



## 15: Gravel Reserves

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## 15 Gravel Reserves

### 15.1 Service Description

#### Current Resource

Land based aggregate resource is abundant across the Selwyn district. Extraction of this aggregate has generally consisted of alluvial quarrying and in some past cases, to the level of the ground water table, depending on the physical and planning constraints at the time the quarry was established.

Ready availability of aggregates, and the need for this material to build and maintain the district's vast road network, has historically resulted in a large number of small quarries being scattered across the region. Because of the often relatively high-water table on the Canterbury Plains, particularly close to the coast, the excavations tend to be shallow.

There are around 225 Gravel Reserves in the District where management and control is vested with Council. These are mostly Crown derived land parcels that have been under the management of Council since the late 1800's and early 1900's and were primarily used to provide aggregate to construct the many roads that criss-cross the district. Most of these were 5 acre (2 ha) blocks and strategically located at main intersections and at intervals to enable short hauls for material. There are some larger sites of up to 20 ha. Over the years they have been progressively used for other purposes as gravel was extracted or where the gravel quality was unsuitable for road construction or maintenance purposes.

Nowadays many have been filled and are leased for grazing and some (around 46) have been used as forestry plantations. There are also a number that have been left as "holes in the ground" and remain unused. It is known that many of the pits were subject to uncontrolled fill over the years and some are identified as potentially contaminated on the LLUR.

There are now only a small number of pits remaining that are actively used for gravel extraction and a few others used for occasional extraction and/or stockpiling.

Some of the sites have retained a designation as gravel reserves under the District Plan to enable extraction activities to occur however on the 24<sup>th</sup> September 2014 Council resolved<sup>1</sup> to withdraw from direct involvement in gravel management and supply, and instead now require contractors to source their own supplies independently. This means that the number of Council owned/ operated sites will continue to decrease until there are eventually no operational sites managed by Council.

Current use of sites is indicated in the table below:

Current Use	Description	Number of Sites
Operational aggregate extraction	Sites currently operational as sources of aggregate and/or stockpiling	25
Forestry	Gravel pit sites used for forestry plantation.	46
Community Reserve	Sites set aside for restoration as parks/ amenity/ recreation areas	3
Clean fill	Clean-fill disposal	5
Leased	Commercial Lease (9), Community Lease (4) or Grazing Lease (109)	122
Other	Other activities include: informal grazing, septage disposal, un-used	24

Table 15-1: Current Gravel Pit Use

<sup>1</sup> Resolution of Council – Council Meeting 24th September 2014 (Gravel Management Strategy Report).

This plan covers the management and operation of all gravel reserve sites within Council jurisdiction that were recently operational and appropriate future use is yet to be determined, or are currently operational, including those used or being considered for clean fill/hard fill disposal.

Gravel pits that are no longer used for gravel extraction and have been developed as Forestry or Community Reserves are covered in other relevant plan sections.

All remaining operational pits are currently managed by Selwyn District Council, with access only permitted to the existing road network contractor (HEB Construction Ltd) and their crushing/ screening contractor. On occasion, at the discretion of Council, some of these pits, may also be accessed by other private companies on a royalty permit system for clean fill deposition. This is discussed more fully in the Quarry Management Plans that have been prepared for respective sites. On site crushing and screening is presently undertaken by sub-contract using mobile plant at these pits.

Approximately 15% of the Council's aggregate demand is also extracted by contractors from the Waimakariri, Selwyn, Kowai No. 1 & 2, Cass, Hawkins and Rakaia Rivers. The Council itself does not hold any resource consents for gravel extraction from these rivers with the existing road network contractor securing gravel authorisations within some of these catchments.

Currently it is estimated that there is a total of approximately 200,000 cubic metres of aggregate material remaining in existing pits.

### **Future Resource**

On the 24<sup>th</sup> of September 2014 Council resolved to implement its current gravel resources through the recommendations of the *Gravel Management Strategy for Selwyn District* (September 2014). The key shift for Council as a result of adopting this Strategy is to work towards eventual withdrawal from direct Council involvement in management and supply of gravel by 30th June 2016, this being subject to several criteria discussed in the Gravel Management Strategy – Report to Council (9<sup>th</sup> September 2014).

It was proposed that the remaining operational gravel pits will be managed and operated via a lease arrangement with a certified quarry manager until they are no longer operational.

The focus has shifted to ensuring that fully extracted sites are transitioned into an appropriate future use. Council developed a decision making tool<sup>2</sup> for future extraction of gravel pits which will aid as a key guiding document for this purpose. Future uses vary from recreation reserve development where sites meet the appropriate criteria, to clean fill or for lease/ disposal.

As part of the future use management, Council has offered existing suitable gravel pits for lease for gravel extraction and/or clean filling and is currently putting in place lease agreements to enable this to occur.

### **Clean filling**

There has been a significant increase in demand for places to dispose of clean material, particularly with major projects underway such as Stage Two of the Christchurch Southern Motorway and Central Plains Water. Normally only approximately one third of the material extracted from gravel pits is replaced.

On occasion, quarry managers have approached the Council to secure the use of suitable gravel pits for disposal of clean fill. There are a number of former pits are permitted for receiving clean fill with the existing road network contractor securing permitted activity use at several sites. These quarry managers must be certified and have significant experience and/or knowledge in quarry management, and provide a steady and reliable track record in appropriate health and safety and of compliance with resource consents. Quarry managers are subject to a lease agreement, with terms and conditions applicable for each site.

There are various benefits and include but are not limited to having all health and safety compliance requirements in place; large amounts of fill can help accelerate rehabilitation; lessee will obtain relevant consents or permitted activity status meaning consent compliance will be their responsibility; and, sites are remediated at no cost to Council.

The clean fill disposal activity is intended to complement any future use plans for the respective sites.

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<sup>2</sup> Gravel Pit Restoration Strategy – Decision Making Tool for the Future Use of (Selwyn District Councils) Gravel Pits in the Selwyn District (2013).

## Management Approach

Council has resolved to enter into lease arrangements with Quarry Managers as follows:

Pit	Area	Purpose/Use
Bealey Pit	2.1878	Clean fill, restoration
Beattys	2.0234	Stock-piling
Broughtons Pit	2.0234	Stockpiling, clean fill
Browns	1.5631	Possible future restoration/clean fill
Cemetery	19.9197	Extraction/clean fill
Charing Cross Pit	2.0234	Clean fill, stock-piling
Coaltrack	2.0234	Extraction/clean fill
Curraghs Pit	2.0234	Clean fill
Gallaghers	4.0469	Low contamination fill
Gardiners	4.0469	Stock-piling (extraction now completed)
Hewitts Pit	2.0234	Future clean fill
Jarmans	3.1591	Clean fill
Lochheads	10.1142	Extraction/clean fill
Pankhurst Pit	2.4227	Clean fill, stock-piling
Racecourse Hill	2.0234	Stock-piling
Reids Pit	4.0468	Clean fill, restoration
Robinsons Pit	8.0419	Clean fill, stock-piling
Rubicon	2.0234	Extraction/clean fill
The Point Pit	2.7013	Stock piling (subject to lessee approval)
Trout Corner	2.0234	Stock-piling
Two Chain Pit	4.0468	Clean fill
Waddington	2.0234	Stock-piling
Wheatsheaf Pit	3.3265	Clean fill - now completed
Widows Pit	2.0234	Clean fill, restoration
Wrights	2.0234	Possible future restoration/fill

Table 15-2: Gravel Pit Use Lease Arrangements

### 15.1.1 Rationale for Council's Involvement

The control and management of SDC's gravel reserves is largely based on the historic provision of a network of sites to supply aggregate for road construction and maintenance. These have largely been inherited by Council from the amalgamating authorities in 1989.

The sites have provided the main source of aggregate for road works and were strategically sited across the district to avoid long distance haulage.

Council, although continuing to operate 4 sites for extraction, has made a strategic decision to withdraw from direct Council involvement in management and supply of gravel and instead focus on appropriate future use planning and management of the existing gravel reserves. A key part of this is the provision of clean fill sites which are in demand across the Canterbury region.

There are a number of reasons for this shift in strategic direction however key reasons are:

- Councils gravel resources are declining in parallel with supply competition options increasing,
- Lack of in house resource to manage the quarry operation,
- Management complexities particularly around health and safety requirements and consenting,
- Poor return on investment, and
- The maintenance requirements and costs.

Council will be involved with the gravel extraction and clean fill activity on an indirect basis only via any lease or partnership agreements that may be entered into in the future. Council will not be the holders of resource consents for activities at the respective sites.

Council will play a hands on role in determining future use management of the sites once planned extraction and clean fill is complete.

## 15.2 Strategic Directions and Challenges

There are a number of key strategic directions and issues in relation to gravel reserve management and subsequent site restoration.

To address the key strategic issues a Gravel Management Strategy was commissioned and subsequently presented to Council on the 26<sup>th</sup> of September 2014 that made a series of recommendations about the future of Councils involvement in the gravel management and supply activity, particularly given the district's gravel resources were at a critical point. This Strategy took into account the regional aggregate resource whilst considering the needs of the district.

In addition to the Gravel Management Strategy, a Gravel Pit Restoration Strategy was prepared for Council in 2013, acknowledging that historically sites had been left un-managed post extraction in many cases. The Gravel Pit Restoration Strategy was developed as a decision-making tool for determination of the most appropriate future use of gravel pit sites in the district on a site by site basis. It is intended as a proactive tool for determining future uses based on a broad range of environmental, social, economic and cultural criteria.

The adoption of the Gravel Management Strategy signalled a major shift in Councils approach to gravel management with a withdrawal of direct involvement with this activity. The focus going forward will be on:

- Ensuring appropriate maintenance and management of operational gravel pits and "ring fencing" remaining aggregate for road maintenance activities by entering formal agreements with the Council's Road maintenance contractor.
- Ensuring the pits provide a safe environment for contractors and the public to ensure compliance with Health and Safety in Employment (Mining Operations and Quarrying Operations) Regulations 2016 and this will require an inspection of both operating pits and former pits to assess compliance and remedial actions. This will be followed by implementing safety remediation works or requiring this as part of lease agreements and inspections with a qualified Quarry Operator.
- Shifting the focus to restoration by offering selected pits for clean and low contamination fill to enable sites to be progressively rehabilitated. This also provides opportunity for disposal of material that would otherwise be difficult and costly. Council has agreed for lease arrangements to be put in place for a number of sites where filling will occur.
- Actively restoring some pits to provide for alternative uses including recreation and native revegetation sites. Restoration will be guided by the Gravel Pit Restoration Strategy. Further restoration work at Cemetery Pit will occur over the 10 year plan in an incremental way to enable it to ultimately be opened for public use.
- Disposing of land no longer required for this purpose. The plan anticipates that Council will continue with the current disposal programme noting that 34 sites are already progressing through the revocation process and are with DoC. However DoC has currently paused the process to ensure that it complies with their internal policies.

### 15.2.1 Key Challenges

The key challenge with Gravel Reserves are identified as follows:

**Funding Remediation and Restoration Programmes:** Previously this activity has generated income from gravel royalties which has been used to offset operating costs and fund improvements. Surpluses have been transferred to a Metal Pit Reserve account that was set up to meet future restoration costs and this account currently has a balance of over \$800,000. However, based on revenue streams and expenditure requirements this will be eroded over the 10 year period and go into deficit.



**Health and Safety:** Council is obligated to comply with the *Health and Safety in Employment (Mining Operations and Quarrying Operations) Regulations 2016*. This will involve some requirements related to site safety and Council has been working through a programme to remediate sites that have unstable pit faces. A number of pits have been remediated with more work planned in 2020/2021 to address the main issues and although many sites will be under lease agreement to Quarry Managers there will still be on-going works and inspection requirements.

