

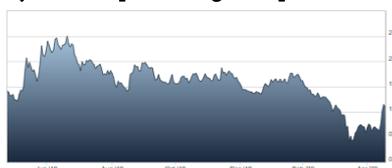
**Stock Data**

Integumen	Modern Water
Share Price :1.20p	Share Price :1.0p
Market Cap: £12.9m	Market Cap: £5.0m
Ord.Shares:1,072.4m	Ord.Shares:502.7m

**Company Profiles**

Integumen	Modern Water
Sector: Personal Care	Sector: Elect. Equip.
Ticker: SKIN	Ticker: MWG
Exchange: AIM	Exchange: AIM
Activities: Operates in life sciences, AI, skin-based clinical research.	Activities: Provider of world-leading water technologies and membranes.

**1-year Share price: Integumen plc**



**1-year Share price: Modern Water Group plc**



Source: [LSE](#)

**Past performance is not an indication of future performance.**

**Turner Pope contact details**

Turner Pope Investments ("TPI") Limited  
8 Frederick's Place  
London EC2R 8AB

Tel: 0203 657 0050  
Email: [info@turnerpope.com](mailto:info@turnerpope.com)  
Web: [www.turnerpope.com](http://www.turnerpope.com)

**Attention is drawn to the disclaimers and risk warnings at the end of this document.**

This is a non-independent marketing communication. The analyst who has prepared this report is aware that TPI has a relationship with the companies covered in this report. Accordingly, it has not been prepared in accordance with legal requirements designed to promote the independence of investment research and is not subject to any prohibition on dealing ahead of the dissemination of investment research.

**TPI acts as sole broker to Integumen plc and Modern Water Group plc.**

**Retail clients (as defined by the rules of the FCA) must not rely on this document.**

**Barry Gibb**

Research Analyst  
Tel: 0203 657 0050 [barry.gibb@turnerpope.com](mailto:barry.gibb@turnerpope.com)

**Andrew Thacker**

Corporate Broking & Sales  
Tel: 0203 657 0050 [andy.thacker@turnerpope.com](mailto:andy.thacker@turnerpope.com)

**Zoe Alexander**

Corporate Broking & Sales  
Tel: 0203 657 0050 [zoe.alexander@turnerpope.com](mailto:zoe.alexander@turnerpope.com)

# Integumen plc & Modern Water plc

The technological collaboration, marketing and production agreement signed last month between Integumen ('SKIN') and Modern Water ('MWG') has already resulted in a significant joint product offering capable of uniquely addressing one of the world's obvious current and post-Pandemic needs. To date, investment markets have almost exclusively focussed on the human race's most immediate demand – that of COVID-19 detection, diagnostics and vaccination – and so has awarded a significant premium to the wider healthcare development sector in anticipation of its potential to deliver on these ambitions. Recognising that the virus (or at least some mutated form of it) is likely to exist for many years to come, however, and that international governments henceforth will need to invest significantly in order to avoid similar future calamities, major new, long-term funding will become available to address these challenges. Having rapidly combined their individual technologies, laboratory and customer experience, SKIN and MWG have now jointly developed a new, unique and particularly timely product – its 'Microtox CTM and VIRIMID Artificial Intelligence Real Time COVID-19 Alert System'. Using substitute agents for [ACE-2](#) ('angiotensin converting enzyme II') to capture the SARS-CoV-2 virus and Integumen's AI driven identification protocols, this offers an early warning detection system for governments, health organisations, utilities etc. seeking a rapid means to monitor, detect, geolocate and quantify COVID-19 in wastewater for hotspots of infection before reaching the general population, thus curtailing spread of the virus. Potentially this is the 'right product at the right time' for the current and post-Pandemic world, suggesting it could even become transformative for both companies.

## Complementary technologies

Further to its signing of a US\$£3.75m (£3.12m\*) bacteria production agreement with MWG earlier this month, Integumen confirmed that the global COVID-19 public health crisis had already resulted in both a significant acceleration of anticipated customer demand and the Group's planned response. In order to meet back-orders and growing demand for water contamination detection bacteria from existing customers across Spain, Italy and China, production of MWG's monitoring reagent commenced some six weeks ahead of the originally planned production date. Correctly recognising that the Pandemic was then still in a relatively early stage of its evolution across western zones, it became apparent that immediate demand could significantly outstrip the initial production agreement signed between the two companies. Moreover, the two Boards also recognised the urgent need for semi-permanent and rigorous 'early warning' contamination detection programmes that are likely to be specified by international governments going forward. They concluded that the combination of their unique technologies and scientific experience could provide not only an immediate and much needed global solution, but also offer potential for a major new, long-term and high margin source of ongoing product with additional recurring service demand.

