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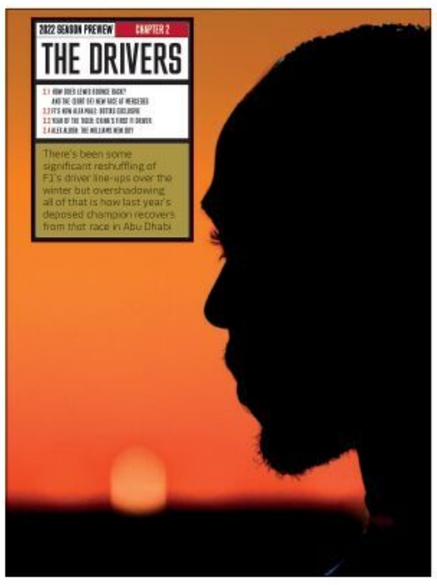

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IGNITION

MARCH 2022

Ben Anderson

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Everything changes but will F1 stay the same?

As I write, Formula 1 pre-season testing in Barcelona is under way and we're finally seeing 2022's revolutionary new cars turning proper laps. There's much anticipation. When no less than Adrian Newey calls this "a huge regulation change, the biggest one we've had since 1983" you realise Formula 1 faces a seismic moment.

So too does F1's present owner Liberty Media, which has bet heavily on a crack team of poachers turned gamekeepers, led by Ross Brawn.

Brawn et al have conceptualised and developed a substantially revised set of technical regulations using the very same techniques F1 teams usually employ to exploit the rules to their own benefit.

The immediate result is an end to the complicated wings and bargeboards, flicks and tricks we've become used to seeing on the top surfaces of F1 cars (and their brake ducts) since the last major rules overhaul of 2017. In conjunction with tighter budget capping and recently agreed new commercial terms for teams, the aim is simple: to create better racing and closer competition. Who could argue with that? It's what we all want to see.

But it's important not to expect too much too soon. This is a radical conceptual departure for F1. To call it a revolution – in a world of endless iteration – is not an overstatement. Revolutions are rapid and sweeping in consequence, but often ponderous in process. Brawn is urging patience.

Aerodynamicists have apparently clawed back 2021 levels of downforce already – something F1 anticipated, says Brawn – which means the cars won't be making their lap times much differently than before, or elongating their braking zones significantly. The extra weight (up 43kg to 795kg dry now) might force drivers to tweak their styles, particularly in slower corners, but even Brawn doesn't expect a huge immediate shakeup to the order. The best teams are the best teams, they still have the biggest budgets and best people.

DRS remains, so don't expect the style of racing to alter radically overnight either. And then there's the tyres. Once again, Pirelli is charged with replacing high-degradation rubber for something on which drivers can push harder for longer. But how long before the teams' development rate overwhelms the pace at which Pirelli can move? You can have tyres that fall apart and plenty of pitstops, or tyres that last forever and barely any pitstops, but not the best of both. That was the lesson following Canada 2010.

And then we have another lesson from F1 history: major rule changes usually cause the field to spread out rather than converge – at least initially. Off the back of the closest championship fight in a decade, that would unavoidably be a bad look – a look that would be compounded if the end of 'high-rake' cars meant Red Bull dropped back while Mercedes stretched clear of everyone again.

Plus ca change.

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GP Racing is published monthly in the above territories.

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Circulation queries Seymour Distribution Ltd, 2 East Poultry Avenue, London EC1A 9PT. Tel: +44 (0)20 7429 4000. Fax: +44(0)20 7429 4001. Email: info@seymour.co.uk. ISSN 2633-8157 (print) ISSN 2633-8165 (online). EAN 07713614480012. Printed by William Gibbons & Sons Ltd, 28 Planetary Road, Willenhall, Wolverhampton WV13 3XT.

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Subscriptions *GP Racing* subscriptions, Autosport Media UK, 3 Queensbridge, Northampton, NN4 7BF, UK. Email: help@asm.secureorder.co.uk. Tel: 0344 848 8826. Overseas Tel +44 (0)1604 251 454. *GP Racing*, ISSN 2633-8157 (USPS 25186) is published monthly by Autosport Media UK, 1 Eton Street, Richmond, TW9 1AG, UK. The US annual subscription price is US$68.37. Airfreight and mailing in the USA by agent named WN Shipping USA, 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Periodicals postage paid at Brooklyn, NY 11256. US Postmaster: Send address changes to *GP Racing*, WN Shipping USA, 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Subscription records are maintained at Autosport Media UK, 1 Eton Street, Richmond, TW9 1AG, UK. Air Business Ltd is acting as our mailing agent.

Thanks to Tim Bampton, Connor Bean, Harry Bull, Niall De'Ath, Lyndsey Fairburn, Rosa Herrero Venegas, Rebecca Leppard, Bradley Lord, Adam McDaid, Curtis Nice, William Ponissi, Katharina Rees, Charlotte Sefton, Richard Wilson

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The wet's sweet little mysteries

While some of the paddock Cassandras had been glumly predicting bad weather on the Friday of the Barcelona test, it turned out merely cloudy. To test Pirelli's new wet-weather tyres several tanker trucks emptied water onto the circuit at lunchtime, giving the first cars out of the garage a chance to try the 'full wets' before stepping down to intermediates.

Despite the clouds the light was good enough – certainly working with Mercedes' move back to silver. It's a nice-looking car, especially when backlit – and you can see some interesting vortices in the spray between the wheels, showing how the new aerodynamics are working.

Photographer
Zak Mauger

Where Barcelona, Spain
When 1:21pm, Friday
25 February 2022

Details Canon EOS-1DX MkII
600mm lens, 1/640s @ F8

F1 PARADE

motorsport IMAGES

Oil be damned: Seb plays fire marshal

An otherwise productive Barcelona test for Aston Martin came to a premature conclusion when the car suffered an oil leak while Sebastian Vettel was driving it on Friday afternoon. The leak developed into a fire, forcing him to stop in an angry-looking cloud of smoke.

We've seen Seb take on the fire marshal role before – last September he had to douse his car during practice at Zandvoort. That foam gets everywhere and can be quite damaging and difficult to remove when it sets, so by taking charge and using a minimal amount, Vettel was trying to maximise his team's chances of fixing the car. Sadly the fire damage was too great.

Photographer
Mark Sutton

Where Barcelona, Spain
When 11:52am, Friday
25 February 2022

Details Nikon D6
500mm lens, 1/1600s @ F6.3

aramco

Snapdragon
RICHARD MILLE
aws
Santander

F1 PARADE

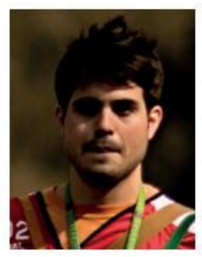
motorsport IMAGES

On song through Barca's crucial turn

One of the key targets of F1's new rules is promoting overtaking opportunities by enabling cars to follow each other more closely through corners – especially high-speed ones leading on to straights, such as the final corner in Barcelona.

The new cars are certainly interesting to watch through this sector of the track: the additional weight makes them ponderous through the chicane but then they hook up nicely and slingshot through the final corner at a suitably high speed as the downforce takes effect.

I used a slow shutter speed to convey the drama – the Ferrari works particularly well as an image because the colours echo the circuit furniture.



Photographer
Zak Mauger

Where Barcelona, Spain
When @2:41pm, Thursday 24 February 2022

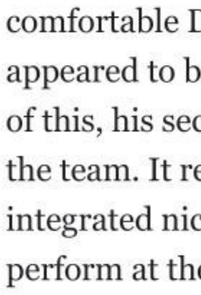
Details Canon EOS-1DX MkII 600mm lens, 1/13s @ F32

F1 PARADE
motorsport IMAGES

Eyes on a sound second season

One of the things that struck me in the McLaren garage during the pre-season test was how comfortable Daniel Ricciardo appeared to be at the beginning of this, his second season with the team. It really feels like he's integrated nicely and is ready to perform at the highest level.

During tests the atmosphere in the garage is usually a bit more relaxed, especially if things are going well. So as a photographer you can get the toys out and be a bit more experimental without causing trouble. For this image I used an off-camera flash to light this angle very differently. For me it really captures the focus Dan has when the helmet goes on.



Photographer
Steven Tee

Where Barcelona, Spain
When 9:11am, Thursday
24 February 2022

Details Canon EOS-1DX MkII
24-105mm lens, 1/250s @ F4.5

Tezos
smartsheet
GoPro
FxPro
yes

F1 PARADE

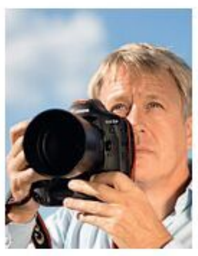
motorsport IMAGES

Aston's lighter fantastic?

For me, the first test when F1 goes through a rules reset is always an exciting time, though your anticipation is tempered with a dose of caution in case the new rules result in an aesthetic horrorshow. I was very pleased to see how good the cars looked, both fascinating and photogenic.

Interesting, too, to see Aston Martin has adopted a lighter shade of green this year – it looks much lighter in real life but it also pings better in photos, with a nice reflective lustre.

For this shot I stood on the inside of the track near the entry to the chicane – the drivers have to come over towards you to open the angle into the corner. Almost like being in Monaco!



Photographer
Steven Tee

Where Barcelona, Spain
When 10:42am, Thursday
24 February 2022

Details Canon EOS-1DX MkII
400mm lens, 1/1000s @ F7.1

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Red Bull swoops out of the shadows

One of the biggest stories of the opening week of testing was the Red Bull RB18, since the team's 'launch' the week before had used one of FOM's show cars from last year dressed in new colours. The definitive car was exciting, very different – and quick, though Red Bull was obviously being careful not to show just how quick...

This is a classic Barcelona testing shot, looking back along the track to the exit of Turn 5. On a good-weather day, during the last hour of running the fading sunlight softens and delivers a dramatic backlit effect. On a hot lap the car would be over those kerbs, so you can tell Max Verstappen is not pushing.

Photographer
Carl Bingham

Where Barcelona, Spain
When 4:34pm, Wednesday 23 February 2022

Details Canon EOS-1DX MkII
600mm lens, 1/500s @ F16

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MASI REMOVED FROM F1 RACE DIRECTOR ROLE

01 **The 2021 Abu Dhabi Grand Prix** has booked Michael Masi's place in Formula 1 history, but it will very likely be his last-ever race as the championship's race director. At the end of February, new FIA president Mohammed Ben Sulayem announced that Masi was to be offered a new position within the federation, while his previous duties will now be divided instead between the Portuguese Eduardo Freitas and the German Niels Wittich. They will alternate as F1's race director from the start of this season.

Masi's removal came as no surprise, since his decisions in the closing laps of the 2021 championship finale went against the FIA's own sporting regulations and meant one of the most exciting seasons in F1 history ended in bitter rancour. After its post-race protest was rejected, Mercedes announced its intention to appeal, but then dropped the

New FIA president Mohammed Ben Sulayem on the grid before the controversial Abu Dhabi GP. The fallout from that race would be the first thing in his in-tray...

idea, allowing F1 to avoid the scenario in which the champion would eventually be determined in court. Mercedes boss Toto Wolff later denied reports the decision to withdraw the appeal was made in exchange for a deal with the FIA which had the dismissal of Masi among its conditions.

Both Wolff and Lewis Hamilton welcomed the FIA's decision to change its race governance structure, but Max Verstappen had a very different take on the matter, saying Masi was "thrown under the bus". His comments touched on a factor that impacted Masi's decisions in Abu Dhabi but has yet to be explained – until the FIA publishes the outcome of its enquiry. Last year F1 began broadcasting radio traffic between teams and the race director, which appears to have emboldened representatives of those teams to be more vocal in their lobbying style.

01 FIA NAMES NEW RACE DIRECTORS

Masi "thrown under the bus", says Verstappen

PICTURES: SAM BLOXHAM

"For me, it's very unfair what happened to Michael," said Verstappen. "People talk a lot about what was decided in Abu Dhabi, but can you imagine a referee in whatever sport has the coach or equivalent screaming in his ear all the time? Let's say: 'yellow card!', 'red card!', 'no decision!', no foul!' It's impossible to make a decision.

02 | HONDA NOT OUT AFTER ALL

03 | RUSSIAN GP CANCELLED

It was the decisions that Michael Masi took which led to this final lap of the 2021 Abu Dhabi GP, and ultimately cost him his job

"So, I think in the first place that F1 already allowed that – that team members could talk to him about making decisions – [was] very wrong. It needed to be Michael making the decisions on his own and having people screaming in his ear was difficult. Now, [that they] did sack him like that in the first place for me is unacceptable.

"I feel really sorry for Michael. Because I think he was a very capable and good race director."