**Maintenance and Management of Gravel Pit Sites:** One of the unintended outcomes from the gravel pit health and safety remediation work has been the ground disturbance and consequential spread of weed seeds. This has resulted in some sites having significant infestations of gorse and broom and a control programme has been required to remedy this situation. With the latest sites where remediation work has been carried out, staff are trialling the under-sowing of grass pasture species as a weed suppression measure. Although many of the sites will be under lease agreements there will be some residual land parcels that will incur costs for noxious weed and pest control and fencing/gate maintenance.

**Availability of Sites for Filling:** There was a shortage of sites for disposal of clean fill and low-level contamination material (road scrapings, water race spoil). Lease agreements are being established with a number of contractors/quarry operators where they will obtain consents for this purpose and manage filling to Council requirements. Further sites may be made available for this purpose over the next 10 years. It will be imperative for Council to have adequate inspection processes in place to control these activities and ensure the desired outcomes are achieved.

**Quarry Management Plans:** These are now in place for all operational sites. These need to be carefully adhered to and regularly updated to reflect any changes occurring at the sites up to the point of remediation/restoration where Closure Plans should then be developed.

**Rehabilitation Management Plans:** These are being prepared for non-operational sites that are no longer active as an extraction site. These need to be carefully adhered to and regularly updated to reflect any changes occurring at the site.

**Clean Fill Management Plans:** These are now in place at four gravel reserves and are managed by the road network contractor who sought and obtained the necessary permitted approvals. No other party, other than the road maintenance contractor, are permitted to use these additional sites. This ensures that the material is acceptable and meets the objectives of the clean fill management plans.

**Gravel Pit Management and Technical Expertise:** While this is limited in-house (no certified quarry operator within Council) creating operational issues such as security, recording extraction volume and inefficient management of resources, has been out sourced to a Quarry Manager. Appropriate maintenance and management of operational gravel pits while they remain under Council jurisdiction is occurring via this engagement.

**Future Management of Un-Used Pits:** There are a large number of old pits that are unproductive and of no further use for Council. Many of these may require some form of gravel pit restoration or may be considered for disposal.

**Uncontrolled Fill:** Uncontrolled filling of some existing gravel pits has occurred over time. This means that prior to future restoration, a preliminary site investigation and in some cases, a detailed site investigation will be required to understand levels of contamination, if any, and associated remediation required. Some of the sites have known contamination and associated HAIL notices attached to the site.

**Diminishing Aggregate Resource:** The existing operational gravel reserves will mostly be exhausted well within the timeframe of this Plan, which means Council will need to find alternative sources of aggregate. This issue is covered further in the Transport Activity Management Plan.

The following actions and projects are proposed to address the issues discussed above.

Action	Commentary	Timing
Formalise Agreement with Road Maintenance Contractor for Management of pits for extraction	<ul style="list-style-type: none"> <li>All operational gravel pits require an appropriate lease agreement between a certified quarry manager and Council. The certified quarry manager needs to be working to a level that is reflective of industry best practice.</li> <li>Agreement to include provisions for enacting QMPs, enhanced levels of supervision, recording and reporting.</li> </ul>	First quarter of 2021
Retention of any gravel resource for extraction for road maintenance purposes only	<ul style="list-style-type: none"> <li>Lease agreement will ensure material is retained for road maintenance purposes.</li> </ul>	Monitored by the property division
Update of Quarry Management Plans (QMPs)	<ul style="list-style-type: none"> <li>All operational gravel extraction sites across Selwyn have a Quarry Management Plan in place. These documents are live, working documents and should undergo regular review.</li> <li>Closure plans may be required for those pits that are no longer being worked.</li> <li>Cleanfill management plans support some of the Quarry Management Plans and require close monitoring and regular review for compliance.</li> </ul>	Quarry Management Plans to be reviewed on an ongoing basis. As sites are extracted to their full potential, Closure Plans should be developed. Next review is scheduled for 2021/2022.
Funding Restoration of Former Gravel Pits	<ul style="list-style-type: none"> <li>Fund projects (e.g. Reids Pit) from reserve DC funds where they will be used for recreation purposes and are required to meet growth</li> <li>Consider applying funds derived from sale of gravel reserves to restoration (subject to approval by DoC)</li> </ul>	2021-31
Managing sites after extraction has ceased, where sites remain of value to Council/ Community	<ul style="list-style-type: none"> <li>Develop restoration plans (with reference to the Gravel Restoration Strategy) and implement the plans.</li> </ul>	Strategy to be implemented on an ongoing basis.
Transfer or sale of redundant lots	<ul style="list-style-type: none"> <li>Sites identified as being inappropriate for quarrying purpose will be investigated for future retention or disposal. This will involve working with DoC on disposal processes.</li> </ul>	On-going
Preliminary/ Detailed Site Assessments	<ul style="list-style-type: none"> <li>As sites are progressively restored/ remediated, preliminary (and in some cases, detailed) site assessments should be undertaken to clearly understand any potential contamination issues. This will influence the remediation required.</li> </ul>	Ongoing
Clean fill activity to be managed by external contractors via lease agreements	<ul style="list-style-type: none"> <li>Agreements with clean fill contractors may be put in place, to enable placement of clean fill as pre-approved gravel pit sites across the District, where they achieve the long term vision for that site.</li> <li>The clean fill contractor will be responsible for obtaining and adhering to resource consents required as part of the process.</li> </ul>	From 2020
Compliance with Health & Safety regulations	<ul style="list-style-type: none"> <li>Undertake independent assessment of all active and non-active pits to identify any non-compliance issues and remedial requirements.</li> <li>Undertake monthly inspections via an independent contractor with appropriate Quarry Management qualifications</li> </ul>	On-going
Lease of gravel pits	<ul style="list-style-type: none"> <li>Where strategically beneficial to do so, lease sites for grazing, community or commercial purposes.</li> </ul>	Annually
Placement of low level contamination into selective gravel reserves	<ul style="list-style-type: none"> <li>Consideration will be given where appropriate, to dispose of Council's low level contamination material; roadside scrapings and water race spoil. This will be appropriately managed through the resource consenting process as required.</li> </ul>	Ongoing
Health and Safety remediation of gravel reserves	<ul style="list-style-type: none"> <li>Continue to remediate sites from a health and safety perspective, have inspection undertaken, and remediate where required. Council expects some remediation to be undertaken as part of the clean filling activities.</li> </ul>	Ongoing

Table 15-3: Gravel Reserves Strategic Actions

## 15.3 Levels of Service

This section defines the levels of service (LOS) for Gravel Reserves and sets out the performance targets identified for each LOS to enable achievement to be measured.

### 15.3.1 Customers and Stakeholders

Customers and stakeholders with an interest in Gravel Reserves include the following:

- Road construction and maintenance contractors
- NZ Transport Agency
- Private contractors and crushing plant operators
- Residents in proximity to gravel reserves
- Environment Canterbury (ECan)
- Local Iwi/Ngai Tahu
- Clean fill operators
- Infrastructural Asset Management groups within the Council
- Selwyn District Residents (indirectly)
- Gravel reserve operational management contractors
- Gravel reserve leaseholders
- Worksafe NZ
- Department of Conservation

### 15.3.2 Contribution to Community Outcomes

The following table sets out the Community Outcomes that are relevant to the provision of gravel reserves and describes how the service contributes to those outcomes.

Community Outcome	How Gravel Reserves Contribute	Duration
<b>A Prosperous Community</b> Selwyn has a strong economy which fits within and complements the environmental, social and cultural environment of the district	<ul style="list-style-type: none"> <li>Local contractors have an increased ability to provide aggregate to the market (Council no longer in this business).</li> <li>Clean fill operators will have more potential sites for clean fill disposal (currently under supply of sites creating challenges/ delays for contractors).</li> <li>Effective allocation of dis-used gravel pits for alternative future uses will contribute to the environmental, social environment of the district.</li> </ul>	<b>Interim</b> (Employment opportunities) <b>Long Term</b> (Council seek to utilise dis-used gravel pits in the most effective manner identified)
<b>A Rural District</b> A living environment where the rural theme of Selwyn is maintained	<ul style="list-style-type: none"> <li>Gravel pits have historically been a part of the district's rural working environment.</li> <li>Future use of sites taking into account the rural theme of Selwyn district.</li> </ul>	<b>Interim</b> (The gravel pits will continue to supply the road maintenance contract in the short term) <b>Long Term</b> (The future use of gravel pits will change as they are fully extracted. The rural theme will be considered within future use investigations)
Air, land, water and general environment to be kept in a healthy condition.	<ul style="list-style-type: none"> <li>Gravel pits are effectively managed and remediated to ensure the general environment is kept in a healthy condition.</li> </ul>	<b>Interim</b> (appropriate management and mitigation of aggregate extraction operations and clean fill operations ensures minimal damage to the general environment) <b>Long Term</b> (Gravel pits are effectively remediated to ensure the general environment is kept in a healthy condition)

Table 15-4: Gravel Reserves Contribution to Community Outcomes

### 15.3.3 Service Drivers

The key service drivers for Gravel Reserves are:

- Ensuring that the operation, maintenance and remediation of the gravel reserves complies with best practice, all legal requirements, Selwyn District Council and Environment Canterbury Policies, Consents and Bylaws
- Maintenance of administrative records including volumes extracted and filled
- Provide a financial return to Council from aggregate extraction
- Minimising direct financial costs to Council from the activity
- Provision of access to suitably located clean fill sites
- Ensuring that the pits and any associated quarrying and crushing equipment and clean fill activities are operated in a safe manner
- Minimisation of detrimental environmental impacts from quarrying, crushing, screening and clean fill activities
- Provision of suitable rehabilitation plans
- Ensuring that any backfilling is carried out in a manner that does not impact negatively on access to the resource and the general environment and that filling complies with long term restoration plans
- Eradication of noxious plants within the boundaries of the gravel reserve, and where appropriate, mowing to reduce fire risk
- The provision of adequate fencing and signage to protect the public and stock from harm and to prevent illegal dumping
- Ensuring that the sites are remediated in a manner that is sustainable in the long term (effective management plans and appropriate resources allocated for the respective remediation approach).
- Reducing the impact on the roading network by ensuring that clean fill sites are located strategically, to reduce haul distances, minimising disruption from a traffic disruption and road maintenance perspective.

### Legislation, Standards and Policies

Specific legislation, standards and planning documents that apply to gravel reserves are described in the tables below. This also explains the implications for levels of service.

Legislation/Standards	LOS Implications
Selwyn District Council District Plan (RMA)	Some of the gravel reserves are designated under the District Plan which allows for essential services to occur without being constrained by planning rules. Rules related to noise, dust emissions and traffic movements are likely to apply to any new designations or consents for this activity. The clean fill activity may require resource consent.
Canterbury Land and Water Regional Plan (LWRP)	Canterbury Land and Water Regional Plan provides direction on how the land and water are to be managed to achieve water quality/ quantity. This plan supersedes the land and water chapters of the NRRP.
Health and Safety in Employment (Mining Operations and Quarrying Operations) Regulations 2016	The Council as a Quarry Operator must appoint a Quarry Manager for the quarrying operation.
Health and Safety at Work Act 2015	NZ's workplace health and safety law that sets out the principles, duties and rights in relation to workplace health and safety.
Reserves Act 1977	As most sites are reserves they are subject to the requirements of this Act, particularly: Leasing and licensing provisions for activities.
WorkSafe Best Practice Guidelines November 2015	It is incumbent on the Council that all its contractors work to accepted industry Best Practice Guidelines and Codes of Practice with respect to safety.
Heritage New Zealand Pouhere o Taonga Act 2014	The presence of sites of historic and/or cultural significance may prevent quarrying taking place in those areas.
Biosecurity Act 1993	Requirements to control plant and animal pests via the Regional Pest Management Strategy.

