PURCHASE OF DECOMPACTION MACHINERY

AGENDA ITEM No. 12

MEETING: **POLICY AND RESOURCES COMMITTEE**

DATE: **3RD JUNE 2026**

REPORTED BY: **GROUNDS MAINTENANCE SERVICES CO-ORDINATOR**

1.0 Purpose of the Report

1.1 The purpose of the report is to request Members' consideration for the purchase of new decompaction machinery for use in improving drainage at various Council facilities.

2.0 Background Information

2.1 The existing verti-drainer machine was purchased in 1999 and given an expected lifespan of 25 years.

2.2 The machine has been well maintained and other than regular maintenance and minor breakdowns has operated well over these years.

2.3 Verti-draining is carried out on areas of the golf course and football pitches and forms part of the regular maintenance of these areas.

3.0 Current Situation

3.1 When the verti-drainer machine was purchased there were few options when it came to decompaction and aeration of sports turf areas.

3.2 Modern turf management relies heavily on soil aeration and decompaction to maintain healthy root growth, improve drainage, and reduce compaction caused by machinery and foot traffic.

3.3 Three commonly used systems are:-

- Deep-tine verti-draining machines
- Linear decompaction machines (with or without sand injection)
- Spiking and slicing.

3.4 The following section of the report provides further information on each of these systems.

3.5 Verti-Drainer Machine

A verti-drainer is a deep-tine aerator designed to penetrate the soil profile to depths of up to 400mm using a heaving or “kick” action. This relieves deep compaction and improves air and water movement through the rootzone.

Advantages

- **Excellent deep compaction relief** – Highly effective at breaking through compacted layers and improving root development.
- **Improved drainage and infiltration** – Create vertical channels for water, nutrients, and oxygen, improving evapotranspiration.
- **Versatility** – Large range of solid and hollow tines available for different turf conditions and objectives.
- **Proven technology** – Widely used on golf courses, sports pitches, parks, and racecourses.

Disadvantages

- **Surface disruption** – The aggressive heave action can leave the surface uneven and may temporarily affect play quality.
- **Slow working speed** – Deep penetration requires low operating speeds, reducing productivity on large areas.
- **Requires suitable conditions** – Very dry or excessively wet ground can reduce effectiveness and increase turf damage risk.
- **Higher tractor power and lifting requirements** – Larger models are heavy and require capable tractors.
- **Potential for turf stress** – Repeated aggressive aeration can damage weaker turf surfaces if poorly timed.

3.6 Linear Decompaction Machine

Linear decompaction uses rotating blades or knives to create narrow linear channels to a depth of 250mm through the soil profile with minimal surface disturbance. The process uses off-set blades to fracture compaction horizontally while maintaining surface playability.

Advantages

- **Minimal surface disruption** – Turf remains largely playable immediately after treatment.
- **Fast operation** – Suitable for large areas and regular in-season use.
- **Excellent for sports surfaces** – Particularly useful where downtime must be minimised.
- **Improves gaseous exchange and drainage** – Linear channels aid water movement and root respiration.
- **Lower visible disturbance** – Preferred on high-profile or intensively used facilities.

Disadvantages

- **Less aggressive than verti-draining** – May not fully relieve severe deep compaction or hard pans.
- **Limited soil heave action** – Does not produce the same deep lifting and shattering effect as a Verti-Drain.
- **Can smear in wet conditions** – Knife systems may create glazing or smearing if operated in saturated soils.

Linear decompaction machines are highly effective at improving the movement of surface water through the soil profile and helping water reach existing drainage systems more efficiently. This allows rainfall and irrigation water to move vertically and laterally through the rootzone and into secondary drainage systems, gravel bands, or pipe drains more quickly.

3.7 Linear Decompaction with Sand Injection

Imants also offer another option that can add a sand injection system which would be particularly beneficial on golf greens and goal mouths. The SandCat is designed to combine linear aeration with direct sand placement into the soil profile in a single pass.

Advantages:-

- **Improved drainage and faster surface drying** - The SandCat cuts and fills the narrow slits with kiln-dried sand, creating permanent vertical channels. These channels help water move through the profile and spread laterally in the rootzone, reducing surface waterlogging and “soft” playing conditions.
- **Relieves compaction and opens the rootzone** - The blades physically fracture compacted layers while the sand keeps those channels open.
- **Stronger, deeper root development** - Because roots can follow the sand-filled channels, they are less restricted by compaction.
- **Firmer, truer playing surfaces** - A major benefit for golf and fine turf is that surfaces become firmer and more consistent after treatment, improving ball roll and playability while still maintaining drainage.
- **Minimal surface disruption compared to traditional aeration** - Unlike hollow tining, there are no cores to clean up.

Disadvantages:-

- **Small hopper** – With a capacity of only 500l it would be impractical on large areas, limiting use to golf greens, and goal mouths.
- **Kiln-dried sand** - generally more expensive than standard top-dressing materials due to the drying process and packaging. Any moisture in the medium may block the feed and limit the effectiveness of the machine.
- **Reduced working width** – working width of 1.2m instead of 1.6m of the Shockwave.