Along with announcing the appointment of the two new race directors, Ben Sulayem outlined additional changes, such as creating a Virtual Race Control room, which is going to support Wittich and Freitas from outside the circuit and will be, as the FIA president put it, "like VAR [Video Assistant Referee] in football". Herbie Blash will also assist Freitas and Wittich in a newly created role of a permanent senior advisor. The Brit, who is turning 74 in September, comes back to F1 after stepping down from his position as Charlie Whiting's deputy at the end of 2016.

The experience offered by Blash, who had assisted Whiting for two decades, should be valuable to Freitas and Wittich, since neither of them has worked in F1 before. Freitas began his career in motorsport in 1979 as a marshal. He eventually became race director for the World Endurance Championship, serving in that position for the past 10 years. Wittich comes to Formula 1 from the DTM, and had previously been named race director of the F2 and F3 championships, but ended up being promoted before he got to take up those posts. The new appointees will be protected from "people screaming in their ears", since the FIA will restrict the ability of teams to speak to the race director.

> "I FEEL REALLY SORRY FOR MICHAEL. BECAUSE I THINK HE WAS A VERY CAPABLE AND GOOD RACE DIRECTOR"
>
> MAX VERSTAPPEN

Other regulatory changes are being brought in to reposition the significance of the sprint races, and to prevent a recurrence of the humiliating scenes of last year's Belgian Grand Prix, where a result was declared after much delay and just two laps behind the Safety Car. There will still only be three sprint events this season – plans for more fell through because the teams couldn't agree rates of compensation for accident damage with the commercial rights holder – and the 'winner' will not necessarily occupy pole position for the grand prix. That spot will be reserved for the fastest driver in Friday's final qualifying session. The points allocation will also be expanded from the top three to the top eight, paying out 8-7-6-5-4-3-2-1. The sprints will be held at Imola, the Red Bull Ring and Interlagos.

The results of a grand prix can now only be declared, and points awarded on a sliding scale depending on distance covered, after the leader has completed two laps in race conditions, ie not under a Safety Car or Virtual Safety Car. ▶

F1 INSIDER

HONDA TO SUPPLY RED BULL UNTIL 2025

02

The 'big H' isn't quite as out of Formula 1 as it originally intended to be. Although the details of the agreement are not yet finalised, Honda has agreed in principle to continue to supply Red Bull with power units until 2025. "The engines will be manufactured in Japan until 2025, we will not touch them at all," Red Bull's racing advisor Helmut Marko told the Austrian press.

Honda announced back in October 2020 that it was ending its F1 program after the 2021 season, but then agreed to continue to supply power units to Red Bull and its sister team AlphaTauri (under new conditions, though) in 2022. The Japanese manufacturer was supposed to transfer its intellectual property (IP) to the newly formed Red Bull Powertrains division, but continue to produce engines until Red Bull's own plant at Milton Keynes was fully functional. These plans have now changed.

Red Bull started its own powertrains division last year after F1 agreed to freeze engine development from 2022 onwards, and has been hiring personnel since – including raids on close rivals. Last April it was announced that Red Bull Powertrains would be led by Ben Hodgkinson, a 20-year Mercedes veteran who had been head of mechanical engineering at Mercedes AMG High Performance Powertrains since 2017. In May, Red Bull revealed it had signed five more senior Mercedes powertrain hires – although, as is typically the case with such moves, each would be serving a long period of 'gardening leave'.

Hodgkinson, who will be Red Bull Powertrains' technical director, will only be able to start work in May.

Honda was due to bow out of F1 on a high, but the Japanese engine supplier will stick around (sort of) until 2025..

His focus will now be on preparations for the next regulatory change in 2026. The new deal with Honda, *GP Racing* understands, means the majority of staff – currently 250 employees – will focus on the new project.

Furthermore, Red Bull no longer needs to buy the Japanese manufacturer's IP. It will effectively enter F1 as a new manufacturer in 2026 and therefore may receive certain concessions over those already present in F1. What these benefits might be is not yet finalised, though.

"The [IP] rights and all these things will remain with the Japanese, which is important for 2026 because it makes us newcomers", said Marko.

Engine production for Red Bull and its sister team AlphaTauri will still be performed in Sakura. Masashi Yamamoto, who was the head of Honda's F1 program, will now set up a new company which will become "a bridge between Japan and Red Bull".

The Red Bull Powertrains plant in Milton Keynes, according to Marko, should be fully operational by this June. By this time it may already be developing the new engine, which in 2026 could carry Porsche branding, since the German manufacturer is thought to be closing in on a deal with Red Bull.

According to *GP Racing's* sister website *Motorsport-Total* the talks are at an advanced stage, and a final decision about the possible partnership was believed to be imminent as this issue of *GP Racing* went to press. ▶

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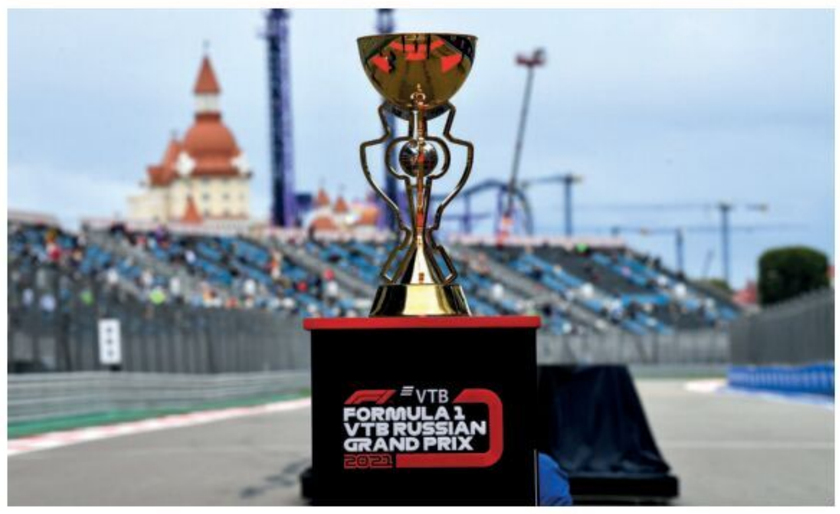
UKRAINE INVASION PUTS BRAKES ON RUSSIAN GP

03 **The future of the Russian Grand Prix** hangs in the balance after Russia invaded the neighbouring country of Ukraine in late February. Faced with a barrage of protests from stakeholders – including an outright declaration by four-time world champion Sebastian Vettel that he would not race in Russia – Formula 1 released a statement saying it would be "impossible to hold the Russian Grand Prix in the present circumstances".

While this woolly phrasing did not amount to an actual cancellation, as the commercial rights holder F1 cannot unilaterally cancel a race without breaking its contract and potentially becoming embroiled in legal action. Although most contracts include a 'force majeure' clause, which removes liability when unexpected circumstances prevent one or other parties fulfilling their obligations, this might still have been contended given the Russian government's official line is that its action in Ukraine is a "special military operation" rather than "war". Sure enough, the Russian GP promoter described the contract as "suspended" and asked ticketholders not to return their tickets, saying "there remains a possibility the event will take place and will be held at the previously planned time".

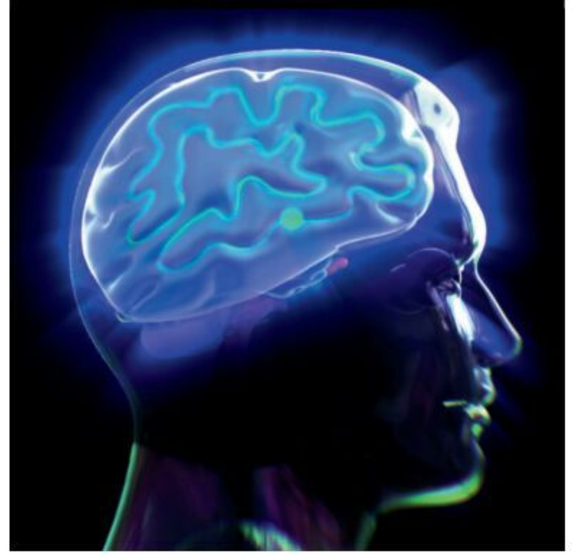
> **"MY OPINION IS I SHOULD NOT GO, I WILL NOT GO. IT'S WRONG TO RACE IN THAT COUNTRY. I FEEL SORRY FOR THE PEOPLE, INNOCENT PEOPLE WHO ARE LOSING THEIR LIVES"**
> SEBASTIAN VETTEL

But at an extraordinary meeting of the FIA World Motor Sport Council, the governing body upheld F1's request to cancel the 2022 race on grounds of force majeure. Given the event's links to Russian president Vladimir Putin, its future beyond 2022 must be in doubt. Putin gave the GP his personal backing, was a frequent visitor, and the event was due to move to a new facility near St Petersburg, his home city.



The 2022 Russian GP has been cancelled, owing to 'force majeure', and the long-term future of the event is in doubt given its close ties to Russian president Vladimir Putin

The Haas team, US-owned but bankrolled recently by Russian oligarch Dmitry Mazepin's Uralkali conglomerate, has also faced some soul-searching. On the final day of the pre-season Barcelona test, Haas removed its Uralkali branding. Team principal Guenther Steiner admitted the sponsorship deal was being reviewed. Given the FIA pulled back from banning Russian drivers, Nikita Mazepin's future is in the team's hands.



F1 MASTERMIND

Your chosen specialised subject: the world's greatest motorsport

Q1 How many races did Max Verstappen start for Toro Rosso: 21, 22 or 23?

Q2 Which three teams ran non-race drivers in practice sessions in 2021?

Q3 Who was the only driver, apart from Ayrton Senna, to claim consecutive pole positions in 1986?

Q4 Fernando Alonso only failed to finish two races in 2021. Which GPs were they?

Q5 Alex Albon switched teams from Toro Rosso to Red Bull at which race in 2019?

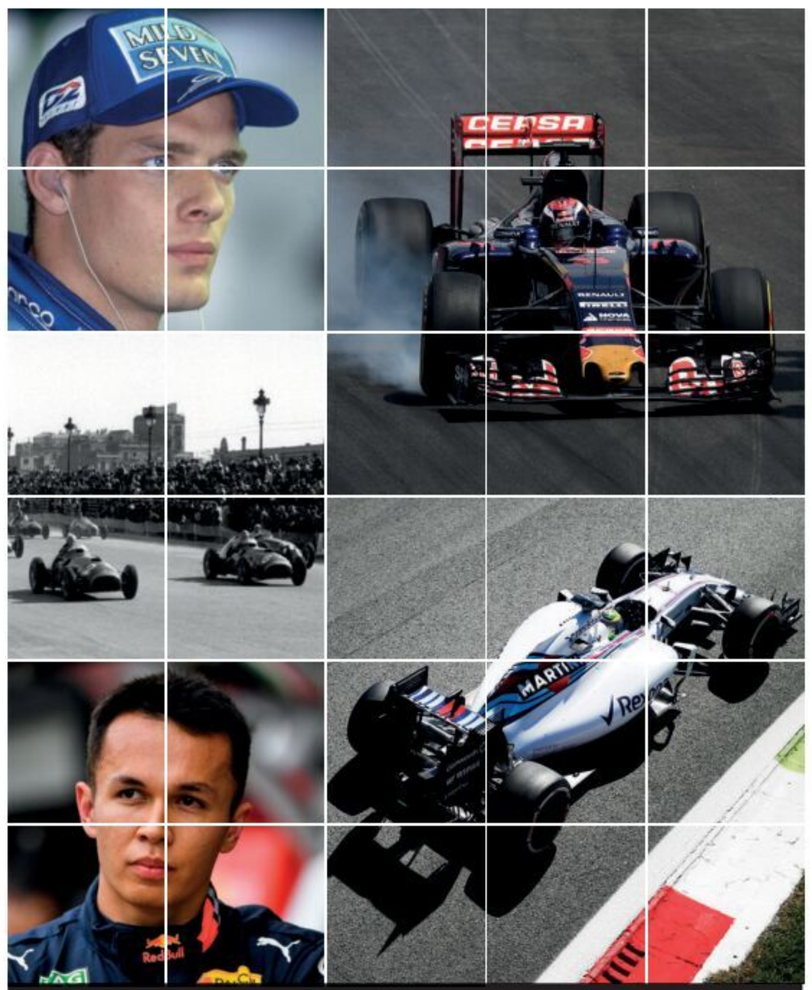
Q6 Which street circuit held the first two Spanish GPs, in 1951 and 1954?

Q7 True or false: the last GP to be run over 100 laps or more was the 1970 US GP at Watkins Glen?

Q8 Bahrain hosted its first ever GP in 2004. Which other country also hosted its first GP that season and at which circuit?

Q9 Alex Wurz started 69 races in his F1 career, driving for three different teams, but who were the four team-mates he raced with?

Q10 Felipe Massa claimed 11 wins and 30 podiums in F1 but at which circuit and in which year did he score the last of those podiums?