Table 15-5: Gravel Reserves Legislation & Standards



Plan/Policies	LOS Implications
Gravel Management Strategy 2014	Sets out future gravel resource requirements for the district Recommendations for future management of resources and quarry sites
Gravel Pit Restoration Strategy 2013	Decision making tool for the most appropriate future use of gravel pit sites. Decision making is based on a broad range of decision making criteria. Ensures planned and informed approach is taken to determining future site use.
Open Spaces Strategy 2015	Through the Open Spaces Strategy, Council has committed to making efficiencies/ thinking smarter about how facilities are provided. Through this they are committed to continuing processes to dispose of surplus reserve land (especially gravel reserves) that have no future purpose for Council and reinvesting in more appropriate open spaces (pg. 32) and developing gravel reserves where they are strategically located (pg. 29)

Table 15-6: Gravel Reserves Plans & Policies

### 15.3.4 Stakeholder Expectations and Consultation

There has been extensive ongoing consultation with a number of stakeholders in the quarry industry, with key stakeholders contributing to the development of the Gravel Management Strategy that was adopted by Council in September 2014. Key stakeholders consulted through the development of the Gravel Management Strategy ranging from local and regional authorities, aggregate crushing, screening, supply contractors, and consultants. Stakeholders are referred to within the acknowledgements section of the Strategy document.

It is also acknowledged that stakeholder perspectives as recorded in the previous Activity Management Plan (2011 – 2013), provided a valuable insight as part of the development of the Gravel Management Strategy.

#### Future Management Options

The Council has had on-going discussion with selected Quarry Operators and the Road Maintenance Contractor (HEB Construction Ltd) on the potential for future management of operating pits and clean fill sites under lease agreements. This has culminated in the decision by Council to enter a number of agreements for future management and use of a various gravel pits.

#### Site Remediation

Going forward, as Council develops programmes for future utilisation of gravel pits, it is anticipated that there will be further consultation with stakeholders. For example, where Council is considering disposal of gravel pits, this process is subject to the Reserves Act 1977 and therefore will require associated consultation with the Department of Conservation as well as the statutory requirements to seek public comment and objections for reserve revocation. In addition, a change of use of gravel pits may trigger planning rules in the District Plan therefore requiring consultation under the Resource Management Act 1991.

Council is undertaking a major site rehabilitation project at Reid's Pit near Rolleston which will see this former pit redeveloped as a recreation site for off-road cycling and a variety of other activities. The development of the concept plan for this project has involved an extensive consultation process with stakeholders and the local community.

#### Customer Expectations

In general terms the Council's knowledge of customer expectations is presently based on:

- Liaison with the road maintenance contractor
- Liaison with clean fill operators
- Informal discussions with the crushing and screening contractors
- In-house Council Unit liaison
- Individual complaints and/or comments from residents

- Health and Safety and general compliance with inspection reports provided by an external certified quarry contractor
- Inspection reports from Environment Canterbury where appropriate

The Gravel Reserves activity has historically been an internal service not having any significant impact on the wider district community and subsequently not generating any significant customer issues or interest. As the activity transitions into a clean fill/ remediation/ restoration focus this is likely to change with interest levels increasing depending on individual sites' future use plans.

Levels of service, are therefore likely to transition, moving from a technically oriented focus on aggregate production/supply and management of quarrying sites to be more customer oriented reflecting the restoration and remediation programmes.

### 15.3.5 Past Performance

#### Aggregate Resource

The Gravel Reserves activity has now changed from what was a focus on extraction of gravel material to placement of clean fill and future use management and development. Historically gravel reserves were managed in a reactive manner, with very little site remediation undertaken. Sites were often left and in some instances unconsented fill placed at the sites. This has led to a need for careful assessment of sites required as future use potential is considered. In some instances preliminary (or detailed) site investigations to determine contamination potential, will be required prior to undertaking remediation/ site restoration. The range of potential future uses are diverse and are described more fully in the Gravel Pit Restoration Strategy (2013).

The graph below shows the actual recorded volume (solid measure – unprocessed gravel) extracted from SDC pits over the last twelve years. This shows the decline in recent years. This decline will continue until the remaining gravel reserve sites are exhausted of aggregate.

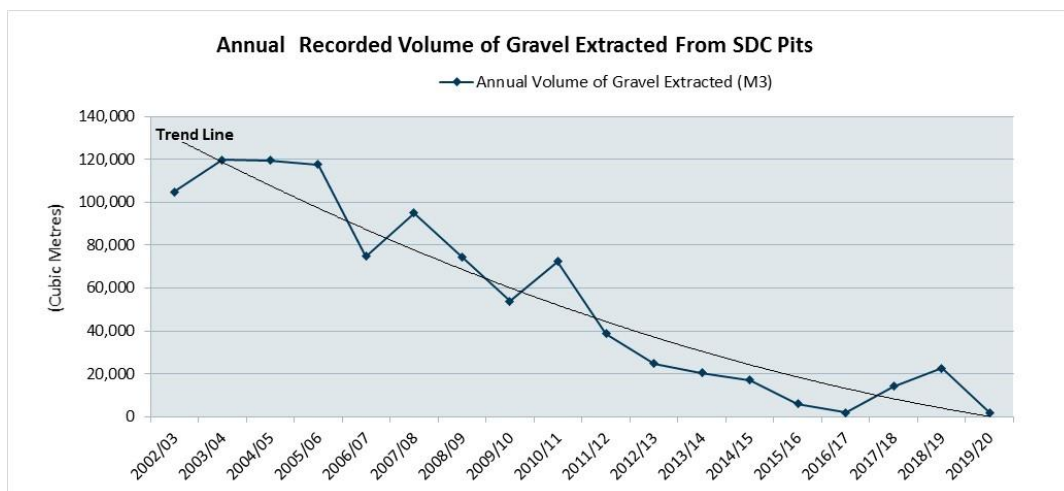


Figure 15-1: Historical Volumes from SDC Gravel Pits

## Site Remediation

Historically, site remediation has occurred on a somewhat reactive basis as community demand has driven the need for restoration/ alternative use, whether this be in the form of a community facility (such as the Prebbleton Nature Park) or a grazing lease.

Currently 3 sites have been fully remediated for community use, several have been remediated in terms of site stability and health and safety, and 92 sites have been remediated for community, commercial or grazing leases.

The following gravel reserves have had targeted health and safety remediation work completed or are in progress as part of the overall remediation programme.

Gravel Pit Name	H&S Remediation Completed
Bealey Pit	Yes
Beattys	No
Broughtons Pit	Partially, in progress
Browns	No, in progress
Cemetery	Yes
Charing Cross Pit	Yes
Coaltrack	Partially, in progress
Curraghs Pit	Partially, in progress
Gallaghers	Yes
Gardiners	Yes
Hewitt's Pit	No
Jarmans	Yes
Lochheads	Yes
Pankhurst Pit	Yes
Racecourse Hill	Yes
Reids Pit	Yes
Robinsons Pit	No, in progress
Rubicon	Yes
The Point Pit	Yes
Trout Corner	Yes
Two Chain Pit	Partially, in progress
Waddington	Yes
Wheatsheaf Pit	Yes
Widows Pit	No, in progress
Wrights	Yes

Table 15-7: Health & Safety Remediated Gravel Reserves

### 15.3.6 Present and Future Levels of Service and Performance

In establishing appropriate levels of service and performance measures for gravel reserves it is important to consider the Council's objectives for this activity. These are as follows:

- To manage gravel extraction and clean fill sites in an efficient, safe and economically viable manner;
- To ensure adverse environmental effects are minimised and, after extraction ceases, sites are restored or developed for suitable purposes.

All operational gravel pits require an appropriate lease agreement between a certified quarry manager and Council. The certified quarry manager needs to be working to a level that is reflective of industry best practice.

Associated with management of the sites is the setting and management of royalties from aggregate sales. Currently royalties are not covering the operating expenses of the gravel pit activity. While Council acknowledges that it cannot return enough from royalties to cover rehabilitation of the sites, Council does seek a royalty return that is consistent with market rates.

Council has a responsibility to manage their gravel pits in an environmentally responsible way, ensuring that operational sites are carefully monitored in accordance with associated regulations.

As sites reach their extraction potential and are no longer being operated as an aggregate resource, Council will implement the decision making process for determining the best future use for the site, as per the Gravel Pit Restoration Strategy 2013. This should be followed by a staged restoration process to be developed and implemented for each site. Currently there are a number of sites awaiting this process, however ultimately Council will have a pre-determined future use for each of the fully extracted gravel pit sites.

The present and proposed LOS are summarised in the following table and LOS issues and gaps are recorded in the table below, along with the Council's response.



## Levels of Service

Objective	Planned LOS	Performance Measure	Core Value						Current Performance	Target Performance			Indicative Performance Yrs. 4-10
			Quality	Customer Satisfaction	Availability	Quantity	Responsiveness	Affordability		Yr. 1	Yr. 2	Yr. 3	

### Gravel Reserves

To manage sites to achieve the best outcome and optimise financial returns	Manage and operate pits via a lease arrangement with a certified quarry manager	Number of pits operated under a lease agreement			X				4	>5	>10	>10	>15
	Gravel pits are managed in an environmentally responsible way	Number of sites undergoing restoration programmes	X						2	4	4	5	>5
To manage remaining gravel extraction sites in a safe and efficient manner and in a way that minimises adverse effects on the environment & restore them for future use	Gravel pits are remediated to comply with safety regulations	Number of pits with completed remediation work	X						17	18	19	20	>20
	Revenues from gravel pits help to offset operational costs	Revenue from gravel extraction, clean filling and lease charges as a % of direct opex costs (excluding projects)						X	49%	≥45%	≥45%	≥45%	≥45%

Table 15-8: Gravel Reserves Present & Future LOS

LOS Issues/Gaps	SDC Response
<p>Ineffective aggregate resource management including:</p> <ul style="list-style-type: none"> <li>• General management of the sites (safety and efficiency of resource extraction), effectiveness, through to the setting of appropriate royalties.</li> <li>• Pits are currently managed under informal arrangements and rely on the technical expertise of contract staff to ensure safe and efficient management.</li> <li>• Inaccurate reporting of extracted volumes</li> </ul>	<p>Following adoption of the Gravel Management Strategy Council intends to transition out of the gravel extraction activity for Council and instead leaving this to private operators. Actions include:</p> <ul style="list-style-type: none"> <li>• Offering existing suitable gravel pits for lease for gravel extraction and/ or clean filling.</li> <li>• Monitor compliance with the Quarry Management Plans</li> <li>• Continue with the engagement of an independent contractor to inspect and report on pit management against compliance requirements.</li> <li>• A more formalised method of measurement, recording and reporting will be developed and implemented.</li> <li>• Future extraction is limited to Council purposes only.</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of direction regarding the provision of gravel pits for clean fill noting that careful consideration needs to be given to the implications of providing for clean fill activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Quarry Management Plans are in place and the final form of the pit is determined in these plan and in the Rehabilitation Management Plans</li> <li>• Develop schedule of potential clean fill sites and a procedure/ protocol for leasing these sites including the requirement to obtain and fulfil resource consent requirements.</li> </ul>
<ul style="list-style-type: none"> <li>• Placement of low level contaminant material is limited.</li> <li>• Gravel reserves are a possible location for this material on the proviso that it is managed appropriately; including obtaining necessary resource consents.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop a schedule of what is permitted clean fill material, and a schedule of possible sites for disposal.</li> <li>• In partnership with a quarry manager/contractor, develop a plan for disposal and obtain necessary resource consents.</li> </ul>
<ul style="list-style-type: none"> <li>• Reactive Environmental Management &amp; Restoration of Sites.</li> <li>• Historically Council has managed the environmental aspects of the gravel pit activity on a reactive basis.</li> <li>• Restoration of sites has only generally been considered following community prompts for action – whether this is to restore the site or lease to the adjacent landowner for example.</li> </ul>	<ul style="list-style-type: none"> <li>• A simple generic Quarry Management Plan has been developed based on industry best practice. This includes the provision of appropriate environmental management practices and will be used as a template for all future quarry operations.</li> <li>• Implementation of the Council Gravel Pit Restoration Strategy that considers the investigation, analysis and timing of the start of each restoration project to be developed and implemented.</li> </ul>

Table 15-9: Gravel Reserves LOS Issues & Gaps

### 15.3.7 Asset Performance

A number of the earlier performance targets were based on Council continuing in the gravel supply business and expanding this with new sites to be brought into production. This meant that there would be significant set up costs and other inputs such as the need to produce Quarry Management Plans. With the change in direction by Council to withdraw from gravel supply many of the targets were not achieved and are now less relevant to the activity.