## Understanding the science

In February 2020, microbiologists at [Dutch research institute KWR](#) conducted a series of [RNA-analyses](#) at municipal waste water treatment plants ('WWTP') in the Netherlands. Significantly, their analyses showed the presence of RNA gene fragments of the COVID-19 virus in the influent water. According to KWR, the screening of the COVID-19 virus at municipal WWTPs could become an important containment step, being used to signal new outbreaks in advance and play an important role in tracking and curtailing the pace and evolution of the Pandemic. As such, rapid and rigorous sewage screening could potentially provide both national and local authorities with a clearer picture of the virus circulation, the resultant pace of infection and the effectiveness of measures designed to protect the wider

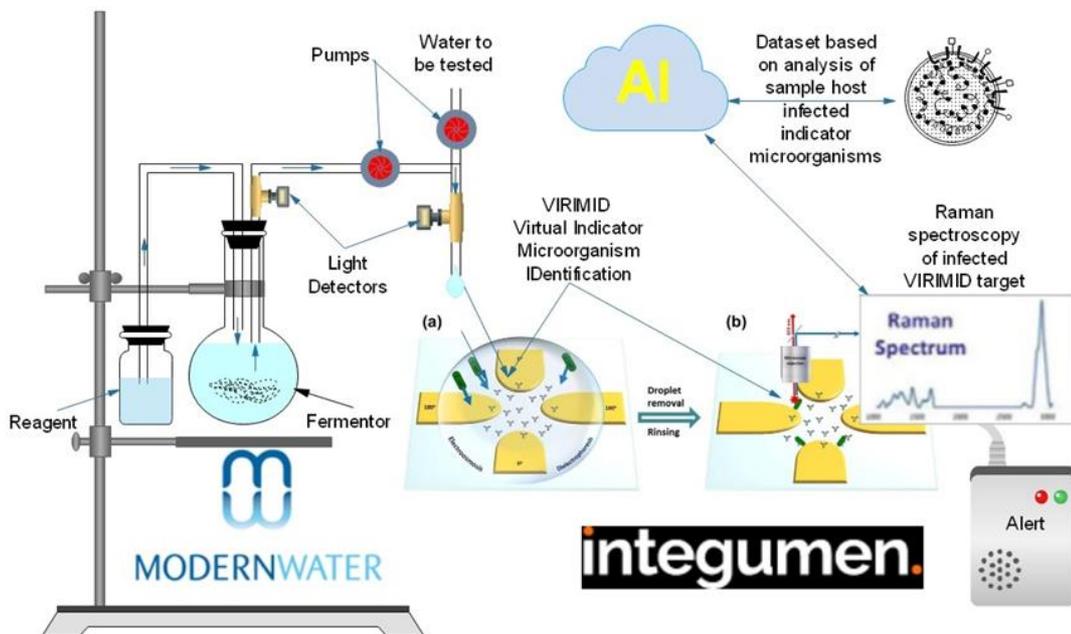
populations. Recognition of the continuing vulnerability of human populations to such global pandemics, as has been demonstrated by the uncontrolled spread of COVID-19, will force governments in the near term to adopt and install new and long-term means of early detection.

Wastewater-based epidemiology is therefore likely to be at the forefront of hotspot identification for any future wave of the current or other mutations of the virus. COVID-19 is caused by the severe acute respiratory syndrome coronavirus II ('SARS-CoV-2') and has an estimated [case-fatality rate of as much as 2-3%](#). The technology being utilised by SKIN and MWG is based on [higher ACE-2 gene expression](#) which has been specifically linked to human susceptibility to SARS-CoV-2. Virus-ridden particles that are inhaled or otherwise and come into contact with cells lining the throat, larynx, eyes sockets etc., have S-Proteins that bind to ACE-2 receptors on their surfaces. These play a key role in passing chemicals into cells and in triggering signals between cells, to the extent that this virus has a surface protein that is primed to lock-on to receptors and thus pass its RNA into the cell.

Once embodied into the cell's replication machinery, COVID-19 makes multiple copies before bursting out to spread the infection. For some, antibodies that are then generated by the body's immune system eventually target the virus and halt its progress. Occasionally, however, the virus can cause severe problems. This is thought to happen when it moves down the respiratory tract and infects the lungs, which are even richer in cells with ACE-2 receptors. Many of these cells are destroyed and lungs become congested with bits of broken cell. In this situation, patients will require treatment in intensive care. In the worst cases, the immune system goes into overdrive, attracting cells to multiple organs in order to attack the virus, resulting in severe inflammation that can run out of control, becoming what is known as a 'cytokine storm' which in some cases results in mortality.