1 23 **2** Alfa Romeo, Alpine and Williams **3** Teo Fabi **4** Bahrain and US **5** Belgian GP **6** Pedralbes **7** True (108 laps) **8** China, Shanghai International Circuit **9** Jean Alesi, Giancarlo Fisichella, Kimi Räikkönen and Nico Rosberg **10** Monza, 2015

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THE F1 ANALYST

BEN EDWARDS

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PICTURES motorsport IMAGES

WILL REGULATION RESET SPRING A FEW SURPRISES?

The unpredictability of new rules adds relish as we build up to the new season. Thirteen years ago, the Brawn GP team created an aerodynamic masterpiece under revised regulations. Having finished last in the constructors' championship in 2008 as Honda, the re-jigged outfit with off-the-shelf Mercedes power took Jenson Button to his only world title, while Ross Brawn's crew completed their journey from misery to ecstasy, carrying off the constructors' trophy too.

McLaren and Ferrari had dominated the previous two seasons, but both suffered. Separated by just a single point at the end of the year, adding their scores together didn't even match the points accrued by another surprise outfit at that time: Red Bull. Chief technical officer Adrian Newey had to dig deep once the FIA eventually determined the double diffuser aero trick pioneered by Brawn, Toyota and Williams was legal, but Newey's inherent design of the RB5 was superb without it. Once updated to the latest theme, it allowed Sebastian Vettel to put real pressure on Button.

Will Mercedes and Red Bull experience a McLaren/Ferrari dip in 2022? It seems unlikely – and perhaps even less likely the wooden spoon team of last year, Haas, can match that Honda/Brawn turnaround. But there are other teams that could suddenly become major contenders for the championship, and although the intense definition of the current regulations leaves less opportunity for inventiveness, we won't know for sure until the cars hit the circuit in anger.

McLaren and Alpine both won a race last year and have high ambitions under the revised rules. There is a steely yet calm sense to McLaren; personnel such as team principal Andreas Seidl and technical boss James Key have been in place for over two years now and have been a key part of planning for this new era. Andrea Stella, who focuses on trackside performance, has lived through many ups and downs at both Ferrari and McLaren. The relationships in senior management seem strong and productive – delivering particularly well to Lando Norris and striving to do so for Daniel Ricciardo. I feel McLaren is well placed, but who knows if the designers have come up with the right ideas?

Alpine is a more moveable feast, as we saw over Christmas and New Year with executive director Marcin Budkowski and Alain Prost both taking an exit. A new power unit is being introduced, and there have been some concerns about reliability. The re-set of the Alpine brand by Renault's CEO Luca de Meo and his decision to employ Laurent Rossi as the front man at the beginning of 2021 has clearly created a very different mindset, and I wonder if that disruption is going to give them the solid base they need to work from. De Meo initiated a new focus for the Renault Group in January 2021 called 'La nouvelle Vague' (The new wave) and it's feeling a bit like that for the team at the moment. Taking on Otmar Szafnauer may settle the scene, but it could take time...

There have been significant leadership changes at Aston Martin too. Szafnauer has gone and his role is now effectively split between Martin Whitmarsh (who oversaw McLaren's success and then tough patch in the late 2000s) and Mike Krack. It was during Brawn's successful 2009 season that Krack left his position as chief race engineer at the BMW Sauber F1 team, a year in which the organisation disintegrated after a strong 2007 and first victory in 2008. Changes to technical management, internal politics, a misstep on KERS, the financial crash, as well as missing out on the double diffuser, had a multiple hit on the team and BMW exited from F1.

Krack has since built his reputation at Porsche, working alongside Seidl, and then back at BMW overseeing other forms of motorsport. Now he is team principal in a group growing with intent and demand from owner Lawrence Stroll. Last season was a real downer; having followed the Mercedes design path to create a winning car in 2020, Aston was hit by the subtle regulation changes which also hurt Mercedes in 2021. Deciding not to chase that loss for too long and switching to the new car design as quickly as possible could give Aston a useful boost.

And Krack has worked with Sebastian Vettel before; in those BMW Sauber days when Vettel was taken on as reserve, and went on to become the youngest points scorer at that time (before Max Verstappen shattered the record in 2015). Vettel stood in for Robert Kubica at Indianapolis in 2007 and brought the car home eighth. It makes me wonder if a refreshed relationship with his former engineer who is now running day-to-day aspects of the team, plus a technical shift which will reintroduce controlled amounts of ground effect aerodynamics to F1 cars, will create additional positive vibes for Vettel.

It would be fitting and entertaining if Aston Martin leaps forward and Vettel becomes a regular frontrunner again during another period of major rule changes. If not, there's also the anticipation of Dan Fallows joining as technical director in April having been instrumental in Red Bull's approach to these new aerodynamic regulations.

There's no doubt Stroll is taking a maximum attack approach towards Aston's F1 challenge.

Brawn GP and Button (above, right and below) went from zeroes to heroes in 2009

The major rule changes could mean one of the midfield teams jumps out of the pack to join the top table and Aston Martin is pushing hard to be just that team

Mike Krack makes a return to F1, after time with Porsche and BMW, as Aston Martin's new team principal

Sebastian Vettel had experience of working with Aston Martin's new team prinicpal, albeit way back in 2007

Lawrence Stroll has dispensed with the services of Otmar Szafnauer (above), who has ended up at Alpine

PICTURES: RAINER SCHLEGELMILCH; STEVEN TEE; GLENN DUNBAR. ILLUSTRATION: BENJAMIN WACHENJE.

UNDER THE HOOD

PAT SYMONDS
PICTURES motorsport IMAGES

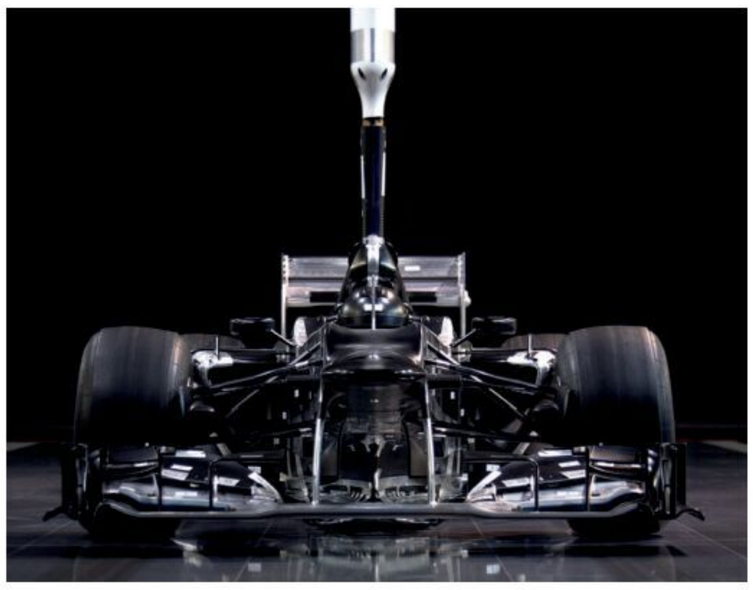
THE ANSWER IS STILL BLOWING IN THE WIND...

With the stated intent of the F1 Commission to work towards a ban on the use of wind tunnels over the next 10 years it might seem perverse that two teams, McLaren and Aston Martin, are investing in new wind tunnels right now.

Current aerodynamic testing restrictions, while variable from team to team, are framed in such a way that it is reasonably easy for teams to share wind tunnels, so what is it about this particular testing technique that makes such a huge investment still worthwhile?

To answer this perhaps we should first explain what a wind tunnel is and how it works. It is an indisputable fact that most of a Formula 1 car's performance comes from aerodynamics and, while the costs involved are huge, aerodynamic research provides a better bang per buck than any other performance area.

That research falls into three categories: computational fluid dynamics (CFD), wind tunnel testing and 'on-car' measurements. I often refer to this as the 'infernal triangle' because none of the techniques give a precise answer.



For the time being teams are continuing to build and use wind tunnels because they are the best tool for the job

CFD, while extremely good at understanding and developing aerodynamics, still struggles to anticipate the effects of highly turbulent flows without enormous computational power.

Wind tunnel testing is limited in many ways including the fact that, like most CFD, it gives a time-averaged solution but in addition suffers from not being able to truly represent the curved flow that a car experiences when cornering. Add to this inevitable modelling inaccuracies, such as the difficulty of having a correct deflected tyre shape, and one can see that in spite of the sophistication there are gaps in true realism.

Even on-car measurements are difficult. A racing car is just that – it is not a scientific instrument – and as such, even with the sophisticated instrumentation available now, it is difficult to make precise measurements. Indeed, any load that is fed direct to the wheel – such as that from the brake duct winglets – cannot actually be measured. Add to that the ever-changing conditions of wind and tyre wear and one can see that accurate measurements are not possible.

That said, the wind tunnel is still the instrument of choice for development – so what does an F1 wind tunnel look like? Perhaps the first thing to understand is that on the track a car moves through stationary or near stationary air as it is driven by its rotating wheels along the ground. In a wind tunnel, we reverse that procedure and blow air past a stationary model. Under the model is what is called a moving ground plane. This is like a huge conveyor belt that simulates the difference in speed between the road and the car and that drives the wheels on the model.

The model, which by regulation can be no bigger than 60% scale, is suspended on a strut via a measuring device called a balance which can measure loads in all directions. The balance sits inside the chassis or spine of the model and to this is attached the suspension, wings and the bodywork.

In general, the wings are machined from aluminium and have their own load measuring devices while the bodywork is largely made of 3D printed materials – although carbon fibre and aluminium may be used for some parts.

The suspension is generally capable of imposing significant loads on the tyres via an active system which will simulate the tyre squash seen on the real car. The tyres are a science in themselves. They are pneumatic and the construction is such that the loads applied deform the sidewalls to exactly replicate the behaviour of the real tyre.

When I worked for teams, I would often show visitors round the wind tunnel and shock them when they saw the model and I explained it was the second most expensive car they were likely to see. A current 60% model, which incidentally weighs around 230 kg, built from scratch but without instrumentation, will cost around £750,000. The balance adds a further £60,000. ▶

PICTURES: MERCEDES; GLENN DUNBAR; ASTON MARTIN. ILLUSTRATION: BENJAMIN WACHENJE

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Aston Martin has broken ground (above) on its new Silverstone campus (top), and these plans still include a new wind tunnel

In addition to this, a number of pressure scanners will be fitted, each capable of measuring 64 separate pressure points around the model and costing over £10,000 each. You can see that building a model from scratch can easily head toward £1million.

The tunnel itself doesn't come cheap. The duct work housing the model, fan and turning vanes would set you back around £30m. The fan, with a huge 3.5MW (4,700BHP) motor, a further £11m, the moving ground system £12m, the motion system that positions the model around £7.5m, and you can add a similar amount for the control and cooling systems for the tunnel. By the time you have added a building to house it in, there will little change from £75m. When we built the wind tunnel at Enstone, for what is now the Alpine factory, it cost £800,000 in today's money just to get enough power on the site.

Once built, the tunnel is a hungry animal. Even with the current restrictions on running, the electricity bill will be around £1m; materials and maintenance over £1m. The staff to design and manufacture the model and run and support the tunnel might add a further £3m, and all this before you have actually employed the aerodynamicists whose job is to exploit all this expensive kit to try to add performance to the car.

So why would anyone spend such a vast sum to build a new wind tunnel when a ban on their use is looming just 10 years away? The simple answer is that there is no more cost-effective way to make a car competitive than aerodynamic testing and, with current technologies, the wind tunnel is the backbone of that. Aston Martin and McLaren, both of whom understand the wisdom of this, have no hesitation in committing this sort of money. Even the FIA, custodians of the budget cap, are allowing one-off capital expenditure exemptions to allow this to happen.

The days of wind tunnels are numbered, but for now they are here to stay.