## Addressing Performance Issues

Performance issues identified for gravel reserves are summarised in the following table and the Council's plan to address these issues is provided for within Section 15.5.4 Operations and Maintenance.

Asset Performance Issue	SDC Response	Timing
Management of operating pits is not being undertaken effectively	<ul style="list-style-type: none"> <li>Put in place a formal lease and management agreement with roading network contractor to manage all operating pits</li> <li>Monitor agreement via independent contractor</li> </ul>	<p>Develop and adopt the agreements in 2021</p> <p>Independent monitoring of pits is in place and will continue</p>
Monitoring extraction quantities	<ul style="list-style-type: none"> <li>Limit extraction for road maintenance purposes and manage under agreement with roading network contractor</li> <li>Extraction returns provide as it occurs and volume checked against crushing contractor records</li> <li>Initiate pre and post-extraction surveys to check quantities</li> </ul>	<p>Extraction limited since 2016</p> <p>Agreement in place in 2021</p> <p>Returns provided from contractor in 2020 and audited</p> <p>Surveys to be carried out after agreement in place (2021)</p>
Informal approach to managing quarrying operations	<ul style="list-style-type: none"> <li>Ensure Quarry Management Plans (QMP) are in place for all operating pits and are kept up to date and current</li> </ul>	<p>QMP to be current for all sites, and updated on an ongoing basis &amp; form part of lease agreements (annually)</p>
Clean fill disposal control	<ul style="list-style-type: none"> <li>Manage clean fill disposal at Cemetery Pit in accordance with consent conditions and under lease agreement</li> <li>Gravel pits suitable for clean fill to be confirmed. Subsequent to confirmation, suitable lessees to be identified and contracts prepared and consents obtained by lessees</li> <li>Continue to manage existing pits with leases in place where clean fill is to be deposited (4 sites)</li> </ul>	<p>Lease agreements being prepared in 2020/2021 for 7 sites</p>
Health & Safety Compliance	<ul style="list-style-type: none"> <li>Remediation programme for operating pits</li> <li>Pits can only operate with certified quarry operator</li> <li>Independent site assessment for health and safety compliance</li> </ul>	<p>Remediation programme began in 2016 and extends to 2020/2021</p> <p>Access now limited to certified quarry managers only</p> <p>Health and safety assessments undertaken on monthly basis from 2017</p>

Table 15-10: Gravel Reserves Performance Issues

### 15.3.8 Changes in Levels of Service

Council has opted to approach the gravel pit activity in a different manner, as was confirmed through the Gravel Management Strategy and associated recommendations presented to Council on the 26<sup>th</sup> September 2014.

Council has made a decision to investigate options for offering the existing suitable gravel pits for lease for gravel extraction and/or clean filling. This signals a withdrawal from direct Council involvement in gravel management and supply by this time. Levels of service no longer relate to the appropriate provision of aggregate resource, especially for the Road Maintenance Contract from Council owned gravel pits. Council will instead require contractors to source their own supply independently.

To the point that Council withdraws from the activity of direct Council involvement in gravel management and supply emphasis will be on efficient, safe operations, environmental factors and ensuring that remaining aggregate extraction is undertaken to maximise Council's return on investment.

Levels of service will shift to appropriate remediation and use of sites to ensure they are utilised to their greatest potential balancing economic, social, environmental and cultural factors. Levels of service will be measured based on number of sites with appropriate future management plans in place and underway.

## 15.4 Growth and Demand

Due to the new direction adopted for the Gravel Reserves activity, Council's withdrawal from direct involvement in gravel management and supply, no growth in terms of aggregate supply is envisaged for this activity. Instead, Council will progressively implement measures to ensure the appropriate future management is in place for exhausted gravel pits remaining under Council jurisdiction meaning that supply of alternative resources such as community recreation facilities, may increase.

Due to the shift in direction for Council in this activity, it is imperative that the Gravel Management Strategy and associated recommendations are implemented, particularly in relation to offering the existing suitable gravel pits for lease for gravel extraction and/or clean-filling. Council needs to carefully consider the risks, implications and subsequent structure (practices and processes) for effectively managing the leases resulting from this process.

The demand for clean-fill sites is particularly prevalent in Selwyn District at present due to the economic activity occurring in the district that is creating demand for property and commercial development and the consequent need to dispose of excess excavation material. Demand is exacerbated by the Council's requirement to dispose of material from road maintenance activities and stock water races (water race spoil).

### 15.4.1 Demand Influences and Impacts

The key factors influencing demand for gravel pits are:

- Location of sites throughout the district to meet road maintenance requirements to reduce haul distances
- Provision of places for stock piling aggregate at strategic locations
- The number and location of other aggregate suppliers within the District or nearby
- The return on investment to Council from gravel extraction operations
- The costs associated with establishing new gravel pit sites (consenting etc.)
- There is high demand for places to dispose of clean material particularly with major projects underway such as CSM2 and other significant roading projects.
- Community desire for gravel pits for alternative uses
- Council has a number of former pits that require restoration/remediation.

#### Strategic Location of Pits

Previously Council has had numerous pits located throughout the district that could be accessed for gravel supply. This is no longer the case with many now exhausted of material. This means extra costs of supply will occur with greater haul distances from alternative suppliers. This is ameliorated to some extent by the increasing number of quarry operators/managers in the district.

Retaining some sites at strategic locations that can still continue to be used for stock piling material will be required to minimise haul costs for works. These can be managed under the proposed lease agreements to the road maintenance contractor.

#### Aggregate Sourced from Alternative Suppliers

There are now a range of other gravel suppliers and quarry operators in the district. This includes large and expanding operations such as Road Metals, Fulton Hogan, Ready Mix, Southern Screenworks Ltd and GBC Winstones along with other smaller operators. Fulton Hogan which has quarries close to the District boundary in Yaldhurst has gained consent in Templeton, near to Christchurch. It is considered that these suppliers and operators have enough material to supply the local market for the foreseeable future. This coupled with the declining number of Council pits available that have useful economic life has led to Council withdrawing from this activity in the medium to long term.



### Return on Investment

Current operation and management of the gravel pit resource is uneconomic. The gravel pits are intended to be self-funding from gravel royalties collected. Analysis of costs versus royalty receipts shows that Council is not now achieving sufficient return to meet on-going expenditure. This is mainly a result of the diminishing number of sites with gravel available and the number of other suppliers now in the market as well as the change in focus to rehabilitation.

### Cost of Establishing New Quarries

The costs associated with establishing a new site are significant and, to be economically viable, the sites need to be large (> 50 hectares). This makes it less feasible for Council to continue to be directly involved in gravel extraction and it is best left to the industry players to develop and manage quarries.

### Clean-fill Disposal

Demand for appropriate clean-fill sites around the district has been increasing in recent times as mentioned above. There is also a demand for sites to dispose of low level contamination material derived from road maintenance and water race operations.

### Community desire for gravel pits for alternative uses

The nature of demand for gravel pits is shifting. While the demand for the aggregate from the gravel pits themselves is declining (aggregate can be sourced elsewhere), the demand for community open spaces remains. There is an opportunity to utilise some of the sites for community use such as ecological restoration/ recreation areas. Several successful examples include Mahoe Reserve in Lincoln, Reids Pit in Rolleston and Prebbleton Nature Park, which are former gravel pit sites administered by the Council. Farmers adjacent to existing gravel pits in the rural areas also, on occasion request lease or purchase of gravel pit sites.

## 15.4.2 Asset Capacity

### Remaining Aggregate Resource

Approximately 500,000 tonnes of material remain in the Council operational gravel pits, however as extraction continues, a number of the Council's operational pits are likely to be depleted over the next few years. The volumes as at 2020 are shown in the table below.

Gravel Pit Name	Estimated volume available (m <sup>3</sup> )	Comment/Future Management
Cemetery	10,000	Material held for road maintenance only
Coaltrack	21,000	Material held for road maintenance only
Lochheads	114,000	Material held for road maintenance only
Rubicon	62,000	Remote location – Material held for road maintenance only

Table 15-11: Gravel Pit Aggregate Capacity

### Clean-fill and Low Contamination Material

Due to the historic nature of gravel pits being located throughout the district, there are numerous sites that have future potential as clean-fill or other uses. Further research into the most appropriate future uses of each of the exhausted gravel pit sites through the Council's Gravel Pit Restoration Strategy will identify actual capacity for future uses. In the interim, and as discussed in the Stakeholder Consultation section, a list of clean-fill sites has been identified for consideration. The following sites have/ are being considered and have been approved by Council for leasing to selected quarry operators/contractors for clean fill deposition:

Pit	Location	Area	Current Use
Bealey Pit	Cnr Bealey & Aylesbury Rds	2.0234	Consented and filled (leased)
Broughtons Pit	Coaltrack Rd/Waireka Rd	2.0234	RC in place but not activated, part of the site is a Hail site, stockpiling and clean fill
Cemetery	Southbridge Leeston Rd	19.9197	Extraction/clean fill/stock piling
Charing Cross Pit	Cnr Stranges & Telegraph Rds	2.0234	Transition to clean fill, stock piling
Coaltrack	Cnr Coaltrack & Beattys Rds	2.0234	Extraction/stock piling/clean fill
Curraghs Pit	Jones Rd & Curraghs Rd	2.0234	Clean-fill (leased)
Gallaghers Pit	Cnr Wrights & Hunters Rds	4.0469	Stock piling, clean fill
Hewitts Pit	Homebush Rd	2.0234	Stock piling, transition to clean fill
Jarmans	Cnr Mitchells & Illingworth Rds	3.1591	Stock piling, clean fill
Racecourse Hill Pit	Cnr Bleakhouse & Auchenflower Rds	2.0234	Stock piling, transition to clean fill
Reids Pit	Selwyn Rd/Weedons Rd	4.0468	As part of a restoration project to create recreation space
Robinsons Pit	Springs Rd/Robinsons Rd	8.0419	Road maintenance stock piling, clean fill in progress with an external quarry manager
Rubicon	Rubicon Rd	2.0234	Extraction/stock piling. Leased to the adjacent landowner, transition to clean fill
Two Chain Pit	Two Chain Rd, Burnham	4.0468	Clean fill/in progress with an external quarry manager
Wheatsheaf Pit	Selwyn Rd	3.3265	Clean-fill (leased)
Widows Pit	Cnr West Melton & Newtons Rds	2.0234	Clean fill/In progress with an external quarry manager

Table 15-12: Gravel Pit Clean-fill Sites

### 15.4.3 Demand Forecasts

Council acknowledges that there is a demand for the aggregate in the District, particularly for the purposes of road maintenance.

It has been estimated that 16 million tonnes of aggregate is required to meet demand to 2041. Following a Council review of the activity via the Gravel Management Strategy development process, it was determined that this demand was best met independent of Council. Reasons for this are discussed in previous sections of this Plan.

