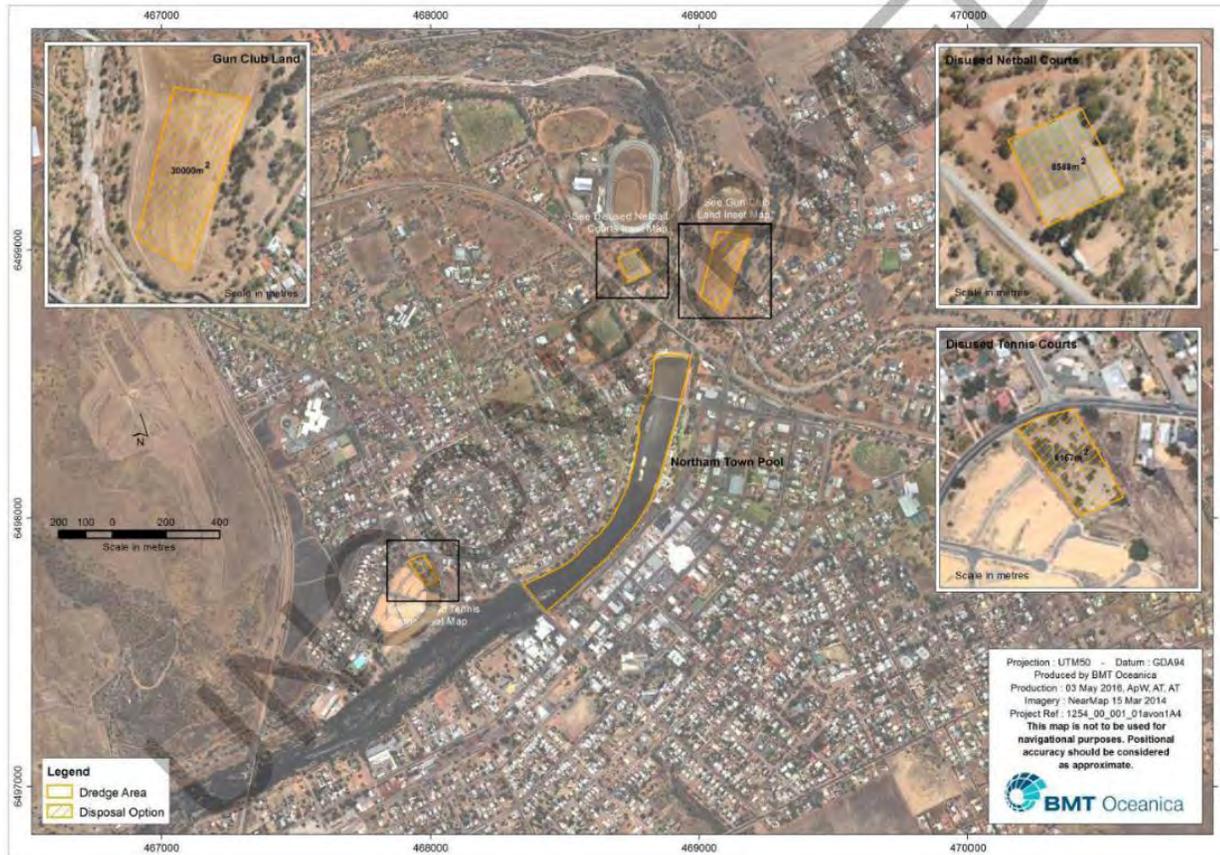
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6.2 GROWTH PLAN PROJECTS

Name of Applicant:	Internal Report
File Ref:	3.1.8.13
Officer:	Chadd Hunt/Jason Whiteaker
Officer Interest:	N/A
Policy:	Local Government Act 1995
Voting:	Simple Majority

PURPOSE

To provide the Committee with an update on the progress of projects from the adopted Northam Growth Plan and to reconfirm priority projects.

BACKGROUND

As the Committee would be aware the Northam Growth Plan was prepared as part of the Regional Centres Development Program for the purposes of identifying growth in the Northam Townsite and ultimately the Avon Sub-Region. As a component of the growth plan key issues inhibiting growth were identified and subsequently a number of key projects to achieve that aspirational growth plan were identified in the plan.

At the Committee meeting in September 2015 the Committee recommended the following which was subsequently endorsed by Council at its ordinary meeting in September –

1. *That Council, accepts the update as provided noting that business case funding allocated in the 2015/16 budget is to be prioritised to progress;*
 - 1.1. *The Urban Renewal Partnership with the Wheatbelt Development Commission and Department of Housing; and*
 - 1.2. *Recreation Centre Stage 2.*

Prior to this resolution the Committee and Council considered the prioritisation of projects in 2014 and resolved the following –

That Council;

1. *Identifies the following projects for development of detailed business cases to allow for funding submissions within the next six months;*
 - a) *CBA Development including*
 - i) *Mixed Use development (subject to State Government Commitment to proceed)*
 - ii) *Government Office Accommodation (as above)*
 - iii) *Including costs for relocating Beavis place and area development*