ONCE BUILT, THE TUNNEL IS A HUNGRY ANIMAL. EVEN WITH THE CURRENT RESTRICTIONS ON RUNNING, THE ELECTRICITY BILL WILL BE AROUND £1M

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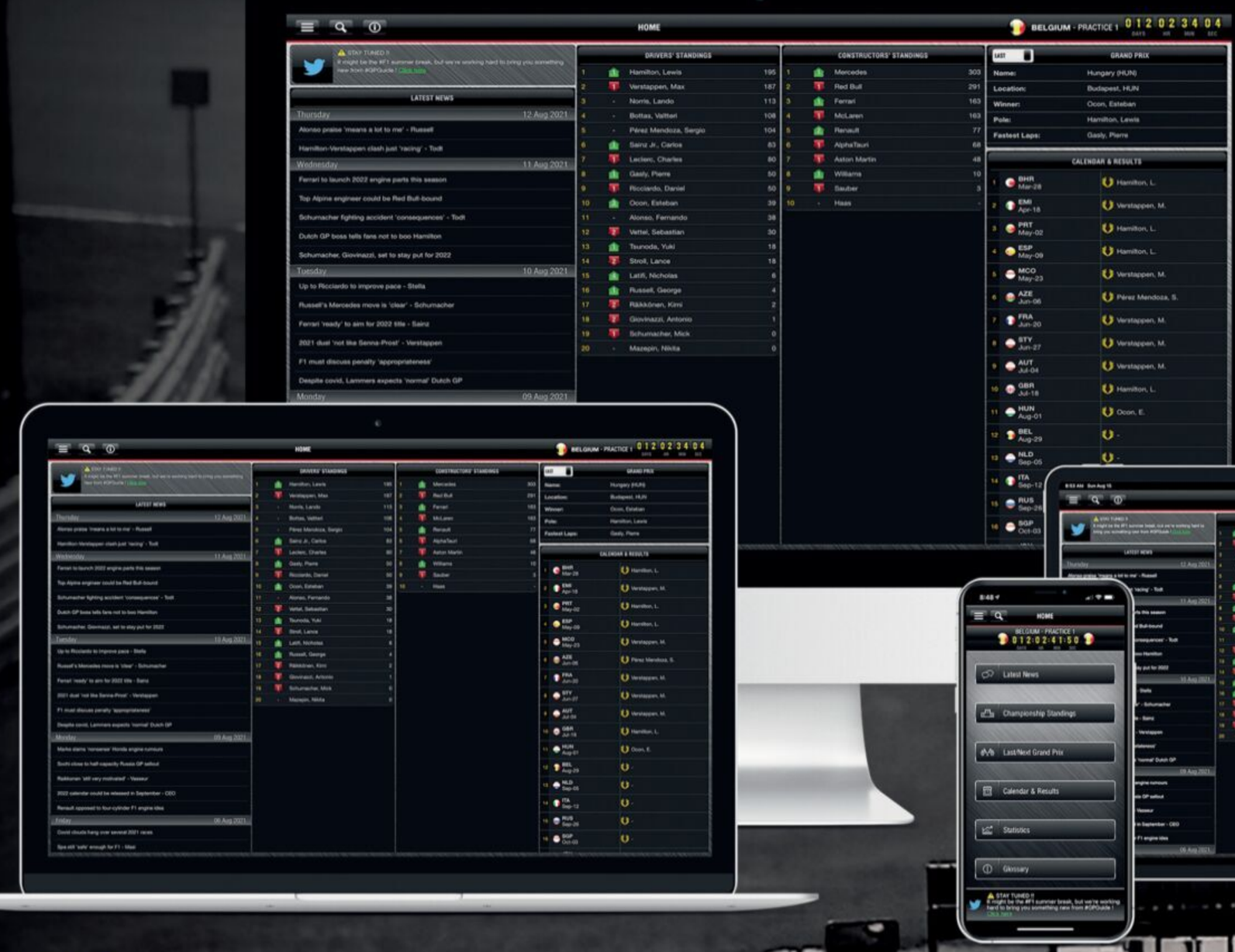

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F1 PRO

Essential guide to the business of F1

STRAIGHT TALK

MARK GALLAGHER

@_markgallagher

One might have thought that Esteban Ocon winning last season's Hungarian Grand Prix would have cemented Budkowski's future, but Alpine's CEO Laurent Rossi clearly has other ideas.

Ideas that also include dispensing with the services of non-executive director Alain Prost, albeit after apparently making the four times world champion an offer he had to refuse. Prost's bitter response to the leak of his departure suggested that he and Rossi are unlikely to swap Christmas cards...

Meanwhile, one year after being given the top job at Alpine by Renault Group CEO Luca de Meo, Rossi is now also overseeing the F1 programme, though rumours continue to the effect that Otmar Szafnauer may soon be Enstone-bound.

Rossi boasts an impressive automotive industry CV. After seven years in Renault's powertrain division, he spent close to a decade at Boston Consulting Group and Google.

Returning to Renault in January 2018, he was promoted to chief of staff to the CEO in the aftermath of the Carlos Ghosn scandal, and finally elevated to the top job at Alpine in January last year.

Rossi's top-level spring clean at Enstone comes at a critical time for the Renault Group's investment in F1.

Last year Alpine sold its 10,000th A110 model, launched an updated version and revealed that within three years it will launch a trio of EVs – a replacement for the A110, a sporty SUV and an Alpine version of the upcoming Renault 5 hatchback.

Rossi has a major road car programme to deliver if Alpine is to achieve de Meo's vision for the brand. Formula 1 must pay its way. And fifth place in the constructors' championship is unlikely to satisfy those requirements.

Alpine needs more than the odd win to justify its future in grand prix motor racing, particularly if there are easier pickings to be had in sportscars or rallying.

With F1 set to use hybrid engines for the balance of this decade, albeit with an increased electrical energy recovery and storage system, Alpine's all-electric strategy risks making a continued involvement unsustainable unless on-track success benefits the company globally.

If Rossi is genuinely aiming for Alpine to consistently compete against Mercedes, Red Bull, Ferrari and a resurgent McLaren, there is a lot of work to be done in a short time.

Formula 1 has been unkind to automotive executives who crave quick success, so all eyes will be on how Rossi's restructuring of his team manifests itself in a year when the technical rules hit the reset button.

ANOTHER SPIN FOR THE ALPINE MERRY-GO-ROUND

When Marcin Budkowski was recruited to Renault by Cyril Abiteboul in the autumn of 2017, it was not only rival teams who were unimpressed at the speed the Polish engineer was able to transition away from his previous role at the FIA.

As gamekeeper turned poacher, Budkowski's move also came as a surprise to senior figures at Enstone, blindsided by Abiteboul's decision to bring in someone he viewed as his own man.

While competitors railed against a senior figure within the FIA being able to move seamlessly to Renault, Abiteboul insisted it was a necessary move to strength his organisation's management, stressing that Budkowski would be joining in a "non-technical capacity".

Furthermore, it was part of a strategy to become a top team "by 2020".

Four years on from hiring Budkowski, the goal of the recently rebranded Alpine team becoming a top outfit remains unrealised. Meanwhile, Budkowski has followed Abiteboul in exiting the French squad as it goes through yet another management refresh.

Rossi (top) celebrates Ocon's victory in Hungary (above), Alpine's first win as the re-branded Renault team. After Rossi's latest mangement reshuffle, the buck definitely stops with him...

PICTURES: FIA POOL; ZAK MAUGER. ILLUSTRATION: BENJAMIN WACHENJE

ADVERTORIAL

Historic Dubai Grand Prix Revival

2022 NOV 25-27 Powered by Gulf Historic

The second edition of the Historic Dubai Grand Prix Revival, powered by Gulf Historic, will bring some of the world's finest historic racing cars to the magnificent Dubai Autodrome in November.

Building on the outstanding success of the inaugural event, the expanded 2022 edition will feature more than 100 grand prix and Le Mans cars racing on the 5.4km track over the weekend of 25-27 November. This year's timetable has expanded to include two separate Formula 1 categories and two grids for endurance sports-prototype and GT cars.

The event will start just five days after the nearby Formula 1 Abu Dhabi Grand Prix and run at the same time as the football World Cup in Qatar as the Middle East becomes a mecca for international sports fans.

The first F1 grid will celebrate the era of Ford Cosworth DFV engine, featuring cars from 1970 to 1985. This is the era of great drivers such as Jackie Stewart, James Hunt, Niki Lauda and Nelson Piquet. While these famous cars will race, the second F1 session will be for cars from 1988 to 1994 running in high-speed demonstrations. The fabulous cars from the era of Ayrton Senna, Nigel Mansell and Michael Schumacher ran with V10 and V12 engines and the noise made by these cars is extraordinary. In both cases, the grids will be full of genuine cars running in their period liveries.

The sportscar grids will recreate international endurance racing across nearly 40 years, from 1982 to 2010. The first grid will be for the cars from 1982 to 1993 and will include Group C, IMSA and GTP cars from Europe and North America. The Group C era was one of the finest in sportscar racing history as machines from Porsche, Jaguar, Mercedes and Nissan battled for Le Mans glory. The second grid features GT and Prototypes from 1994 to 2010, including 200mph monsters from Le Mans and IMSA.

Both the Formula 1 and sportscar grids will be packed with the cars that made history across half a century and, though incredibly rare and valuable, they will be driven with great commitment by talented racers.

"Everything at the HDGPR is turned towards the public," says Romain Dumas, twice winners of the Le Mans 24 Hours. "The circuit is fantastic and the crowds provide great energy. It's a really wonderful meeting which I hope to attend again in 2022."

The Dubai Autodrome has been a mecca for motorsport in the region since its construction in 2004 and the 24 Hours of Dubai has become an important date on the international sportscar racing calendar.

Away from the spectacular on-track action there will be a wonderful range of attractions and activities to make this an event for the whole family. The weekend will include a 1970s-themed dress code, traditional music, dancing and marching bands, classic car concours, a bicycle race around the track for competing drivers and a gala dinner that promises to be a highlight of Dubai's winter social diary.

"Enthusiasm for track-based motor racing in the Middle East has been steadily building in recent years, notably thanks to the region's growing influence on the Formula 1 calendar," says Pierre-Brice Mena, Managing Director of event organiser GP Extreme. "The HDGPR – powered by Gulf Historic – taps into the spirit of the first Dubai Grand Prix, which was held in 1981 and was ahead of its time."

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THE 2022 SEASON PREVIEW

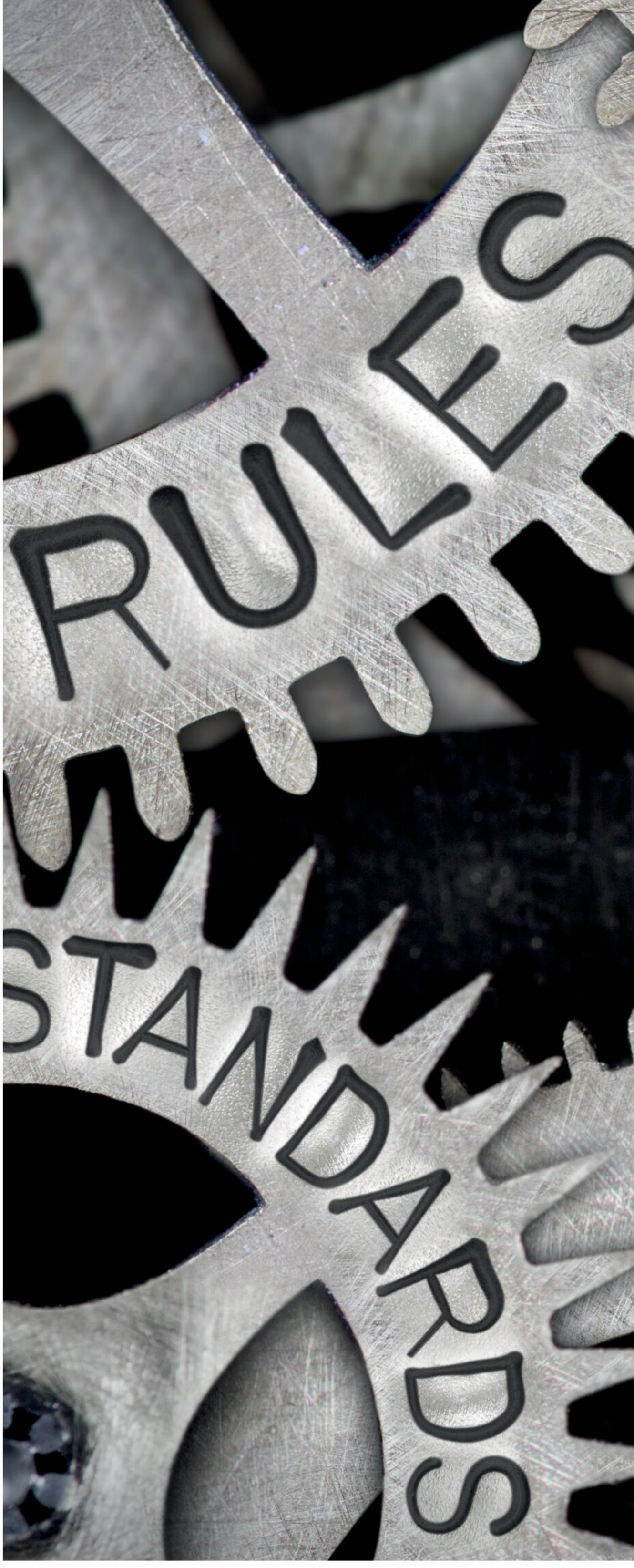
A major rules overhaul, some key driver swaps and a brand new race. This is year zero for Liberty Media's true vision for Formula 1, and there's a lot riding on it after last season's epic title contest...