Recent extraction has been modest (average of 12,900 m<sup>3</sup> per year over the last three years), and it is estimated that there may be up to 9,000 m<sup>3</sup> extracted from Council sites annually to meet road maintenance requirements until such time as the pits are exhausted. This projection is based on the annual average supplied and the diminishing resource available. This material will primarily come from Lochheads, Cemetery, and Coaltrack Pits. Note that a possible extension for Coaltrack Pit is being explored by the road maintenance contractor. The estimated future operating life of Council gravel pits with some material remaining is set out in the table below.

Gravel Pit Name	Expected Life	Future Use/Comment
Cemetery	< 5 years	Road maintenance only
Coaltrack	< 5 years	Road maintenance only
Lochheads	< 15 years	Road maintenance only
Rubicon	>20 years	Remote location so limited use

Table 15-13: Gravel Pit Estimated Life

Demand for clean fill disposal has been difficult to quantify although it generally correlates to increases in development. Enquiries about possible clean fill disposal sites have been increasing especially from contractors involved in large projects in the district (CPW Scheme, CSM2, fibre installation). Excess material excavated from development sites has been a significant demand driver. There has also been significant demand for disposal sites in the district for material resulting from building demolition and excavation works as part of the greater Christchurch rebuild programme.

Much of the material generated by Council activities does not normally meet criteria for clean fill and requires special consents to enable safe disposal. This mainly relates to road edge strippings and water race spoil that may contain low levels of contaminated material. This material has previously been deposited onto private land but this practice cannot continue and sites need to be found and consented to enable safe disposal of this material.

#### **Future District Demand for Clean Fill**

It is difficult to accurately ascertain the likely quantities of clean fill material that could be available for disposal at Council sites. Anecdotally there have been numerous requests for sites where clean fill material could be disposed of.

The following major projects have been identified that could provide demand for clean fill disposal although these have not been quantified:

- Izone development (Ngai Tahu Property extension)
- iPort development (Rolleston)
- Christchurch Southern Motorway extension (CSM2)
- Rolleston and Lincoln Town Centre developments
- Darfield Waste Water Pipeline
- New schools development in Rolleston
- Residential development especially in Lincoln, Rolleston, West Melton, Darfield and Prebbleton

#### ***15.4.4 Demand Management***

Council resolved that the Road Maintenance Contractor source their own supply independently at the time that the new Road Maintenance Contract commenced on the 1<sup>st</sup> July 2015. However, it has also restricted use of the remaining aggregate in Council owned pits for road maintenance activities only to ensure the limited supply can continue to support this work for as long as possible.

Management of gravel pits for future clean fill sites will remain in high demand for the foreseeable future given the significant growth of the district and its proximity to Christchurch City. It is imperative that Council incorporate terms and conditions into the lease agreements that ensure risks to Council are adequately mitigated.

Council will need to adopt a proactive approach to the management of remaining exhausted gravel pits in order to effectively utilise them going forward. The use of the Council's Gravel Pit Restoration Strategy followed by appropriate planning and development will ensure the resources are utilised to their greatest potential.

#### ***15.4.5 Meeting Demand through Asset Growth***

Council's previous strategy was to secure land and sites to enable continued extraction primarily for its own purposes. Council has however made an active decision not to grow the asset through opening gravel pit sites. Instead Council has resolved to rely on commercial providers for future aggregate supply.

As part of any new lease agreement with operational quarry contractors, the lease will ensure that Council retains preferential rights to aggregate resources at convenient sites for road maintenance works where there is still aggregate available.

## 15.5 Managing Assets

This section explains how the SDC gravel reserves are managed and operational services delivered.

### 15.5.1 Management Strategy

#### Timeframe for Provision of Gravel Extraction Sites

Although the Council has resolved to withdraw from direct Council involvement in gravel management and supply, the Council will continue to provide sites via third parties and supporting assets (fences, gates, signs) into the foreseeable future.

If opportunities arise in the future to dispose of some existing land parcels previously used for gravel extraction and now no longer required for that purpose, the Council will consider pursuing this option. Some areas that were previously used for gravel extraction have been identified in a report to Council on surplus land.

#### Management Practices

Overall administration of SDC gravel reserves is undertaken by the Council's Property Group. The Acquisitions, Disposals and Leasing Team deals with property tenure matters relating to the sites. The Reserves Operations Team arranges for any maintenance works that may be required such as weed control and fencing repairs. This work will be the responsibility of the leaseholder once lease agreements are put in place for gravel extraction and clean-fill sites.

The Council has engaged an independent contractor with Quarry Certification to carry out inspections and provide reports on Council's operating pits from a health and safety and operational perspective. This work is focused on compliance with Health and Safety and Quarry Management Plans. It is intended to continue with this practice once all leases are in place to ensure overall compliance with lease conditions.

The key management objectives for the Council's gravel reserves operation are set out below. These will continue into future under the proposed lease regime:

- To provide an economically sustainable supply of aggregate to support current requirements for road maintenance and construction purposes for Selwyn District Council until the remaining aggregate resource is exhausted.
- To undertake gravel extraction works in a way that protects the safety of contractors and the public.
- To manage the gravel extraction in an environmentally responsible manner.
- To maintain the gravel reserve sites in a tidy and safe condition.
- To manage the sites in a long term sustainable way that enables the land to be used for other purposes after extraction has ceased.

Approved Clean-fill Operators will be subject to a lease arrangement with the following management objectives applicable to their activity:

- To ensure that all resource consents/ permits are obtained and adhered to prior and during the clean-fill operation
- To manage the sites in a long term sustainable way that enables the land to be used for other purposes after the clean-fill activity has ceased
- To undertake clean-fill activities in a way that protects the safety of contractors and the public
- To manage the clean-fill activity in an environmentally responsible manner
- To maintain clean-fill sites in a tidy and safe condition



### 15.5.2 Asset Description

This section covers a description of the Council's Gravel Reserve assets including information on the operating pits and the supporting infrastructure.

#### **Gravel Reserves Inventory**

The Council holds approximately 225 parcels of land set aside and/or designated in the District Plan for gravel reserves purposes and these total over 550 hectares. The lots vary in size from 0.5 to 14 hectares with approximately 150 being 2 hectares or less in area. Approximately 46 lots contain forestry blocks, the remainder are generally in use both formally, under leases, and informally for grazing. The land is generally flat, agricultural ground of varying quality. Information on these assets is held in the Council AMIS system with further data being captured, updated and uploaded as it becomes available.

Some of the gravel reserves sites have designations as "Gravel Reserves" under the Operative Selwyn District Council District Plan and these are being rolled over as part of the District Plan review that is currently in progress.

Information on the reserve areas that are no longer required for gravel extraction purposes and are now used for forestry or grazing are not generally included in this section of the plan and will be covered in Forestry or Reserve Sections. There may, however, be some areas that will be further investigated for future gravel extraction potential. These sites are indicated in the attached appendices.

Four of the approximately 225 parcels of land are currently operational as sources of aggregates. The extraction history of many of the other lots is generally unknown. A large number are likely to have been used as a source of aggregate material to form the original road network across the district and will have been exhausted of gravel and back filled many years ago.

The Council has commenced a process to review these reserves for possible disposal and has initially identified around 34 land parcels that could be sold. Any disposal is subject to the requirements of the Reserves Act and confirmation of revenue sharing arrangements with the Department of Conservation.

The following table provides information on the remaining operational pits and includes those that are used for stock-piling or clean fill (those pits considered to be "active").

Pit	Location	Area	Current Use
Bealey Pit	Cnr Bealey & Aylesbury Rds	2.0234	Consented and filled (leased)
Beattys	Cnr Hacketts & Waireka Rds	2.0234	Depth to water table prohibits clean fill, lease agreement (grazing)
Broughtons Pit	Coaltrack Rd/Waireka Rd	2.0234	RC in place but not activated, part of the site is a Hail site, stockpiling and clean fill
Cemetery	Southbridge Leeston Rd	19.9197	Extraction/clean fill/stock piling
Charing Cross Pit	Cnr Stranges & Telegraph Rds	2.0234	Transition to clean fill, stock piling
Coaltrack	Cnr Coaltrack & Beattys Rds	2.0234	Extraction/stock piling/clean fill
Curraghs Pit	Jones Rd & Curraghs Rd	2.0234	Clean-fill (leased)
Gallaghers Pit	Cnr Wrights & Hunters Rds	4.0469	Stock piling, clean fill
Gardiners	Cnr Wrights & Hunters Rds	4.0469	Stock piling only
Hewitts Pit	Homebush Rd	2.0234	Stock piling, transition to clean fill
Jarmans	Cnr Mitchells & Illingworth Rds	3.1591	Stock piling, clean fill
Lochheads	Cn Kings & Heslerton Rds	10.1142	Extraction/stock piling
Morgans Pit	Cnr Rockwood & Morgans Rds	2.0234	Stock piling
Pankhurst Pit	Two Chain Road	2.4227	Clean fill, stock-piling
Racecourse Hill Pit	Cnr Bleakhouse & Auchenflower Rds	2.0234	Stock piling, transition to clean fill
Reids Pit	SelwynRd/Weedons Rd	4.0468	As part of a restoration project to create recreation space
Robinsons Pit	Springs Rd/Robinsons Rd	8.0419	Road maintenance stock piling/in progress with an external quarry manager
Rubicon	Rubicon Rd	2.0234	Extraction/stock piling/cleanfill Leased to the adjacent landowner
The Point Pit	Coleridge Rd	2.7031	Rehabilitated, no longer required
Trout Corner	Telegraph Rd & Granges	2.0234	Roading use this site
Two Chain Pit	Two Chain Rd, Burnham	4.0468	Cleanfill/in progress with an external quarry manager
Waddington	Old West Coast Rd	2.0234	Part of the site is a HAIL site Depth to water table prohibits clean fill
Wheatsheaf Pit	Selwyn Rd	3.3265	Clean-fill (leased)
Wright's Pit	Cnr Wrights & Barrs Rds	2.0234	No longer required/ Leased to adjacent landowner
Widows Pit	Cnr West Melton & Newtons Rds	2.0234	Cleanfill/In progress with an external quarry manager

Table 15-14: Active Gravel Reserves Sites

### Infrastructural Assets

There are few supporting assets for the Gravel Reserves activity. The main assets include fences and gates required to secure the sites from unlawful entry and to control stock from adjoining properties. In total there is around 16.8 kilometres of fencing across all the active gravel pit sites.

The quantity of gates has not been fully captured but it is assumed that each site will have at least one entry gate to enable access to the site. All sites have signage provided however signage is required to be updated to reflect the existing road network contractor. No other asset information is available for this service area.

## Gravel Reserves Asset Valuation

A valuation of Gravel Reserves assets is undertaken every three years. Valuation information is held in the Council's Fixed Asset Register. The current structure of the data held in the register does not allow easy extraction of information specific to gravel reserves. Valuation information only indicates a minor replacement value for assets of \$5,408. A future improvement will involve separation of valuation data into service categories.

### 15.5.3 Asset Condition

#### Fences

Data shows that >90 % of fences are stock proof. Although historically there has been some anecdotal information that indicates fences have failed on a number of occasions and stock from adjoining properties has entered gravel pits, improved fencing work has been undertaken in recent times to alleviate this issue.

Information on the condition of fences on gravel reserve sites has been collated and is shown in summary form in the following graph. Repair and/or renewal of fencing at a number of the operational pits occurred over the last three years and this is reflected in an overall improvement in asset condition for the 2020 data. The number of 'poor' and 'very poor' fencing lengths has also continued to reduce. There is an annual maintenance programme to repair fences that are not stock proof and a capital renewal programme where fencing is required to be replaced.

Information on the condition of fences on gravel reserve sites has been collated and is shown in Figure 15-2 below.

This indicates that a portion of fencing is likely to need repair or renewal over the 10 year planning period. Where a higher level of security is required at a site or the fence is found to be in poor to very poor condition and cannot be easily repaired, it is likely that the fencing that requires repair will be replaced fully and/or sections of the fence will be renewed with a higher standard of fencing (e.g. deer wire fence and associated gates instead of sheep wire fencing) under the annual capital renewal programme.