Authorities that are able to detect regional changes of SARS-CoV-2 in their wastewater will therefore have advanced warning of the spread of COVID-19 (or other mutated forms of the virus or up to 120 others already known to exist in the medium). Successful real-time monitoring, however, requires the combination of several different proprietary technologies. In this case, these include (i) Microtox CTM provided by MWG, and (ii) Virtual Indicator of Microorganism Identification ('VIRIMID') plus Artificial Intelligence Dataset Analysis provided by SKIN, in order to accurately facilitate real-time detection. A schematic of the Companies' jointly offered Artificial Real-time COVID-19 Alert System is shown below:

**Microtox CTM and VIRIMID - Artificial Intelligent Real-Time COVID 19 Alert System**



SARS-CoV-2 binds to angiotensin-converting enzyme (ACE2) 10-20 x COV-1 and type II transmembrane serine proteases (TMPRSS2)  
VIRIMID = VIRtual Indicator Microorganism IDentification - Changes to ACE2 detected in wastewater may indicate presense of COVID19

Source: Integumen, Modern Water

### What each company brings to the opportunity

The combination of their different already proven technologies has resulted in the rapid development of a unique product that immediately addresses a specific international post-Pandemic need.

**Modern Water** brings a unique position that includes international leadership in the established bioassay-based rapid toxicity testing market, along with multiple global clients (that range from utilities, reservoirs, hospitals, etc.). Having built up a user base over the past 30 years that regularly uses its services/maintenance/consumables for installed Microtox water contamination detection units, quality monitoring and filtration membranes, it has effectively created the gold standard of water testing for what has become a significantly underexploited customer opportunity. In a post-Pandemic world, this is expected to provide immediate access to significant new demand that is likely to specify delivery of some form of real-time coronavirus alert and quality control system in order to continue to provide consumers with a guaranteed, quality assured service.

**Integumen** is able to implement MWG services through its artificial intelligence and database analytics technologies, enabling highly accurate predictive, real-time data processing. These comprise VIRIMID (or 'VIRtual Indicator Microorganism IDentification'), together with its RAW-test dataset-based analysis based on sample host-infected indicator microorganisms. Together with MWG's products and services, these combine to provide the jointly offered 'Artificial Intelligent Real-Time COVID-19 Alert System'.

### Investment Opinions

**Integumen** is demonstrating its ability to rapidly identify and respond to the urgent needs now presented by the global Pandemic. Having already been contracted to supply European bacteria reagent manufacturing capacity together with the provision of logistical support for Modern Water's sales, marketing and distribution in the US, EU, China and Japan, the two have now gone further to design a post-Pandemic product capable of supporting a safer world. Given the anticipated need for such safety equipment, this first mover advantage derived from combination of proprietary technologies could potentially create a transformative future opportunity. Notwithstanding this, the addition of value and opportunity through the Group's AI division is already opening other options to develop data analytic tools/facilities for Modern Water monitoring equipment, with the potential to include 'bolt-on' services in anticipation of new longer-term national requirements and scope to secure higher client revenues. This, together with ongoing expansion of Rinocloud's high margin data and AI services, Labskin's analytical/monitoring technologies and the extended customer reach being offered through ecowaterOS's multi-continental consortium, highlights the scale of opportunities being presented to Integumen in its underserved global markets. With the weight of anticipated demand from global-scale manufacturers potentially testing the Group's expanded laboratory capacity before the current period end, [TPI's Initiation research on Integumen plc](#) (released on 8th January 2020) set a target price of 3.23p/share\*.

**Modern Water** has implemented significant operational and management change to date in 2020, while also significantly broadening its corporate vision. This new jointly developed product demonstrates its ability to rapidly identify and respond to the urgent needs presented by the global Pandemic. Operating in an area of high international growth, its consumable reagents have historically enjoyed gross margins as high as 83%. Today's news confirms not only that its current products and services might ideally position it to assist in immediate detection and monitoring requirements related to the COVID-19 pandemic, but also recognises the urgent need for more permanent and rigorous 'early warning' contamination detection programmes that are likely to be specified by international governments going forward. This could provide a major new, potentially transformative long-term source of ongoing demand for Modern Water's products and services, presenting cross-selling opportunities across the two companies' respective sales, marketing and distribution channels. Its recent participation in the Integumen-led ecowaterOS consortium also recognises the urgent international need for an end-to-end water contamination, detection and decontamination provider network, that offers the ability to provide customers with instantaneous monitoring solutions. Altogether, recent news and initiatives reflect the new dynamism that has been injected into the Company both in terms of ambition, product offering and customer targeting, following its reorganisation.