2022 SEASON PREVIEW | CHAPTER 1

REVOLUTION

1.1 2022 AERO RULES EXPLAINED
1.2 SUPERSIZE MY WHEELS
1.3 NEW FUEL, FROZEN ENGINES
1.4 F1 GOES (PARTLY) ONE-MAKE
1.5 ROSS BRAWN BETS THE HOUSE

After a year's delay enforced by the global pandemic, F1's major rules reset is finally here – and the cars are going to look very different as a result...



1.1

F1 ALTERS YOUR WINGS

'Ground-effect' returns as wings become less important – in theory...

WORDS STUART CODLING PICTURES motorsport IMAGES

For many years now, Formula 1 has grappled with the issue of overtaking: there's not enough of it, and most solutions thrown at this problem either haven't worked or have actively made it worse.

F1's radical new look for this season is the result of five years' work led by *GP Racing* columnist and former Benetton technical director Pat Symonds, alongside Nikolas Tombazis, the FIA's head of single-seaters and former chief designer at Ferrari. This is the first time a big regulatory change has been rigorously researched, and conceived as a complete system in which every area of the car works together to achieve the stated aim – theoretically, at least.

The key factor restricting overtaking opportunities is turbulence. When a car gets into the 'wake' of the car ahead, it loses aerodynamic

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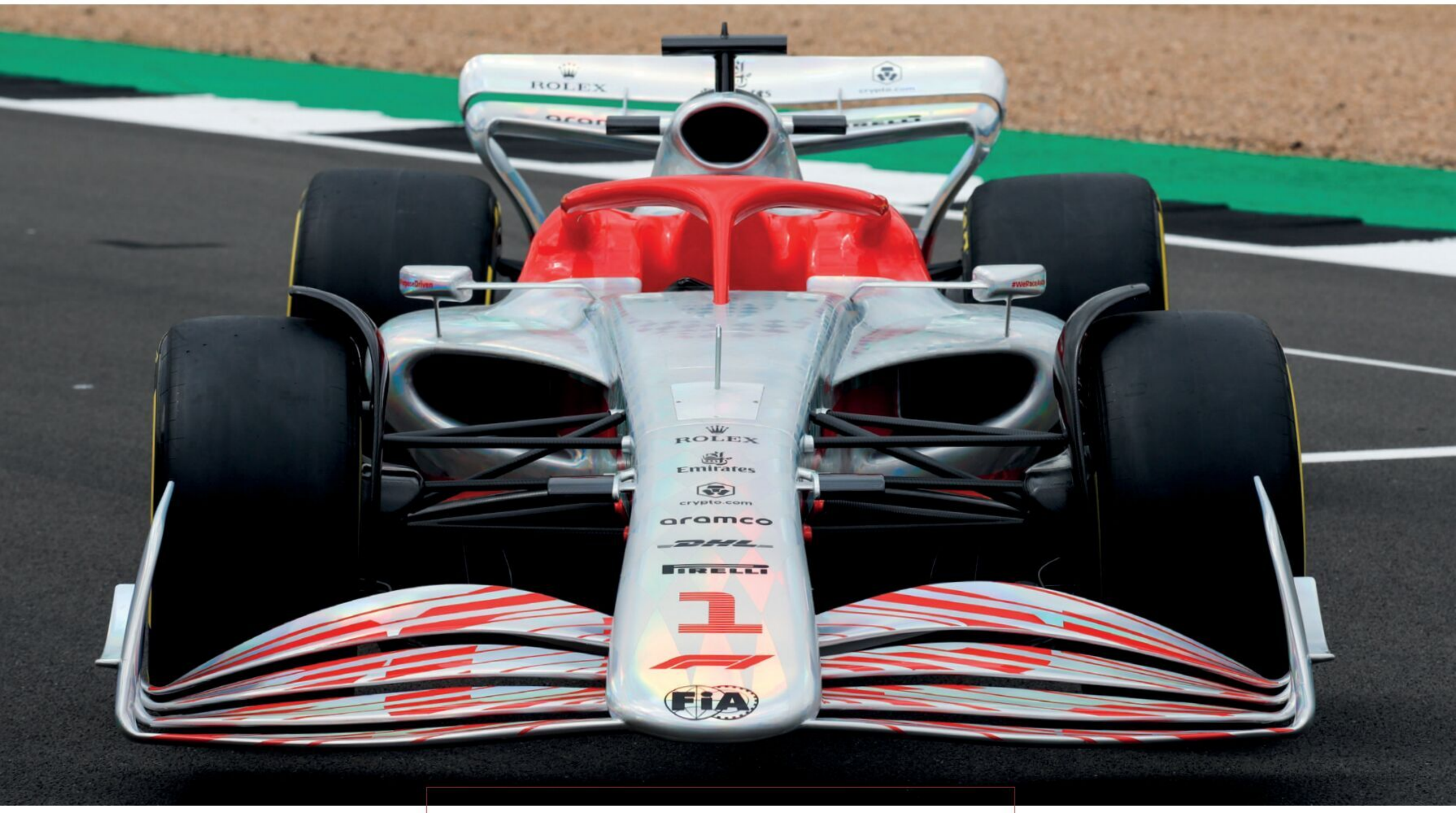


Formula 1's work culminated in this model interpretation of its own rules, revealed in July last year. Then it was over to the teams...

performance as its wings become less effective. Through corners it washes into understeer and loses ground it then must recover on the straights.

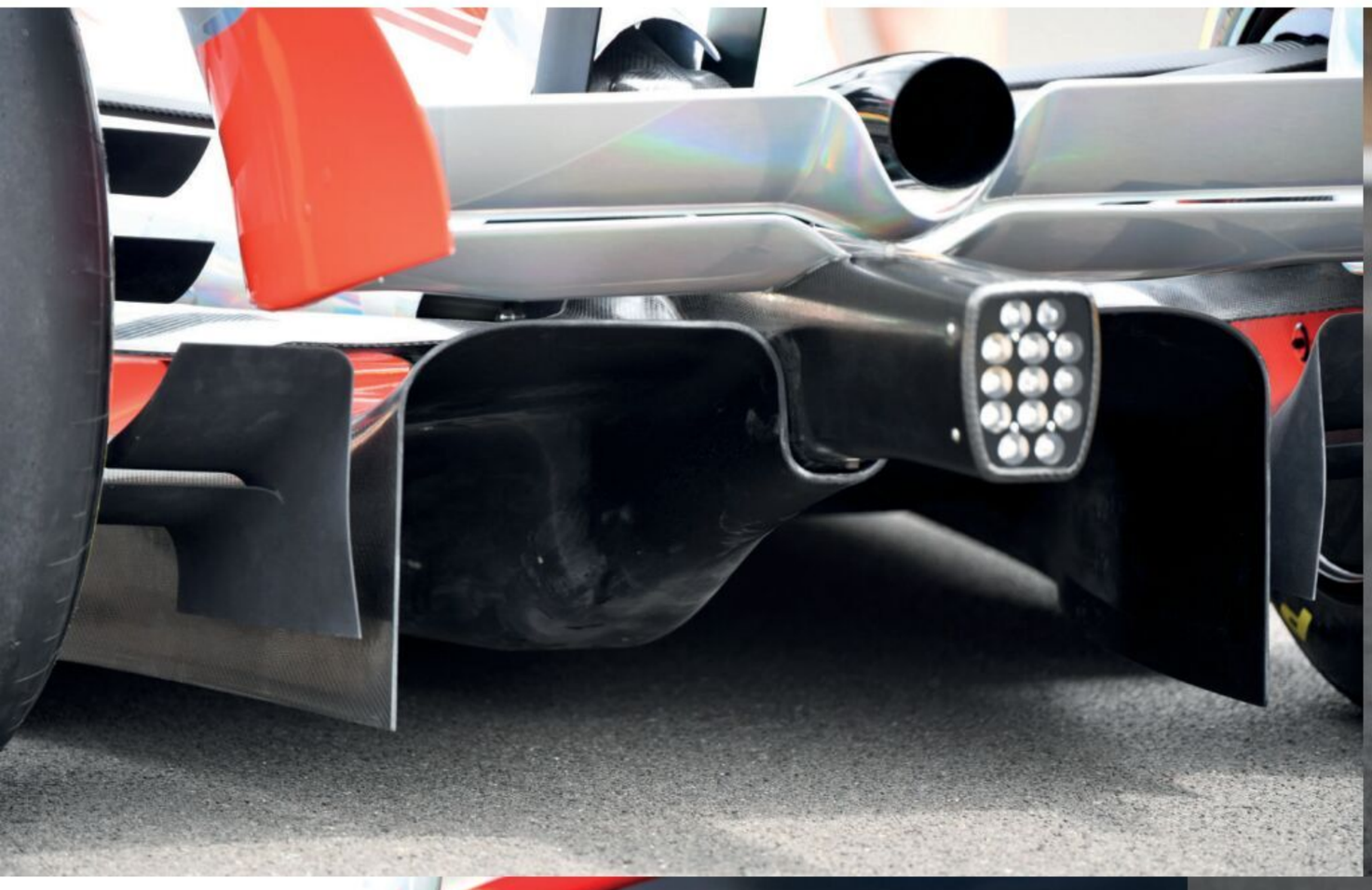
Previous attempts to redraw the cars to improve overtaking have failed, largely because of unintended consequences which could have been identified with more research, or by asking better questions. The 'widebody' formula adopted in 2017 was intended to make the cars faster and more dramatic-looking, which they were, but they created an even more turbulent wake.

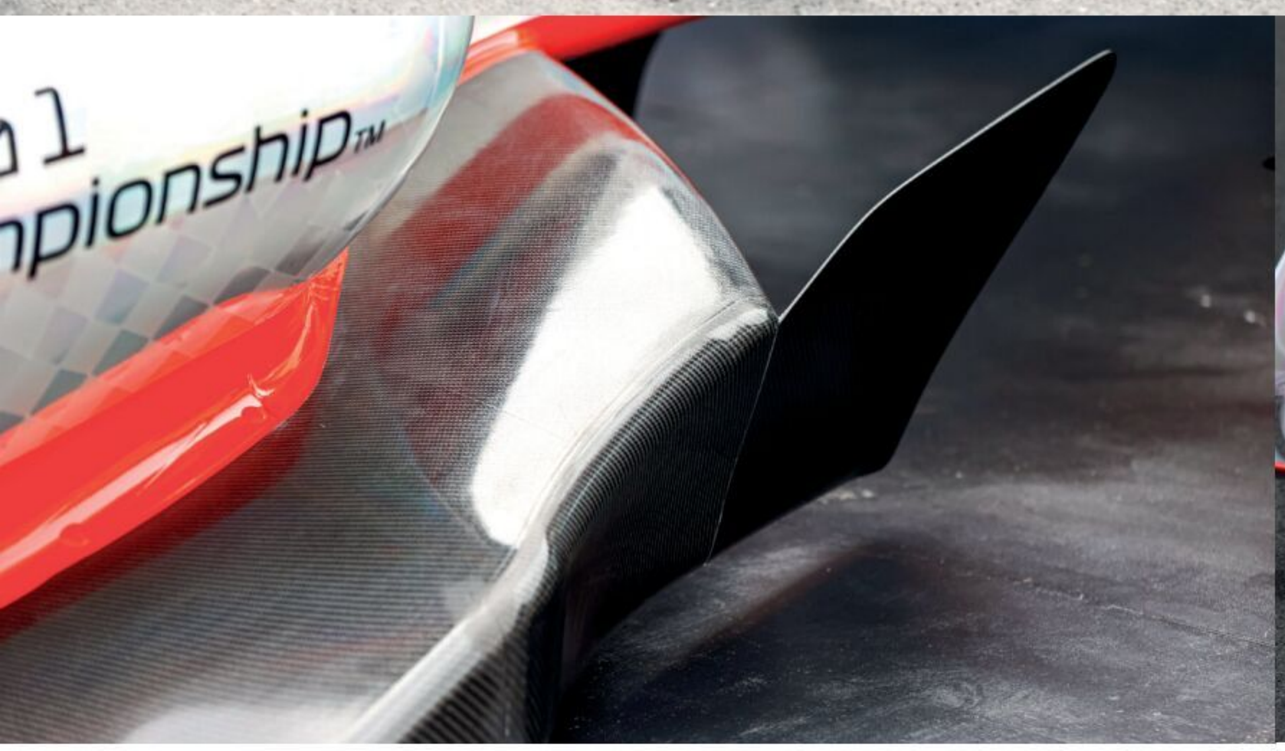
This year's package is a fundamental change to the balance of how downforce is generated, making the wings less influential and the wake less turbulent. F1 and the FIA have also been able to simulate the effects on following cars, using computing power well beyond the limits teams currently must work within.

The front wing remains an important area since this is the first part of the car which meets oncoming air, but it has been enlarged and simplified. Among the biggest changes is the removal of the gap between the multi-level horizontal wing elements and the nose; previously designers would use the inner tips of these elements to set up vortices which swept air outwards towards the bargeboards (which have now been banned). The permitted number of these elements has been reduced from five to four, and there are strict limits on their angle, shape and how far they can overlap. In combination with wider noses and simplified endplates, and the removal of nose furniture such as capes and ducts, the aim is to make the front wings produce less downforce (despite a larger surface area) and therefore be less critical to the car's performance.