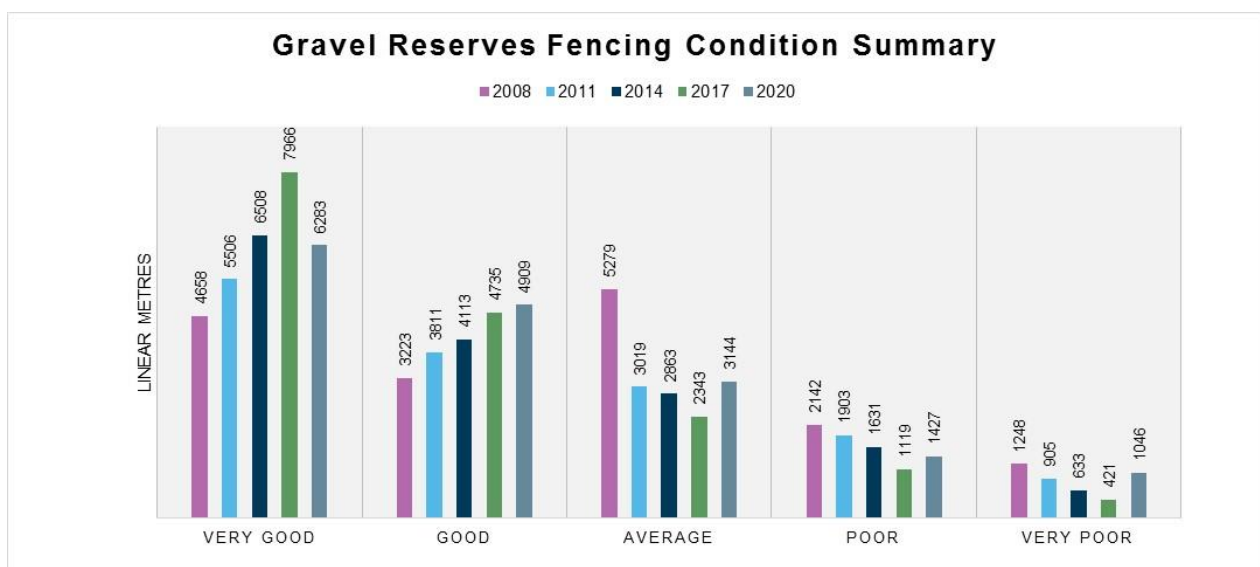


Figure 15-2: Gravel Reserves Fencing Condition Summary

#### Other Assets

Some condition data has been captured for gates and signs with the focus being on the active sites as it is important to have these pits fully secured and sign posted to prevent public entry. The results of the condition assessment are shown in the graph below. This indicates that most assets surveyed are in "good" or "very good" condition but a few signs have been identified as being in "very poor" condition and will require replacement. There will be an on-going need to keep gates and signage to a serviceable standard which will largely be achieved via annual maintenance programmes.



Figure 15-3: Gravel Reserves Gates and Signs Condition Summary

### 15.5.4 Operations and Maintenance

#### Operations

Gravel reserves for extraction are presently managed under an operational arrangement with the current Road Maintenance Contractor, HEB Construction Ltd. This arrangement is currently being formalised by way of a lease agreement which will also provide for filling activities on Council pit sites. In addition, as discussed previously in this plan, other pits that are now not required for extraction will be leased to selected quarry operators/contractors for filling.

In order to maximise the economically efficient extraction of the aggregate resource a generic Quarry Management Plan (QMP) has been developed.

A QMP has been prepared for the operational sites where extraction is occurring, and developed on a site-specific basis. QMP's exist for Coaltrack Pit, Cemetery Pit, Lochheads Pit, and Rubicon Pit.

Each QMP covers the following items:

- Demarcation of the area to be quarried and a record of the existing land contours;
- Details of staged development;
- An indication of final contours and floor levels including the proposals for the coordination of final levels with adjoining land;
- Provision for the disposal and/or stockpiling of topsoil, overburden and quarried and clean fill materials, including the area(s) to be used for stockpiling;
- Provision for screening from public view, if required, and fencing dangerous or potentially dangerous features;
- Processes in the event of the appearance of historical artefacts;
- Description of methods to be employed to prevent contamination of air (particularly from dust), or groundwater, including provision of appropriate signage;
- Description of methods to be employed to comply with the noise provisions of the District Plan and Regional Plans;
- An indication of the route by which quarried material will be removed from the site;
- Where possible the determination of an end use for the site and provision for its progressive restoration;

Other matters included are:

- Health and Safety At Work Act 2015 and quarrying regulations and legislative requirements;
- Management structure and responsibilities, including communication processes with contractors who may be managing sites on behalf of the Council;

- Record keeping of progress against objectives and targets and the outcomes of compliance monitoring, and complaints, if any;
- Site inspections by Council staff and external contractors;
- Regular reporting to Council management, and;
- Processes for continuous improvement.

The quarry management plans will form an important document for Clean-fill Operators, to ensure that future clean-fill at sites is undertaken in a way that is consistent with the respective QMP.

It is proposed that these documents will form the basis of a new contractual (lease) arrangement with the selected quarry managers/contractors that will be managing these sites in the future.

Tui Creek Consulting Ltd carry out monthly inspections of active gravel pits to ensure compliance with health and safety and QMPs. Monthly reports on the sites visited are prepared and sent to Council. These record any issues and the remediation actions required.

Rehabilitation Plans support the closure of a quarry for extraction purposes. Rehabilitation management plans are in place for Gallaghers Pit, Gardiners Pit, Hewitt's Pit, Jarmans Pit and Charing Cross Pit

The objectives of a rehabilitation plan is to:

- Minimise the environmental impact of the operation during the development and operational phases, ensuring that protection of water quality and erosion control works are key priorities, and to ensure progressive rehabilitation is completed as soon as possible;
- Ensure that site drainage and sedimentation structures remain stable and functional;
- Ensure that vegetative matter and topsoil is made available for the site rehabilitation as required;
- Undertake rehabilitation in a manner consistent with that of the existing adjacent quarry; guarantee that the resource is extracted and the site rehabilitated in a manner that will ensure the quality of surface runoff at all times;
- Produce a final "walk away" landform that is geo-technically stable that blends aesthetically into the surrounding landforms, yet as far as possible does not limit possible future land uses; and
- Minimise visual impact of the operation during the operational phase as well as post-quarrying.

## **Maintenance**

There are few maintenance activities associated with this service area and these mainly consist of keeping the sites in a tidy condition and ensuring fences and gates are secure.

**General Maintenance** – includes spraying to keep boundaries and fence lines clear of brush weeds, maintenance and repair of boundary fences, repairs to gates and access ways.

**Maintenance Inspections** – Inspections are undertaken quarterly. These inspections identify, overburden removal, fencing work (both repair and renewal), weed control and any other maintenance work.

Note that in the future, as lease arrangements are rolled out for gravel pit sites, the responsibility for noxious weed control and keeping the sites in a tidy condition will be with the lessee.

## **Operations and Maintenance Issues Identified**

Specific maintenance and operating issues that have been defined and the Council's management response is set out in the following table.



Issue Identified	SDC Response	Timing/Process
Illegal dumping of rubbish or unsuitable fill material	<ul style="list-style-type: none"> <li>Rubbish is removed as soon as it has been reported</li> <li>Signs are installed pits to indicate that access is by way of permit only</li> <li>Fences and gates maintained to deter access</li> </ul>	<ul style="list-style-type: none"> <li>Sites are checked regularly as part of the maintenance programme and by the independent contractor as part of the monthly inspection programme</li> </ul>
Efficient and safe operation of active gravel pits	<ul style="list-style-type: none"> <li>Improved management controls via QMP</li> <li>Complete and update QMPs for all active pit sites</li> </ul>	<ul style="list-style-type: none"> <li>Complete QMP development 2020-2021</li> <li>QMPs to be updated on an on-going basis (generally as part of lease agreements to operate pits including for clean-fill activities)</li> </ul>
Maintaining stock proof fences	<ul style="list-style-type: none"> <li>Reactive repairs &amp; renewal as required</li> <li>Work with neighbouring property owners</li> <li>Pit operators responsible under future lease agreements</li> <li>Implement renewal programme</li> </ul>	<ul style="list-style-type: none"> <li>Sites are checked regularly as part of the maintenance programme and annual inspections</li> <li>Lease agreements to cover fencing planned for implementation in 2021</li> </ul>
Noxious weed and pest control	<ul style="list-style-type: none"> <li>An annual spraying programme is undertaken based on priority sites identified during maintenance inspections</li> <li>Build noxious weed control requirements into any future lease agreements</li> </ul>	<ul style="list-style-type: none"> <li>Annually as part of the Council inspections</li> <li>Build into lease agreements for 2021</li> </ul>
Managing sites after extraction has ceased	<ul style="list-style-type: none"> <li>Develop restoration plans (with reference to the Gravel Restoration Strategy) and implement the plans</li> <li>Some of the sites may be part of clean fill restoration project sites</li> </ul>	<ul style="list-style-type: none"> <li>Restoration programmes to be undertaken from 2021 to 2031</li> </ul>
Clean fill disposal control	<ul style="list-style-type: none"> <li>More pits to be consented &amp; monitoring processes put in place to ensure clean fill only</li> <li>Declaration must be completed on the volume and source of material</li> </ul>	<ul style="list-style-type: none"> <li>Consents for 4 sites now in place (3 under lease agreements)</li> <li>Consents for future filling operations will be the responsibility of lease holders</li> </ul>
Health & Safety Compliance	<ul style="list-style-type: none"> <li>Pits can only operate with certified quarry manager</li> <li>Independent site assessment for health and safety compliance with monthly reporting</li> <li>Implement site remediation programmes on a priority basis</li> </ul>	<ul style="list-style-type: none"> <li>All active pits have assigned and certified Quarry Manager</li> <li>Site inspections started in 2017 and are on-going</li> <li>Site remediation programme commenced in 2016 and to be completed in 2020/2021</li> </ul>

Table 15-15: SDC Gravel Reserves Operations & Maintenance Issues

### Operational and Maintenance Projects

A number of operational projects have been identified over the 10 year planning period to support actions to address issues outlined above. Projects and budgets are set out in the table below. These generally signal the change in focus to rehabilitation of sites.

Project	Expenditure Forecast Over 10 Years	Timing
Cemetery Pit Development	\$50,000	2022-24
Gravel Pit Restoration	\$423,000	\$42,300 each year for 10 years
Cemetery Pit Resource Consent	\$20,000	2022/23
Quarry Management Plans	\$12,300	2023/24, 2026/27, 2029/30

Table 15-16: SDC Gravel Reserves Operations & Maintenance Projects

### Historical Operations and Maintenance Costs

A summary of historical operations and maintenance costs for gravel reserves over the last three years is presented in the graph below. This also shows the forecast operational costs over the 10 year planning period.