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- b) *Bernard Park Precinct Development, including;*
 - i) *Minson Avenue implementation (street scaping)*
 - ii) *Aboriginal and Environmental Interpretive Centre*
 - iii) *Bernard Park Master Plan Implementation*
 - c) *Train Station Development*
 - i) *Aesthetic and street scaping improvements*
 - ii) *Establishment of clear linkages back to the Northam CBD*
2. *Identifies the following projects for further concept development with the view of positioning for funding submissions in 2016 and beyond.*
- a) *Finalisation of Health Precinct*
 - b) *Education Precinct*
 - c) *Identification and Planning for redevelopment of social housing areas*
 - d) *Recreation Centre Stage 2*

STATUORY REQUIREMENTS

N/A

CONFORMITY WITH THE COMMUNITY STRATEGIC PLAN

OBJECTIVE C3 Provide active and passive recreation facilities and reserves
STRATEGY C3.1 Develop, maintain and support appropriate recreation facilities throughout the Shire.

OBJECTIVE E1 Support business and investment opportunities
STRATEGY E1.1 Promote new commercial and industrial development through appropriate zoning of land, provision of suitable infrastructure and efficient & effective business approval process

STRATEGY E1.3 Support sustainable business and commerce initiatives

STRATEGY E1.4 Enhance the aesthetic environment to support business Opportunities

BUDGET IMPLICATIONS

Council has funds set aside to assist in the development of detailed business cases (\$50,000). The Council also have funds available (reserve) to be utilised to assist in leveraging capital projects (for example \$815,000 in Regional Development Reserve, \$388,000 in Road & Bridgework Reserve, \$400,000 in Recreation & Community Facilities Reserve)

OFFICERS COMMENTS

The following progress has been made around each of the identified projects;

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a) The Urban Renewal Partnership with the Wheatbelt Development Commission and Department of Housing

The WDC is in the process of developing a business case for funding. Staff's understanding is that a project brief is required to be submitted to the Regional Development Council with the basic information relating to the proposed project. It is then subject to preliminary assessment and a formal business case is then invited to be submitted.

b) Recreation Centre Stage 2

Council is in the process of determining the most appropriate option with regard to aquatic facilities within the townsite of Northam. This will provide guidance on the scope and nature of Stage 2 of the recreation centre. Basically should the determination be made that a new pool be developed at the current recreation centre site then the business case will be significant as it will involve additional parking areas, location and orientation of swimming pool, major earthworks etc.

c) CBA Development including

- i) Mixed Use development (subject to State Government Commitment to proceed)
- ii) Government Office Accommodation (as above)
- iii) Including costs for relocating Beavis place and area development

It is suggested that any business case for a CBA/D development includes a level of street scaping with a focus on Fitzgerald Street, Minson Avenue and perhaps critically the linkage between Fitzgerald Street and the new shopping precinct.

d) Bernard Park Precinct Development, including;

- i) Minson Avenue implementation (street scaping)
- ii) Aboriginal and Environmental Interpretive Centre
- iii) Bernard Park Master Plan Implementation

The ongoing development of Bernard Park is occurring and the Committee is aware of the progress of the AEIC project. The works associated with the "swan enclosure" is about to commence which is a major component of the master plan. Similarly the drainage works associated with Minson Avenue are nearing completion.

e) Train Station Development

- i) Aesthetic and street scaping improvements
- ii) Establishment of clear linkages back to the Northam CBD

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The proposed grant to assist with the street scaping and improvements to the appearance of the railway station were not successful. The establishment of clear linkages from the station back to the CBD is progressing through another grant.

f) Finalisation of Health Precinct

The Wheatbelt GP Superclinic is completed and the construction of the St John Ambulance Regional Sub-Centre and training centre is imminent. A component of the proposed second stage is likely to be completed as a component of the Urban Renewal project being completed in that locality.

g) Education Precinct

The planning for this is proposed to be undertaken in the 2016-17 financial year

h) Identification and Planning for redevelopment of social housing areas

The approach that staff is taking with this project is to await the outcomes of the current revitalisation application being developed. This can then be used as a template for further planning in other identified areas.

RECOMMENDATION / COMMITTEE DECISION

Minute No: RCI.19

Moved: Paul Tomlinson
Seconded: Amanda Marshall

That Council accepts the update as provided noting that business case funding allocated in the 2016/17 budget is be progressed for the following;

- 1. Planning for social housing areas redevelopment.**
- 2. Recreation Centre Stage 2; and**
- 3. CBA/D Development**

CARRIED 7/0

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7. DATE AND TIME OF NEXT MEETING

To be confirmed.

8. DECLARATION OF CLOSURE

There being no further business the Presiding Member declared the meeting closed at 2.07pm.

"I certify that the Minutes of the Regional Centres Implementation Committee Meeting held on 13 June 2016 have been confirmed as a true and correct record."

Presiding Officer

Date

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13. NEW BUSINESS OF AN URGENT NATURE INTRODUCED BY DECISION OF MEETING

13.1. Elected Members

Nil.

13.2. Officers

Nil.

14. DECLARATION OF CLOSURE

There being no further business, the Shire President, Cr S B Pollard declared the meeting closed at 7.27pm.

"I certify that the Minutes of the Special Meeting of Council held on Wednesday, 29 June 2016 have been confirmed as a true and correct record."

_____ President

_____ Date