The most far-reaching change comes under the car where the floor is no longer flat, as it has been by law since 1983. The central wooden 'plank' remains, to prevent teams running their cars too low, but on either side of it there are now long channels running the full length of the chassis. Each one has a wide opening and then narrows as it passes around the plank before widening again. Four vertical fences are permitted at the openings to generate vortices which help to pull airflow through the tunnels towards the exit, which ramps upwards and functions like the diffusers used in the previous generation of cars. Speeding up airflow creates negative pressure which pulls the car downwards, increasing cornering grip.

THE MOST FAR-REACHING CHANGE COMES UNDER THE CAR WHERE THE FLOOR IS NO LONGER FLAT, AS IT HAS BEEN SINCE 1983





At the rear, the exit ramp of the underfloor tunnels interacts with the lower beam section of the new rear wing to direct air upwards rather than outwards, so the following car encounters less turbulence. The rest of the rear wing is now one curved section without endplates, slats and sharp edges which can be used to generate vortices which are beneficial to the car but detrimental to the one following. The inward sweep at the base of the wing is intended to help pull the airflow over the car between the rear wheels, narrowing the wake.

Will this result in cars being able to follow one another closely? "So far everyone has been playing with models," says Haas technical director Simone Resta. "We will only be able to judge once we can stay one second behind another car in a fast corner…"

F1 is confident it will work. It began by buying the defunct Manor team's 2017 wind tunnel model and design data, which it analysed in the Sauber tunnel to establish a baseline of wake turbulence. Most recently, after evaluating its own models, it's been able to use the cloud computing power of AWS to perform a computational fluid dynamics (CFD) simulation of two cars running together. Under the current restrictions on aero research, it takes a team around 14 hours to complete a single CFD simulation.

"If we wanted to use that same technology and computational power, then a two-car simulation with double the number of cells gets you to 550-600 million cells – and that would be four days," F1's lead engineer Rob Smedley told *GP Racing's* sister title *Motorsport.com*. "It's a barrier to the research and development needed.

"The first iteration was spinning up in their [AWS's] EC2 service, at 1000/1100 cores, and version two, we're up to about 2500 cores. It got that design iteration down from four days to around about six to eight hours.

"We can't hope to get it right first off. But let's have a look to see that we've made a step forward. If we've made a step forward, and then there's more fundamental steps we can take, after one year of learning in 2022, let's continue to do that."

1.2.

THE WHEEL DEAL

New 18-inch wheels mean a leap into the (almost) unknown for F1's tyre supplier

In a world in which those wealthy or tasteless enough to covet a Bentley Bentayga can spec one with 22-inch rims, the sight of F1 cars riding on 13-inch wheels has become increasingly anachronistic. Sizing up to 18-inch items brings F1 closer to the showroom while asking new questions of engineers and aerodynamicists – not to mention the company charged with the task of supplying the grid.

It's also had the effect of making cars heavier, though the larger wheels aren't the sole reason for the minimum weight creeping up to 795kg.

Once shod with Pirelli's new family of rubber, the wheels will stand 60mm taller than before. The construction of the tyres is all new, and the shorter sidewalls will necessarily be stiffer. We'll see the tyres moving around far less under extreme cornering forces. That means there's much to learn in terms of tuning the suspension geometries and working out how the behaviour of the new tyres influences the airflow. It was incredibly difficult to simulate the sidewall deformation of the old tyres in the windtunnel, given the differences in scale between the models and real life.

Drivers will be hoping Pirelli has delivered on its brief to create tyres less prone to thermal degradation, a characteristic introduced a decade ago in the belief that it would lead to more unpredictable racing. While that was true in the short term, as the years went by it caused the opposite: processional races with no strategic variation as drivers were instructed to stick to a target laptime far slower than their cars were capable of. Are the days of having to nurse the rubber coming to an end? We'll have to see.

In recent years Mercedes has made great gains through careful control of heat transfer from the brakes, through the wheel rim and on to the tyres. These kinds of tricks are now off the menu since wheels are now standard items from a single supplier (BBS), removing the ability to add cooling fins and such.

The teams have had a chance to evaluate the new wheels and tyres, albeit on previous-generation cars with ballast added to bring them up to the new minimum weight. Since these couldn't accurately simulate the aero loadings of the new cars, some engineers have downplayed the usefulness of the tests – but others disagree.

"Learning this new product that is very different, how it interacts with the new regulations, is an important aspect," says Simone Resta. "As a company we made an investment [in a mule car] to test those tyres in Silverstone and Abu Dhabi last year, which was an interesting and valuable experience for us."

1.3.

FROZEN, BUT THE STORM RAGES ON...

Engine development is frozen – but can cunning companies test the limits?

One of the measures brought in to control costs retreads territory familiar in Formula 1: an engine freeze. Theoretically the power units raced this year must remain identical in spec until the end of

Bigger wheels (below) have been on the agenda for a while but are now are just another part of a much larger rules shake-up

AS WITH THE V8 ERA ENGINE FREEZE, WHICH LASTED FROM 2007 TO 2013, THERE IS A MECHANISM BUILT INTO THE THE RULES WHICH PERMITS MODIFICATIONS

2025, after which a new engine formula is due to be introduced.

But, as with the V8 era engine freeze, which lasted from 2007 to 2013, there is a mechanism built into the rules which permits modifications "for the sole purpose of reliability, safety, cost saving, car installation and supply issues". After the 2.4-litre V8 engine specs were frozen at the end of 2006, many manufacturers shamelessly exploited the rules to introduce 'reliability' improvements which also boosted performance.

While there's no provision in the rules to allow a team to catch up if it finds a fundamental flaw in its power unit, the FIA has said it may consider permitting some development if such a scenario comes about. Mercedes and Red Bull are basing their power units on those they used last year – Mercedes will hope it has conquered the reliability gremlins which manifested themselves mid-season – while Ferrari and Alpine are introducing new internal combustion engines in a bid to make up a small shortfall in power.

"You would naturally think that's going to stop developments," says Mercedes AMG High Performance Powertrains boss Hywel Thomas. "And I'm sure it will, in terms of peak power. But what we do know, from when we were in that situation in the V8 days, was that there was still a lot going on in that engine."

One of the biggest concerns for the teams has been the mandatory introduction of E10 petrol, a fuel which has become standard in the UK and many other territories. Thomas describes it as "probably the largest regulation change we've had since 2014 [when the hybrid V6 formula was introduced]." It has 10% ethanol content, with the aim of reducing carbon emissions. But while ethanol has just a quarter of the carbon atoms per molecule found in petrol, it has a lower energy density. The effect is that you have to burn more of it to produce the same amount of power.

Methanol does have some benefits to performance, since it has a better cooling effect than petrol and is more resistant to pre-ignition (when the fuel-air mixture ignites during the compression phase of the cylinder stroke, before the spark plug fires). All the power unit manufacturers have had to pay close attention to the impact the new fuel will have on the behaviour of the internal combustion engine.

"The engine architecture had already been set [last season]," says Honda's Yasuaki Asagi,

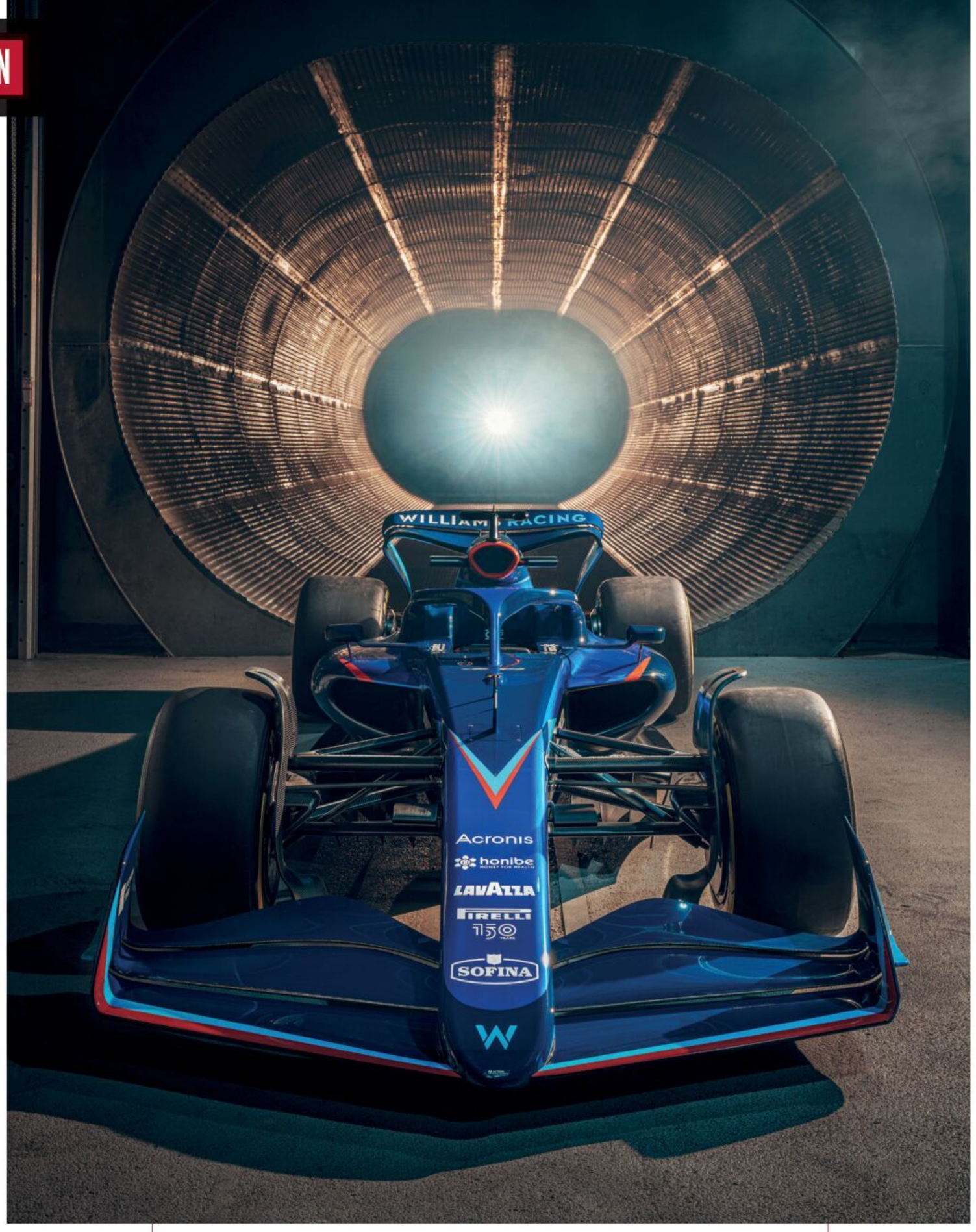
"so we have made changes to bring out the best performance. With E10 fuel the power and energy that it has with the same weight are reduced That is the characteristic of alcohol fuel.

"On the other hand, the abnormal combustion [pre-ignition] of the old fuel will be easier to control now. We are aiming for maximum efficiency, but with E10 fuel the power of the engine will also decrease and the amount of power generation will also decrease."

1.4.

THE SUM OF ITS PARTS

F1 isn't about to become a one-make championship, but cost cuts will mean more standardised components



Williams and a number of teams launched using renders of the F1 show car. When the teams hit the track interpretations varied but it is mainly under the skin where listed components are to be found

Formula 1's 'listed parts' system has been refined with a view to further driving down expenses, and enabling competitors to effectively collaborate on improving many of the parts which are standardised. At the same time, it aims to stop teams copying or reverse-engineering each other's work, as with as Racing Point's controversial 2020 'Pink Mercedes'.

Parts now fall into four categories. Listed team components (LTC) covers what used to be known as listed parts, components for which each team is responsible for designing and constructing. These are the areas which are fundamental to a car's performance and design concept, such as the survival cell and front impact structures, plus all aerodynamic components – including wheel drums. Rules allow these to be "influenced by the design or concept of a competitor's LTC", but strictly forbid cloning techniques such as using computer software to extract surfaces and geometries from photographs.

Transferrable components (TRC) are what used to be known as non-listed parts, the components teams are allowed to supply to one another. This is a much longer menu comprising bits which are essential for a car to function but have very little differentiating effect on laptime – assorted pumps and actuators, gearbox and clutch components, axles and suspension members, mountings and electrical looms and so on. Teams must supply the same TRCs they use themselves and, to comply with budget cap regulations, be transparent about their cost and fair market value.