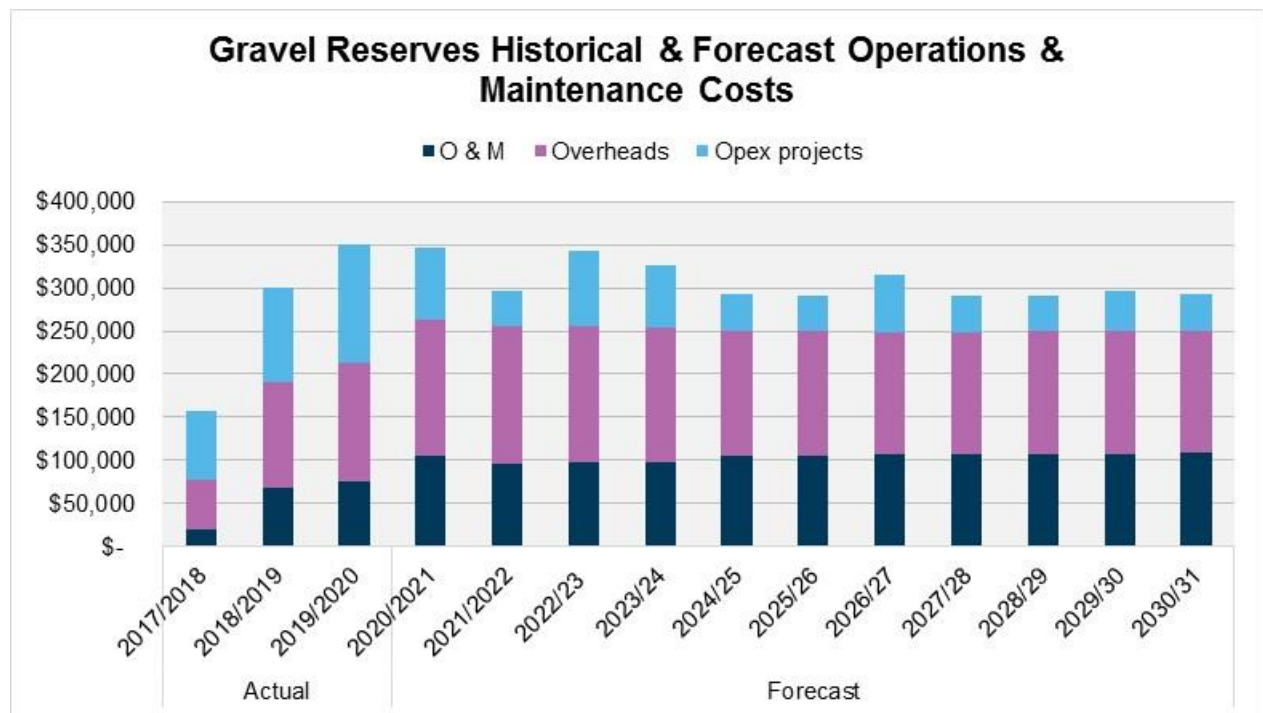


Figure 15-4: Gravel Reserves Historical Operational Expenditure

#### 15.5.5 Asset Renewal

Other than perimeter fencing and signage, in the context of this Plan it is not possible to “renew” existing assets (gravel resources). Recycling of materials will, however, be encouraged wherever possible. Where a higher level of security is required at a site or the fence is found to be in poor to very poor condition and cannot be easily repaired, it is likely that the fencing that requires repair will be replaced with a higher standard of fencing (e.g. deer wire fence and associated gates instead of sheep wire fencing). On this basis a total of \$84,044 has been included in the 10 year Plan to cover this work.

#### 15.5.6 New Asset Requirements

Due to the altered direction for the gravel pit activity, Council disposed of a number of gravel pits therefore no new asset projects have been identified for this plan.

#### 15.5.7 Disposal Plan

Council has reactivated the gravel pit disposal process. A total of 34 sites have been initially identified as surplus to requirements. These have been through a reserve revocation process and have been passed on to the Department of Conservation (DoC) for disposal (Refer Appendix 15 B for a schedule of sites for disposal). DoC has currently paused the process to ensure that it complies with their internal policies but it is expected that the disposal process will recommence in 2021/22. As analysis of other gravel pit sites takes place, further sites will be added to the disposal schedule should it be deemed that they are surplus to requirements. An additional group of reserves have already been identified for possible disposal.

The majority of gravel reserves are Crown Reserve with control and management vested in the Council. Sale is problematic and requires the sites to be “bundled”, reserve revocation procedures to be enacted and to follow other processes determined by the Minister of Conservation. The ultimate fate of each lot will be subject to investigation and decision during the currency of this Plan. Where the procedure is followed through to fruition the sale of these reserves is conducted by the Department of Conservation and any net revenue from sales would be shared equally between the Crown and the Council. Any costs incurred by Council or DoC in disposing of the reserves would be deducted from sales proceeds. This would include property research, legal and marketing costs. The Council intends to incrementally work through this process with the objective of divesting interests in land that is no longer useful and likely to be a future maintenance burden.

Ngai Tahu will have an interest in the disposal process in terms of a first right of refusal for Crown derived land as prescribed under the Ngai Tahu Claims Settlement Act. As part of the disposal process Council will engage with Ngai Tahu to ensure the statutory process is followed and to ascertain their views and interest in the land.

Expected revenue from land sale is indicated in the Financial Forecast for this activity. This is net of costs which will be deducted by DoC as part of the disposal process. The use of the net proceeds from sale of crown reserves is, however, restricted. As part of DoC’s policy which has allowed Local Authorities to dispose of reserves, Council is to use its share of the net income arising from the disposal of Crown reserves, to either acquire natural and historic heritage areas, or to secure public access to a reserve. Specifically, priority is given: “to acquiring land identified in the District Plan for the protection of significant indigenous vegetation and significant habitats of indigenous fauna or the enhancement of public access to and along the coastal marine area, lakes and rivers (S.6 of the Resource Management Act), providing the interest serves the purposes in S 13 of the Reserves Act.”

### *15.5.8 Risk Management*

A risk assessment has been undertaken for gravel reserves and this process has identified a number of key risks. Mitigation and action measures to control and manage risks have also been determined. Risk mitigation measures have been built into maintenance and operational practices and inspections as required. Improvement actions will be initiated as part of process and contract reviews.

One of the key risks with gravel pits is the potential for a serious harm accident to either contractors or the public. Council has been working with WorkSafe NZ to ensure the operating pits are managed in a safe way and are secured from public access. All pits have been inspected from a health and safety perspective and plans drawn up to remediate issues identified. Plans have been implemented via the annual remediation programmes on a site-by-site basis. Work has involved

- Re-battering unstable slopes,
- Levelling unstable material,
- Making internal haul roads safe,
- Improving fencing and gate installation, and
- Updating the signage installation.

The other key risk mitigation actions that have been put in place include:

- Assigning a Certified Quarry Manager to each operating site (the schedule of Quarry Managers is reported on an annual basis to WorkSafe NZ).
- Engaging a Certified Quarry Manager to inspect all operating gravel pits on a monthly basis and submit a report on any issues detected and the actions required to address these.

Key risks for gravel reserves are recorded in Section 6 of this Plan (Risk Management). A comprehensive risk assessment has been carried out for Gravel Reserves.

### 15.5.9 Sustainable Management

As described in Chapter 17, Council has made a decision to integrate more sustainable management approaches in to the way it works, manages assets and delivers services.

Quarrying is, by nature, not a “sustainable” activity. The consumption of this non-renewable resource should be optimised by applying waste minimisation principals and the early adoption of alternative, more resource efficient forms of construction. These strategies fall outside the scope of this Plan.

Nevertheless, a more sustainable approach to the way the Council manages and operates quarrying activities can be achieved. The sustainable management approach for gravel reserves is described in the following table.

Wellbeing	Sustainable Approach
Environmental	Restoration of exhausted gravel reserves into natural area parks with native vegetation and water bodies Restoration of gravel reserves by way of rehabilitation using clean fill methods
Social	Gravel reserves can be restored for recreational activities once quarrying activities have ceased
Economic	Utilise existing aggregate resources beyond Council for the supply of aggregate

Table 15-17: Gravel Reserves Sustainable Management

## 15.6 Financial Programmes

This section provides a summary of financial forecasts for Gravel Reserves over the 10 year planning horizon. Additional detail on financial forecasts is contained in Annex 15A.

### 15.6.1 Historical Financial Performance

The graph below sets out the historical performance for this activity including actuals for opex, capex and revenue compared with budgets. The following observations can be made in respect to this comparison:

- 2017/18 opex underspent mainly due to work halted on Cemetery Pit restoration as a result of contamination issues. 2017/18 capex was not spent as Council was not investing in sites for extraction.
- 2018/19 opex underspent mainly due to deferral of Cemetery Pit restoration work as a result of contamination issues.
- 2018/19 revenue is above budget due to net gain on sale of land no longer required for gravel extraction (Mulligans Block).
- 2019/20 opex is underspent mainly due to continued deferral of Cemetery Pit restoration work. Contamination issues were addressed as part of development programme.
- 2019/20 revenue is below budget as gravel resources are diminished and alternative sources are used for road maintenance works; anticipated land sales occurred a year early in 2018/19.
- 2019/20 capex is underspent as the proposed purchase of land as an extension to Cemetery Pit has been delayed due to a lengthy investigation process. It is noted that the extension is now not proceeding as the land is not viable for gravel extraction.

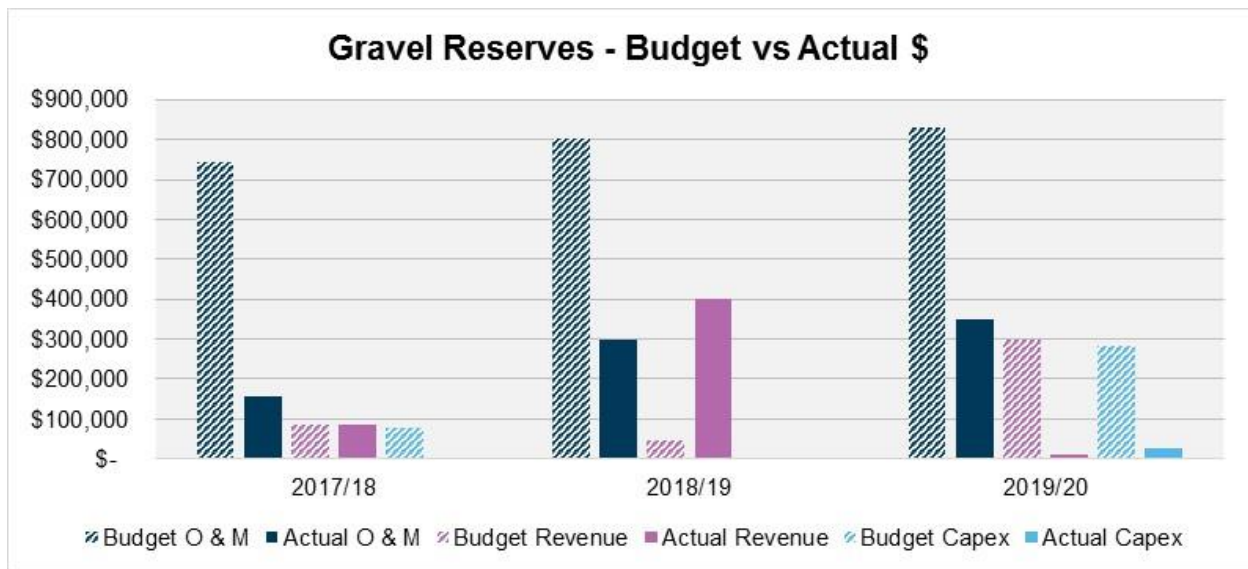


Figure 15-5: Gravel Reserves Historical Financial Performance

### 15.6.2 Operations and Capital

Financial Summary	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
<b>Operating</b>											
Total Operating Revenue	50,515	256,885	47,900	162,875	48,900	48,900	48,900	240,275	50,400	50,400	50,400
Total Opex	341,636	296,913	342,181	324,032	290,225	288,902	311,762	287,452	287,348	292,066	287,629
Depreciation	4,021	362	1,029	1,420	1,699	2,613	2,959	3,260	4,201	4,496	4,894
Operating Surplus/Deficit	-295,142	-40,390	-295,310	-162,577	-243,024	-242,615	-265,821	-50,437	-241,149	-246,162	-242,123
<b>Capital</b>											
Capital Renewals	5,408	7,308	10,234	9,360	4,600	11,826	5,508	9,558	5,760	9,000	10,890
New Capital - Improved LOS	-	-	-	-	-	-	-	-	-	-	-
New Capital - Growth	251,000	-	-	-	-	-	-	-	-	-	-
Total Capex	256,408	7,308	10,234	9,360	4,600	11,826	5,508	9,558	5,760	9,000	10,890

Table 15-18: Gravel Reserves Financial Summary



Figure 15-6: Gravel Reserves Financial Summary (excluding depreciation and support costs)



## Gravel Reserves Key Financial Projects/Programmes

Project	Expenditure Forecast Over 10 Years	Timing
Environmental Management	\$223,250	From 2021
Cemetery Pit Development	\$50,000	2022-24
Fencing Renewal	\$84,044	From 2021
Gravel Pit Restoration	\$423,000	\$42,300 each year for 10 years
Quarry Management Plans	\$12,300	2023/24, 2026/27, 2029/30

Table 15-19: Gravel Reserves Key Financial Programmes

### 15.6.3 Funding

The general approach to funding the Gravel Reserves activity is set out below:

**Operating Expenses (excluding depreciation)** – Funded from a combination of royalties and lease revenues (and the Metal Pits Special Reserve Fund if required)

**Capital Expenses** – Funded from a combination of royalties via lease arrangements (and the Metal Pits Special Reserve Fund if required)

The activity has a commercial component from royalties paid for gravel extraction that generates revenue for Council. Historically the main benefits for the activity have been the district's road network and costs have been indirectly passed on via contract rates that reflect the royalty payment. In the future with a change in direction for this activity income will also be generated from lease/partnership arrangements. Where extraction continues to occur the lessees will pay a royalty based on verified extraction records. Clean-filling activities will be by way of a lease for each site recognising the lessee's establishment and consent costs. A conservative income from this approach has been calculated and provides a contribution to funding this activity over the 10 year planning period.