When used empty, the SandCat functions similarly to the Imants Shockwave.

3.8 Spiking and Slicing Machinery

Spiking and slicing includes star slitters, sarel rollers, and shallow slit tining that mainly affect the upper soil profile, usually to a maximim depth of 150mm.

Advantages

- Very low surface disruption.
- Fast and inexpensive operation.
- Allows frequent aeration during the playing season.
- Improves surface gas exchange and water infiltration.
- Helps reduce surface sealing and capping.
- Ideal for maintaining surface firmness and pace on fine turf.
- Requires less power and smaller machinery.

Disadvantages

- Limited depth and limited effect on deep compaction.
- Little to no soil shattering below the surface.
- Benefits are often short-term.
- Can smear soil if used in wet conditions.
- May create superficial aeration only.
- Less effective on heavily compacted clay soils.

3.9 All systems provide valuable benefits, but they are suited to different objectives as explained below:-.

- A **verti-drainer** is generally the preferred option where severe compaction, poor drainage, or deep rooting issues exist and where more aggressive soil renovation is required.
- A **linear decompactor** is often better suited to routine maintenance and heavily used sports surfaces where maintaining immediate playability is important.
- **Spiking and slicing** are for continual surface aeration and maintenance.

3.10 In practice, many golf courses and sports facilities use both systems as part of an annual aeration programme, combining periodic deep-tine aeration with more frequent linear decompaction to achieve balanced soil management and minimise disruption to users. However, the equipment is not just for sports turf areas and could be beneficial on other amenity areas.

3.11 Dealers have therefore been contacted to offer quotations from their respective machinery in 1.6m and 2.1m wide options. The table below shows the various manufacturers: -

Rickerby's	Linear	Verti-quake 2516
	Linear	Verti-quake 2521
	Verti	Verti-drain 7416
	Verti	Verti-drain 7521
Lloyd Ltd.	Verti	GKB DTA210
	Spiker	GKB Top Air 160
	Spiker	GKB Combislit 200
Thomas Sheriff	Verti	Wiedenmann Terra Spike G6
	Verti	Wiedenmann Terra Spike XP
	Verti	GKB DTA160
	Verti	GKB DTA210
	Linear	Imants Shockwave
	Linear	Imants SandCat
GGM	Verti	GKB DTA160
	Verti	GKB DTA210
Carrs Billington	Linear	Imants Shockwave
	Verti	Salvatici Aeroking

3.12 The purchase of a linear decompaction machine would provide a valuable addition to the existing aeration programme and complement the verti-drainer machine already owned by the Council. While the verti-drainer remains highly effective for deep seasonal aeration and the relief of severe compaction, its use can cause significant surface disruption and often requires suitable weather and ground conditions to achieve the best results.

3.13 A linear decompaction machine would allow staff to carry out more regular in-season decompaction with minimal disturbance to the playing surface, enabling sports pitches and fine turf areas, such as greens and tees to remain in use while still improving drainage, root development, and soil structure.

3.14 Using both machines in conjunction would provide a more balanced and flexible approach to turf management. The verti-drainer could continue to be used for annual deep-tine aeration and renovation works, while the linear decompactor could undertake routine maintenance operations throughout the year, reducing reliance on a single piece of equipment and extending the operational lifespan of the existing machine.

3.15 Taking into account that the existing verti-drainer machine will continue to be used in conjunction with the proposed Linear Decompaction Machine, and the reduced operational demand this will enable, and with continued regular maintenance, officers consider that there is no reason why the current machine should not remain operational for a further 10 to 15 years.

3.16 For information, it should also be noted that a direct replacement for the existing Verti-Drain machine currently carries a recommended retail price of £35,250, further highlighting the value of extending the working life of the Council's existing asset through the complementary use of additional machinery.

3.17 The purchase of both a 2.1m and a 1.6m linear decompaction machine would provide a comprehensive and versatile solution for the maintenance of the Council's sports turf facilities and green spaces, allowing staff to effectively manage compaction across a wide range of surfaces while minimising disruption to play and public use.

3.18 The proposed 2.1m machine would be ideally suited to larger open areas such as sports pitches, fairways, and other extensive turf areas within the Council's parks. Its wider working width would allow significant ground coverage in shorter periods of time, enabling regular decompaction programmes to be undertaken with reduced labour and fuel costs.

3.19 The addition of a smaller 1.6m machine, to be used in conjunction with the existing Groundsman aeration machine would provide the flexibility required to maintain more sensitive and confined areas such as golf greens, tees, surrounds, and smaller fine turf surfaces as well as goal mouths, where manoeuvrability and reduced ground pressure are critical.

3.20 Larger machines are often unsuitable for these areas due to their weight, turning circle, and potential for surface damage. A dedicated smaller unit would allow operators to carry out regular aeration and decompaction works on fine turf areas with greater precision and reduced risk to surface quality. This would support healthier root systems, improved gaseous exchange, and more consistent playing conditions on high-value turf surfaces.