The third category covers spec parts used by all teams and outsourced to suppliers designated by the FIA. Known as Standard Supply Components (SSC), these must not be modified to enhance performance. The list includes items such as the standard ECUs, fuel flow meters and Pirelli's tyres. New for this year are the standardised wheel covers supplied by BBS and the mandatory tyre pressure sensors mounted in each wheel.

Open Source Components (OSC) is the category which has required the biggest shift in mindset. First proposed in 2019, when teams pushed back against proposals for a bigger list of standardised parts in this year's new technical package, this will enable competitors to redesign certain parts.

Among the key objections to imposing more standard components was the effect they might have on performance, reliability and weight, plus the additional costs involved in validating them. The OSC category theoretically enables teams to pool their knowledge and reduce research costs. A requirement to publish the designs should act as a cap on performance-related development.

"The best design eventually percolates through all the teams," said Mercedes chief technical officer James Allison when the idea was floated. "It then ceases to be an area where any of us would particularly want to spend development money, because a good design is out there."

The list includes structural elements such as the front floor, and covers elements of the steering, braking and fuel systems as well as the DRS actuator, driveshafts and axles. But, given the nature of F1, it will take time to bed in because teams generally don't finalise designs until the last possible minute.

"You couldn't sit there waiting for the open sources design to come from a competitor," said Allison, "thinking, 'I won't do that myself, I'll just wait for it to appear on the internet.' Because by the time it appeared it would be too late."

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1.5

IN CONVERSATION WITH

WORDS LUKE SMITH
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ROSS BRAWN

Huge resources have gone into this year's overhaul of the F1 rules, promising better racing – but will it live up to the hype? F1's managing director of motorsports explains why the work isn't over yet...

Unlike previous big regulation changes, the 2022 overhaul has been driven by work between Formula 1 and the FIA together, with a dedicated team. How useful has that been?

This is certainly the first time in my time in Formula 1 that such effort has been put into the type of cars we go racing with. The system before relied on the teams providing the resource, and I've been part of that. This sort of initiative is never the priority for the teams. Having a group of people that have been working on this as their main priority is very exciting. Due to the nature of the new regulations, inevitably when we start the season, we may see some scatter in the performance of the teams. I think that's unavoidable. But also, it was unavoidable to not go down that route. I think staying where we were, it was just going to get worse and worse.

It also sounds like there will be more of an evolutionary than a revolutionary approach taken to revising the rulebook in the future?

The thing to remember is the team are not stopping here. As soon as the cars start to appear, we can analyse how they're achieving their performance and we can evolve it. We can start to tune the regulations to keep it going in the right direction. If something comes along that's horrible that we definitely don't want and it's causing problems, then theoretically, as long as eight teams agree and the FIA agree and F1 agree, we can change it, which we couldn't do before.

We've now had a first look at the cars. Can you sense any arguments or disputes appearing already in the grey areas of the rulebook?

There's bound to be. It wouldn't be F1 without disputes! It would be naive to think we're not going to have arguments.

When the new regulations were first discussed, it was expected the cars would be several seconds per lap slower than in 2021. But teams have predictably clawed that time back to be around the same pace. What kind of performance are you expecting?

I don't think we made a performance prediction. We said let's target a couple of seconds less than where we are now, because that's what the teams would make up when they got hold of the designs. I'm not surprised by what's happened, and personally I'm not concerned. Over time there'll be some trimming of the lap time to keep it in a certain region. We keep it within a margin. I'm pretty comfortable that's where we'll be. We'll see what the development rate is and decide if that needs adjusting in the future.

Does the success of 2021 pose a headache at all? It was such a close title fight, and now we may now see the field spread out again?

2021 was a great season between two drivers. I know we had a bit of variation in terms of who won races, but most of it was down to unusual circumstances. We only really had two drivers and two teams in the world championship. It was a great season from the point of view of entertainment and battles. But we really would like to see more teams in that battle.

"IT WOULDN'T BE F1 WITHOUT DISPUTES! IT WOULD BE NAIVE TO THINK WE'RE NOT GOING TO HAVE ARGUMENTS"

Are you expecting a natural change in the pecking order under the new regulations, like your race team in 2009? Could we see Mick Schumacher and Haas winning races?

Any win has to be on merit. I honestly don't think the regulations will change the general order of things dramatically. I think it will bring it a lot closer. We'll have a bigger group of competitive teams. As we know, we either expected a Mercedes or a Red Bull to win the race unless something different happened.

But we're blessed with a number of great drivers in Formula 1 today: Lando Norris, the Ferrari drivers Charles Leclerc and Carlos Sainz, and we've got George Russell in the Mercedes. I think there's any number of combinations of drivers that will give us a fantastic season. And if there's three or four of them mixing it up, that's even better.

Liberty has been clear in its ambition to work with the FIA to create a more competitive championship and exciting on-track product. How important is it for the commercial rights holder that the new rules are right?

We wouldn't have done it unless we thought it was worth doing. We had a fantastic season last year, but if you look over the past seven or eight years, it's been dominated by Mercedes, which I think had quite a lot to do with the engines. We're hitting a sweet spot in terms of power units. There's no power unit which I think will be well out of the running.

I think we could be entering a great period. There is lots of optimism for the season. And I think we'll see some interesting results this year from some of these young hotshoes who are coming through. If they get the right car behind them, we can all have a lot of fun.

2022 SEASON PREVIEW | CHAPTER 2

THE DRIVERS

2.1 HOW DOES LEWIS BOUNCE BACK?
AND THE (SORT OF) NEW FACE AT MERCEDES
2.2 F1'S NEW ALFA MALE: BOTTAS EXCLUSIVE
2.3 YEAR OF THE TIGER: CHINA'S FIRST F1 DRIVER
2.4 ALEX ALBON: THE WILLIAMS NEW BOY

There's been some significant reshuffling of F1's driver line-ups over the winter but overshadowing all of that is how last year's deposed champion recovers from *that* race in Abu Dhabi

2.1

A FIRE STILL BURNS

There was talk of Lewis Hamilton walking away from Formula 1 after the events of last season. But no. What Lewis saw as injustices lit a "righteous fire" within him, says his Mercedes team – and it hasn't gone out...

WORDS ANDREW BENSON PICTURES MERCEDES & motorsport IMAGES

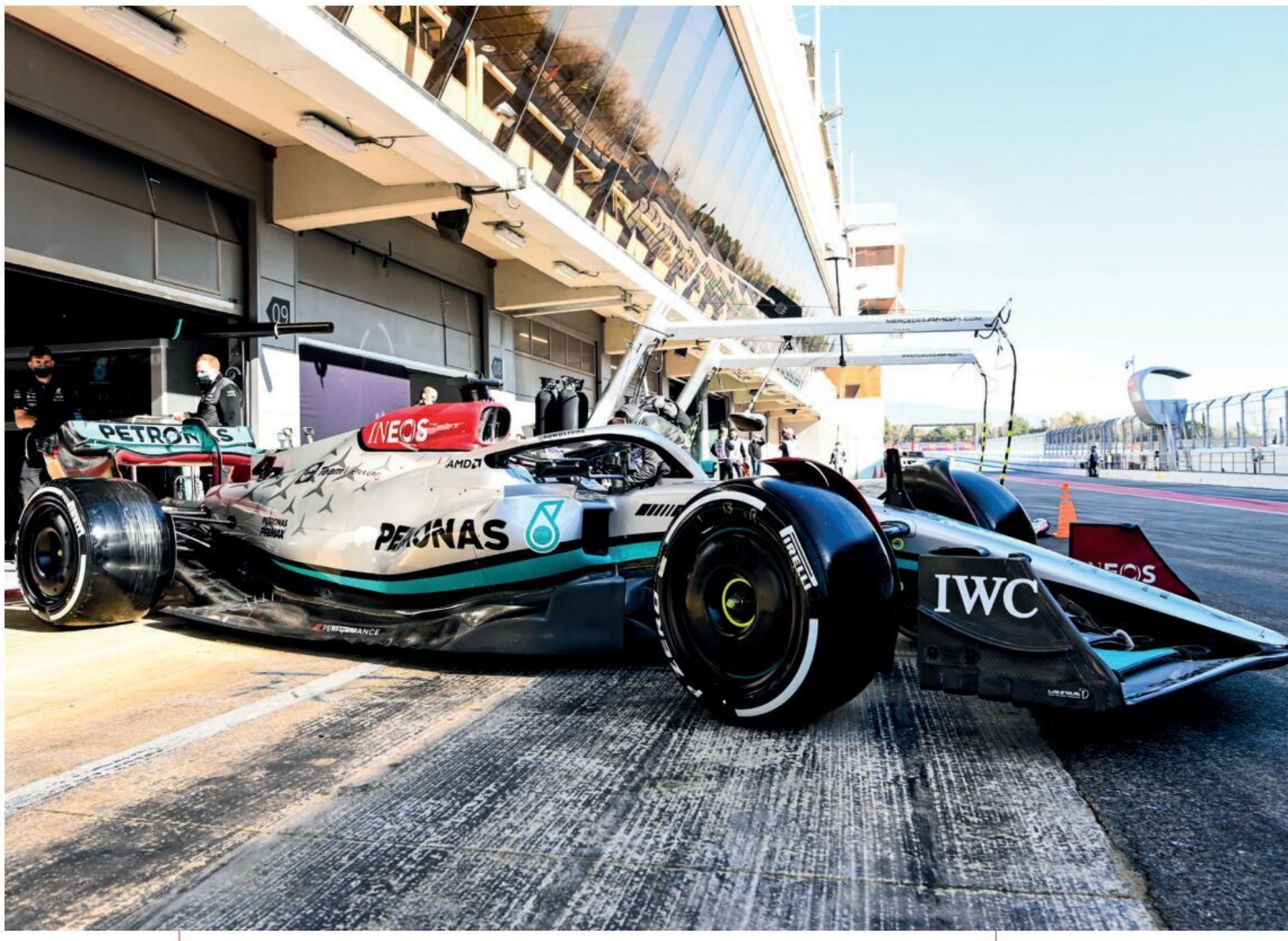
When Lewis Hamilton was disqualified from qualifying at last year's São Paulo Grand Prix on questionable grounds, something happened inside him.

The Mercedes team saw it as an injustice; being sent to the back of the grid for the sort of minor technical infringement that would normally be treated with a quiet "fix that and don't do it again" from officials. Hamilton, equally affronted, retreated within and found new strength.

And inside Mercedes, they noticed. "They've just lit a righteous fire underneath him," one senior figure told this writer that weekend. "And it's going to carry him all the way to the world title."

Had it not been for race director Michael Masi's decision to

IN THE END – INEVITABLY – HAMILTON DECIDED HE WANTED TO CONTINUE. DEEP DOWN, HE STILL LOVED F1. HE STILL FELT YOUNG



After some soul searching Hamilton returned to action at the Barcelona test, ahead of what will be his 16th season in F1

freestyle with the rules at the season finale in Abu Dhabi, that prediction would have been spot on. The disqualification in Brazil led to a run of four races that has to be considered among the best of Hamilton's illustrious career.

Interlagos was remarkable. Starting Saturday's sprint event from last, he finished fifth, after an exquisitely clinical climb through the field. Demoted to 10th on the grid for the grand prix with an engine penalty, Hamilton was third within four laps, survived title rival Max Verstappen taking both off the track in trying to defend his lead, and went on to win.

There followed a performance of crushing superiority in Qatar. In Saudi Arabia, Hamilton kept his cool behind a Verstappen who seemed prepared to do almost anything to win, and again it was the Mercedes man who triumphed.

And then, after a brilliant pole lap from Verstappen in Abu Dhabi, Hamilton got a better start, dodged another beyond-the-limit passing attempt from the Red Bull driver on the first lap, and went on to dominate the race. He was on course for the title, before Masi ignored the rules in two different ways to set up that infamous, unequal one-lap shoot-out.

After some cursory comments to the TV cameras, Hamilton then disappeared to contemplate what had happened. He removed himself from the public eye and headed to Colorado, where he always spends the winter.

During that nearly two months of silence, it emerged that he was seriously considering his future. "Disillusioned" with the sport he loved, as Mercedes team principal Toto Wolff put it, Lewis needed some time to think.

Hamilton wanted to digest the way in which he had lost what would have been a record eighth world title. And he was keen to see what governing body the FIA was going to do about the failings exposed in Abu Dhabi.

In the end – inevitably – Hamilton decided he wanted to continue. Deep down, he still loved F1. He still felt young. He realised he had a lot more to give.

All of which leads to one thought – if the relatively minor events in Brazil led Lewis to what he did in the final four races of 2021

just how big is the “righteous fire” burning inside him as he embarks on the new season, and what could be its effect?

“That fire’s not gone out,” the insider says.

Looking back, Hamilton describes the weeks following Abu Dhabi as “a difficult time”.

“The sport I loved,” he says, “there was a moment when I lost a little bit of faith in the system. But I am generally a very determined person and I like to think to myself that while moments like this might define careers, I refuse to let this define mine.