The total income generated over the 10 year period from royalties and lease arrangements is estimated to be \$492,000 which will partly offset expenditure incurred. However this will need to be supplemented from the Metal Pits Reserve Account (which is estimated to have an opening balance of \$685,569 at 1 July 2021). This will see the Metal Pits Reserve Account go into significant deficit based on expenditure programmes and estimated revenue. Funding from alternative sources will be required to meet the on-going cost of this activity as it moves from extraction to restoration.

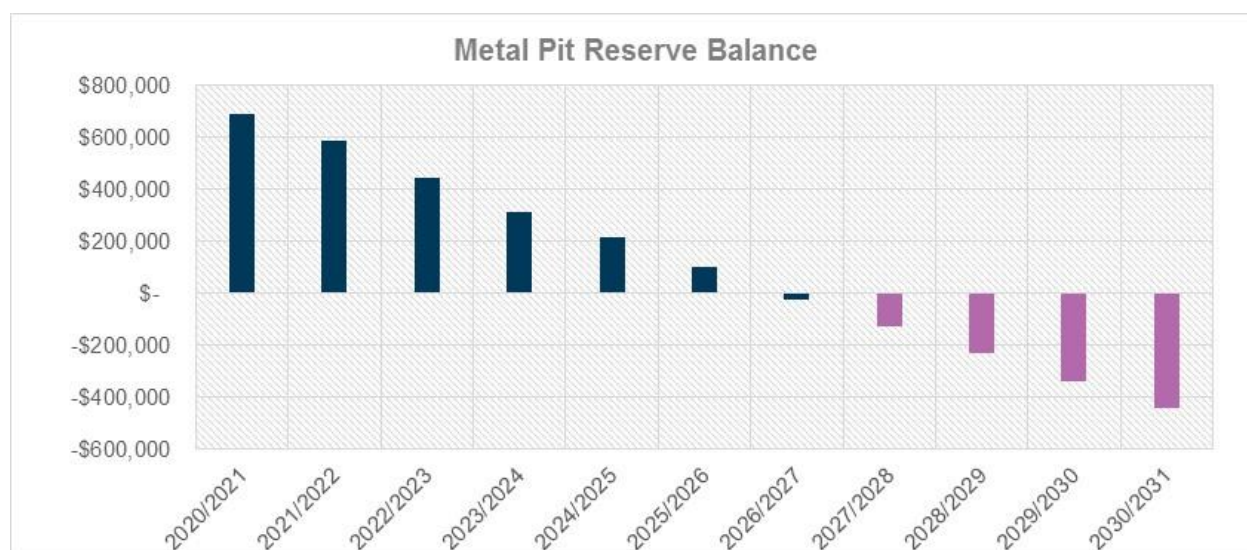


Figure 15-7: Metal Pits Reserve Fund Account

## **Annex 15A**

### **Gravel Reserves 10 Year Financial Forecast**

## Gravel Reserves 10 Year Financial Forecast

Gravel Reserves 10 Year Financial Forecast												
	Budget	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	
	2020/21	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	10 Yr Total
<b>Operating Revenue</b>												
Operating Revenue	50,515	256,885	47,900	162,875	48,900	48,900	48,900	240,275	50,400	50,400	50,400	1,005,835
<b>Total Operating Revenue</b>	50,515	256,885	47,900	162,875	48,900	48,900	48,900	240,275	50,400	50,400	50,400	1,005,835
<b>Opex</b>												
Staff Costs	0	0	0	0	0	0	0	0	0	0	0	0
<b>Other Operating Expenditure</b>												
Routine Maintenance & Operations	101,994	96,233	96,233	96,233	103,623	103,623	103,623	103,623	103,623	103,623	103,623	1,014,060
<b>Total Other Operating Expenditure</b>	101,994	96,233	96,233	96,233	103,623	103,623	103,623	103,623	103,623	103,623	103,623	1,014,060
<b>Support Costs</b>	157,023	158,380	158,648	156,399	144,302	142,979	141,739	141,529	141,425	142,043	141,706	1,469,150
<b>Operating Projects</b>												
Scheduled Maintenance Projects	82,619	42,300	87,300	71,400	42,300	42,300	66,400	42,300	42,300	46,400	42,300	525,300
<b>Total Operating Projects</b>	82,619	42,300	87,300	71,400	42,300	42,300	66,400	42,300	42,300	46,400	42,300	525,300
<b>Total Opex</b>	341,636	296,913	342,181	324,032	290,225	288,902	311,762	287,452	287,348	292,066	287,629	3,008,510
<b>Operating Surplus/Deficit (excl. deprn)</b>	-291,121	-40,028	-294,281	-161,157	-241,325	-240,002	-262,862	-47,177	-236,948	-241,666	-237,229	-2,002,675
<b>Depreciation</b>												
Depreciation	4,021	362	1,029	1,420	1,699	2,613	2,959	3,260	4,201	4,496	4,894	26,933
<b>Operating Surplus/Deficit (incl. deprn)</b>	-295,142	-40,390	-295,310	-162,577	-243,024	-242,615	-265,821	-50,437	-241,149	-246,162	-242,123	-2,029,608
<b>Capex</b>												
Capital Renewals	5,408	7,308	10,234	9,360	4,600	11,826	5,508	9,558	5,760	9,000	10,890	84,044
New Capital - Improved LOS	0	0	0	0	0	0	0	0	0	0	0	0
New Capital - Growth	251,000	0	0	0	0	0	0	0	0	0	0	0
<b>Total Capex</b>	256,408	7,308	10,234	9,360	4,600	11,826	5,508	9,558	5,760	9,000	10,890	84,044
<b>Capital Revenue</b>	0	1,029,910	0	854,350	0	0	0	792,050	0	0	0	2,676,310

## **Annex 15B**

### **Site Disposal Schedule**

## Gravel Reserves for Disposal

Asset ID	Reserve No.	Valuation No.	Physical Location	Area (ha)	Local Purpose	Zone	Gazette Reg.
500331	263	2352216600	Shands Road, Templeton	2.7519	Gravel Pit	Inner Plains	1879/827
500443	955	2352219900	Larcombs Road, Main South Rd	4.0468	Gravel Pit	Inner Plains	1879/826
500286	969	2421023200	Tramway Road, Sheffield	2.0234	Gravel Pit	Outer Plains	1879/826
500345	983	2421021100	Wrights Road, Sheffield	2.0234	Gravel Pit	Outer Plains	1879/82
500281	990	2421023600	Keens/Fraser Roads, Sheffield	2.0234	Gravel Pit	Outer Plains	1879/826
500250	992	2421038400	Kowai Bush Road, Springfield	0.9611	Gravel Pit	Outer Plains	1881/530
500355	1387	2422014100	Coaltrack Road, Coalgate	1.1241	Gravel Pit	Living One	1879/826
500348	1469	2412009700	Old South Road, Dunsandel	2.0234	Gravel Pit	Outer Plains	1879/827
500330	1508	2420013300	Telegraph Road, Charing Cross	2.0234	Gravel Pit	Outer Plains	1879/827
500340	1509	2420014500	Essendon Road, Darfield	2.0234	Gravel Pit	Outer Plains	1879/827
500328	1510	2420012200	Wards/Essendon Rds, Darfield	2.0234	Gravel Pit	Outer Plains	1879/827
500324	1519	2420015300	Clinton/Bealey Rds, Greendale	2.0234	Gravel Pit	Outer Plains	1879/827
500082	1528	2420008800	Homebush Rd, Darfield	2.0234	Gravel Pit	Living 2A	1879/827
500248	1753	2419019100	West Coast HW, Halkett	4.0469	Gravel Pit	Outer Plains	1953/54
500233	2219	2423025700	Struie/Bealey Rds, Hororata	2.0234	Gravel Pit	Outer Plains	1879/827
500368	2220	2423025800	Bealey Rd, Hororata	2.0234	Gravel Pit	Outer Plains	1879/827
500366	2301	2423032600	Ardlui Rd, Hororata	2.0234	Gravel Pit	Outer Plains	1879/827
500240	2319	2423031000	Te Pirita Rd, Hororata	2.0285	Gravel Pit	Outer Plains	1879/827
500292	2458	2412031900	Ardlui/Saunders Rds, Rakaia	1.1241	Gravel Pit	Outer Plains	1882/1341
500322	2527	2420017700	Bealey Rd, Charing Cross	2.0867	Gravel Pit	Outer Plains	1882/1341
500265	3537	2404015700	McDonalds/English Rds, Lincoln	2.0234	Gravel Pit	Outer Plains	1901/940
500246	3878	2419015400	Highfield Rd, Kirwee	0.2023	Gravel Pit	Outer Plains	1913/2173
500285	972	2426017800	West Coast Rd, Springfield	2.074	Gravel Pit	Outer Plains	1879/826
500288	984	2421004500	West Coast Rd, Sheffield	2.0234	Gravel Pit	Outer Plains	1879/826
500306	988	2421003000	Waimakariri Gorge Rd	2.0234	Gravel Pit	Outer Plains	1879/826
500304	1536	2421001900	Old West Coast Rd, Sheffield	2.0234	Gravel Pit	Outer Plains	1879/826
500334	1555	2422015100	Coaltrack Rd, Coalgate	2.0234	Gravel Pit	Outer Plains	1879/827
500174	2293	2412029400	Mitchells/Sharlands Rds	2.0234	Gravel Pit	Outer Plains	1879/827
500297	2311	2412031500	Te Pirita Rd	2.0234	Gravel Pit	Outer Plains	1879/827
500291	2314	2412030400	Ardlui Rd, Te Pirita	2.0234	Gravel Pit	Outer Plains	1879/827
500258	2799	2426004300	Algidus Rd, Lake Coleridge	0.0884	Gravel Pit	High Country	1888/493
500259	2801	2426004600	Algidus Rd, Lake Coleridge	0.0894	Gravel Pit	High Country	1888/493
500363	3536	2422006900	Yeomans Rd, Homebush	1.52	Gravel Pit	Outer Plains	1901/969
500285	4017	2426015800	Rubicon Rd, Springfield	2.0234	Gravel Pit	Malvern Hills	1918/2073