\*£=1.20US\$

**THIS DOCUMENT IS NOT FOR PUBLICATION, DISTRIBUTION OR TRANSMISSION INTO THE UNITED STATES OF AMERICA, JAPAN, CANADA OR AUSTRALIA.**

### **Conflicts**

This is a non-independent marketing communication under the rules of the Financial Conduct Authority (“FCA”). The analyst who has prepared this report is aware that Turner Pope Investments (TPI) Limited (“TPI”) has a relationship with the companies covered in this report. Accordingly, the report has not been prepared in accordance with legal requirements designed to promote the independence of investment research and is not subject to any prohibition on dealing by TPI or its clients ahead of the dissemination of investment research.

TPI manages its conflicts in accordance with its conflict management policy. For example, TPI may provide services (including corporate finance advice) where the flow of information is restricted by a Chinese wall. Accordingly, information may be available to TPI that is not reflected in this document. TPI may have acted upon or used research recommendations before they have been published.

### **Risk Warnings**

Retail clients (as defined by the rules of the FCA) must not rely on this document.

Any opinions expressed in this document are those of TPI’s research analyst. Any forecast or valuation given in this document is the theoretical result of a study of a range of possible outcomes and is not a forecast of a likely outcome or share price.

The value of securities, particularly those of smaller companies, can fall as well as rise and may be subject to large and sudden swings. In addition, the level of marketability of smaller company securities may result in significant trading spreads and sometimes may lead to difficulties in opening and/or closing positions. Past performance is not necessarily a guide to future performance and forecasts are not a reliable indicator of future results.

AIM is a market designed primarily for emerging or smaller companies and the rules of this market are less demanding than those of the Official List of the UK Listing Authority; consequently, AIM investments may not be suitable for some investors. Liquidity may be lower and hence some investments may be harder to realise.

### **Specific disclaimers**

TPI acts as sole broker to both Integumen plc (“Integumen”) and Modern Water plc (“Modern Water”) which are listed on the AIM Market of the London Stock Exchange (“AIM”). TPI’s private and institutional clients may hold, subscribe for or buy or sell Integumen and/or Modern Water’s securities.

Opinions and estimates in this document are entirely those of TPI as part of its internal research activity. TPI has no authority whatsoever to make any representation or warranty on behalf of Integumen or Modern Water.

**General disclaimers**

This document, which presents the views of TPI's research analyst, cannot be regarded as "investment research" in accordance with the FCA definition. The contents are based upon sources of information believed to be reliable but no warranty or representation, express or implied, is given as to their accuracy or completeness. Any opinion reflects TPI's judgement at the date of publication and neither TPI nor any of its directors or employees accepts any responsibility in respect of the information or recommendations contained herein which, moreover, are subject to change without notice. Any forecast or valuation given in this document is the theoretical result of a study of a range of possible outcomes and is not a forecast of a likely outcome or share price. TPI does not undertake to provide updates to any opinions or views expressed in this document. TPI accepts no liability whatsoever (in negligence or otherwise) for any loss howsoever arising from any use of this document or its contents or otherwise arising in connection with this document (except in respect of wilful default and to the extent that any such liability cannot be excluded by applicable law).

The information in this document is published solely for information purposes and is not to be construed as a solicitation or an offer to buy or sell any securities or related financial instruments. The material contained in the document is general information intended for recipients who understand the risks associated with equity investment in smaller companies. It does not constitute a personal recommendation as defined by the FCA or take into account the particular investment objectives, financial situation or needs of individual investors nor provide any indication as to whether an investment, a course of action or the associated risks are suitable for the recipient.

This document is approved and issued by TPI for publication only to UK persons who are authorised persons under the Financial Services and Markets Act 2000 and to professional clients, as defined by Directive 2004/39/EC as set out in the rules of the Financial Conduct Authority. This document may not be published, distributed or transmitted to persons in the United States of America, Japan, Canada or Australia. This document may not be copied or reproduced or re-distributed to any other person or organisation, in whole or in part, without TPI's prior written consent.

Copyright © 2020 Turner Pope Investments (TPI) Limited, all rights reserved.