3.21 In addition, the proposed purchase of both 1.6m and 2.1m machines could be achieved by utilising the allocated capital budget of £35,000 for replacement vert-drainer. This approach would maximise the value of the available budget, improve the reliability and longevity of current assets, and enhance the overall standard of sports turf maintenance across the sites.

3.22 Both the Imants Shockwave and Redexim Verti-quake machines have been trialled by works staff.

3.23 The Imants Shockwave is the original and appears more premium/heavy duty, while Redexim's Verti-quake is robust but simpler.

4.0 Policy Implications

4.1 This complies with the Council's Strategic Aim 2: -

"To manage the Council's finances and assets in a responsible manner".

4.2 Purchasing this machine was previously identified as a high priority in the Golf Course Improvement and Investment Plan.

5.0 Staffing Implications

5.1 The use of the machine by the works staff is explained in the report.

6.0 Financial Implications

6.1 A capital budget provision of £35,000 has been allocated in the 2026/27 budget to replace the verti-drainer.

6.2 Below is a table of the quotations supplied by the dealers for each machine, including delivery:-

Rickerby's	Linear	Verti-quake 2516 (1.6m)	£11,500.00
	Linear	Verti-quake 2521 (2.1m)	£12,500.00
	Verti	Verti-drain 7416 (1.6m)	£25,750.00
	Verti	Verti-drain 7521 (2.1m)	£30,250.00
Lloyd Ltd.	Verti	GKB DTA210 (2.1m)	£31,750.00
	Spiker	GKB Top Air 160 (1.6m)	£11,750.00
	Spiker	GKB Combislit 200 (2.0m)	£6,550.00
Thomas Sheriff	Verti	Wiedenmann Terra Spike G6 (1.6m)	£28,008.62
	Verti	Wiedenmann Terra Spike XP (2.1m)	£36,163.79
	Verti	GKB DTA160 (1.6m)	£26,448.28
	Verti	GKB DTA210 (2.1m)	£30,931.03
	Linear	Imants Shockwave 1.6m	£12,607.06
	Linear	Imants Shockwave 2.1m	£13,444.71
	Linear	Imants SandCat (1.2m)	£21,172.29
GGM	Verti	GKB DTA160 (1.6m)	£29,500.00
	Verti	GKB DTA210 (2.1m)	£38,500.00
Carrs Billington	Linear	Imants Shockwave 1.6m	£12,100.00
	Linear	Imants Shockwave 2.1m	£13,350.00
	Linear	Imants Shockwave 220 (2.2m)	£21,650.00
	Verti	Salvatici Aeroking 300.50 (1.6m)	£17,400.00

6.3 It is recommended that consideration is given to the purchase of both the Imants Shockwave 2.1m, and Imants Shockwave 1.6m from Carrs Billington at a cost of £25,450.

6.4 Basic maintenance and repairs for the existing verti-drainer will continue to be funded from the Works Equipment Maintenance Revenue Budget.

6.5 However, replacement of the damaged rear roller and worn front roller, mountings and bearings are estimated at £1,000.

6.6 In addition, although currently serviceable, replacement of the damaged rear cover and catches would add another £1,700 to the repair costs.

6.7 It is therefore recommended that £2,700 is utilised from the £9,550 underspend on the Capital Budget to purchase the major parts and undertake the repairs to the existing verti-drainer machine.

6.8 Members are also advised that a potential opportunity has arisen through the Football Association grant funding programme, which provides financial assistance for the purchase of machinery to improve football pitches. Under the scheme, the Football Association would fund 75% of the total cost of the machinery, with the Council contributing the remaining 25%.

6.9 It is therefore requested that Members consider retaining the £6,850 underspend within the Capital Budget in order to support a potential future funding application for additional sports turf equipment, alongside the current proposal, following advice received from the Football Association.

6.10 It is also advised that purchasing two additional machines may increase the Council's insurance premium.

7.0 Crime and Disorder Implications

7.1 None.

8.0 Equal Opportunity Implications

8.1 None

9.0 Environment, Biodiversity and Climate Change Implications

9.1 None.

10.0 Risk Assessment

10.1 It is not considered that the matter contained in this report poses a risk to health and safety of staff or to the financial or public standing of the Council to a degree that a risk assessment should be appended to this report.

11.0 General Data Protection Regulations (GDPR)

11.1 Is any personal or sensitive data required for this proposal which may have any implications for GDPR? **NO**

12.0 Recommendations

12.1 It is recommended that: -

i. Members receive the report.
ii. Members consider the purchase of both the Imants Shockwave 2.1m, and Imants Shockwave 1.6m from Carrs Billington at a cost of £25,450.
iii. Members consider allocating £2,700 from the £9,550 underspend on the Capital Budget to purchase the major parts and undertake the repairs to the existing verti-drainer machine.
iv. Members agree to retain the remaining Capital Budget underspend of £6,850, to provide match funding to support a potential application for grant funding to the Football Association for additional sports turf maintenance equipment.

Grounds Maintenance Services Co-ordinator