“I just unplugged, switched off. I deserved that anyway, but I had my family around me. It is a rare occasion when we’re all together, and I just focused on being present with them, took time to digest what happened – and it is still difficult to fully understand everything – but to come back stronger.

“The experience was very clear in my mind and it replayed in my mind a lot. I don’t remember what I said to Max. I have not revisited it. I don’t particularly want to go backwards. I want to look forwards. We can’t change the past. Nothing will ever be able to change how I felt at the time or how I feel about the situation.

“Through these experiences you can turn these emotions into power and strength and that’s what I’m doing. If you think what you saw at the end of last year was my best, wait ’til you see this year.”

“YOU CAN TURN THESE EMOTIONS INTO POWER AND STRENGTH. IF YOU THINK WHAT YOU SAW LAST YEAR WAS MY BEST, WAIT ’TIL YOU SEE THIS YEAR”

The events of Abu Dhabi created a complex mix of reactions. That what happened was wrong was not in question. Hamilton, on his way to the title, undoubtedly had his fate changed by Masi’s decision to make up the rules governing the re-start.

As Hamilton’s new team-mate George Russell puts it: “He had that race completely under control, and he only had to bring it home and he’d have been an eight-time champion and he had that completely taken away from him.”

But at the same time, had the rules been adhered to correctly, there were still ways in which Verstappen might have ended up on top. By winning a new standing start or passing Hamilton after it, had the race been stopped, for example. Or, if the lapped cars had all been left in place, by clearing them at a restart behind the safety car and then passing Hamilton.

And while in many ways Hamilton deserved to win last year’s title, so in just as many did Verstappen. Both had outstanding seasons; their performances were difficult to separate over the year, on the points they scored, but also on a more subjective assessment of their seasons.

Hamilton, one suspects, recognises this. And while the FIA has not, as yet, explicitly admitted that mistakes were made in Abu Dhabi, the changes it has introduced as a result are a tacit admission of it.

Masi has been replaced by an alternating pair of race directors. Race control has been beefed up, with extra layers of support, and a new remote race control office, similar to the virtual assistant referee in football. And perhaps most telling of all, a face from the past is back.

Herbie Blash was the right-hand man of former FIA F1 director Charlie Whiting, whose death on the eve of the 2019 season led to Masi's promotion. Blash, who went back decades with Whiting through their shared histories at the FIA and, before that, Bernie Ecclestone's Brabham team, had retired from his position of deputy race director at the end of 2016. Now, at the age of 73, he's back in a new role as the permanent senior adviser to the new race directors Eduardo Freitas and Niels Wittich.

Despite all this, it is clear Hamilton still has some way to go before his trust in the powers that be is fully restored.

"I put faith and trust alongside each other," he says. "Trust can be lost with a flick of a finger but to earn it is built over a long period of time.

"It's good to see the FIA are making changes. Accountability is key. We have to use this moment to make sure this never happens to anyone ever again. We have to make sure we are seeing those changes and rules are applied fairly

"THE FIA ANNOUNCEMENT IS THE FIRST STEP, BUT IT DOESN'T NECESSARILY CHANGE ANYTHING JUST YET. WE HAVE TO SEE ACTION"

and accurately and consistently.

"The FIA announcement is the first step but it doesn't necessarily change anything just yet. We have to see action and it will take a bit of time, but I am not really focused on that area yet. I am putting every ounce of energy into making sure I am the best you have ever seen."

The winter has left many questions unanswered. What exactly was agreed in the three days of talks between Mercedes and the FIA in the wake of Abu Dhabi that culminated in the world champion constructor withdrawing its appeal against the result? How much did Hamilton's silence, and the implicit threat contained within it, influence the outcome of the FIA's inquiry into Abu Dhabi and the fate of Masi?

Perhaps no answers will ever come. But one thing is clear. The shadow of the 2021 season

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THE (SORT OF) NEW FACE AT MERCEDES

While Lewis Hamilton was in the mountains of Colorado this winter, brooding over the loss of an unprecedented eighth world title, his new team-mate George Russell was practically living at the Mercedes factory in Brackley, building relationships with his new team.

Russell's arrival as Hamilton's team-mate inevitably means a period of adjustment, a new dynamic at Mercedes.

The 24-year old has already marked himself out for potential greatness in a way Valtteri Bottas never had – from his starring performance when he subbed for Hamilton in Bahrain in 2020, to the breathtaking things he did in the Williams, such as out-qualifying Hamilton in the wet at Spa last year.

Expectations are high – and Hamilton has already talked about how he wants to help Russell grow, as the next British driver he wants to see win the title. But will increased expectations also lead to increased tensions?

"This year the interesting situation is that we have with George an up-and-coming star and undoubtedly the best F1 driver ever in the other seat," team boss Toto Wolff says. "The dynamic is new and is something we will try to steer in a direction that it has the most positive effect."

For now, Russell is saying all the right things. Ask how he feels now he is a potential title contender, and he insists he has "not even thought about it".

"My main goal is to have the team and car around me to develop the car in the correct direction to give us the best opportunity over the next two, three, four years," Russell says.

"Lewis and I need to work together. We can't focus too much on each other because things are changing. We hope Mercedes will still be the fastest car but there are no guarantees and we need to work together to make sure we are."

Everyone expects Russell to run Hamilton closer than Bottas did, but there is risk as well as opportunity for Mercedes' new driver. He has his hands on a front-running car but will now be measured against the toughest yardstick there is, perhaps the toughest there has ever been.

will inevitably hang over the year ahead.

The rules have changed. The whole grid is hoping for a reset, and a closer fight through the field. Ferrari expects to be competitive again. But it's hard to imagine that Hamilton and Mercedes won't be major contenders, or that Verstappen and Red Bull won't be among their closest rivals.

"This has nothing to do with Max," Hamilton says. "Max did everything a driver would do given the opportunity he was given. He's a great competitor and we will go into another battle like we did last year and we will grow from our races and experiences we had last year. No issues with him. I don't hold any grudges with anyone. That is never a good thing to carry around with you. I move forwards. I don't dwell on the past."

In the weeks leading up to Bahrain, Hamilton and Mercedes will be focusing on getting on top of a car designed to regulations that amount to the biggest change seen in F1 for 40 years.

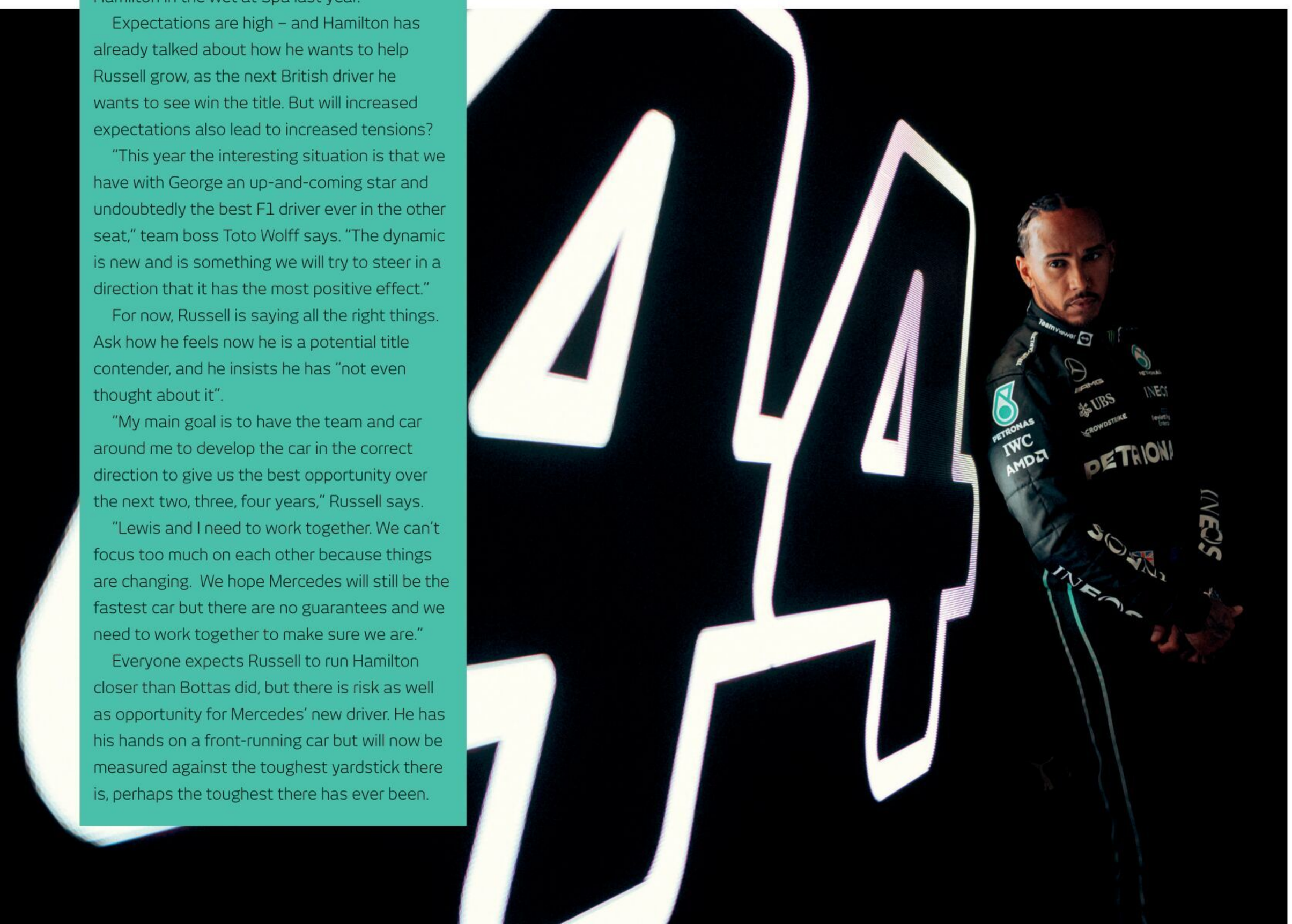
"The car is so different to any other car I've driven in the past," Hamilton says. "The aero balance and how it shifts. It's a much different machine to drive and it's going to require a lot of finesse, a lot of work to find how to set it up with the new, different tools we have. But this is the most exciting part of the year for me. It's a special experience to go through with everyone."

That, though, is the dress rehearsal. All too soon, the curtain will come up on a new season. And Hamilton is on a mission to make amends for what happened at the end of the last one.

"What he did was absolutely right," says Mercedes team principal Toto Wolff, "to take himself out of the microcosm of F1 and back out socially. He has come back in a great mindset. He is positive, he is determined and yet again adversity thrown at him will make him stronger. As he said, it's attack mode."

"I haven't really set any goals initially," Hamilton says. "Naturally, everyone is working towards the ultimate goal of winning the championship and the target of doing something we have never done before. We've done eight [constructors' titles]. Now it's time to move on to the next one."

Andrew Benson is BBC Sport's chief F1 writer



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FORMULA 1'S NEW

ALFA MALE

Mercedes dumped him for George Russell, so Valtteri Bottas has reunited with old boss Fred Vasseur in a bid to bring Formula 1 glory back to Alfa Romeo

WORDS OLEG KARPOV PORTRAITS ALFA ROMEO

Surely it had to be the first question to Valtteri Bottas, were you to meet him during one of his early visits to his new team's base in Hinwil, Switzerland.

"How do you like coffee here, Valtteri?" we ask.

"There is still work to do," Alfa Romeo's new Finn laughs in response. "There's nothing wrong with the coffee, but it can always be better.

"But I'm on it", he says, adding confidently: "I'm gonna sort it."

After all, that's what he's here for: to share his experience and help his new team to improve in every area.

We are in one of the two Sauber buildings on Wildbachstrasse, in an immense workshop with a wind tunnel stretched out at second-floor level. Bottas is no longer a stranger in Hinwil. He came here right after his first test behind the wheel of an Alfa Romeo mule car at the end of last year in Abu Dhabi. Then he did so again in January, for some simulator sessions and meetings with engineers.

Now it's time for his first – and exclusive for *GP Racing* – photoshoot in a brand new shirt with an Alfa Romeo logo on it, and his first interview as an official Alfa Romeo driver.

After a quick chat about Valtteri's favourite (at least non-alcoholic) drink, we relocate to a truck-sized aquarium called InfoLab, next to the wind tunnel entrance. It is mostly used for exhibitions, but currently features only a 50% model of a Sauber C22 from 2003 mounted on one of the walls. InfoLab's long benches are perfect for a pleasant, casual – and of course socially distanced – conversation, which begins with the topic of Valtteri's history with team boss Frédéric Vasseur.

"It was probably 2008 when I did my first test with them,"recalls Valtteri of Vasseur's ART junior single-seater team, with which he would spend a couple of years in F3 Euroseries and a title-winning 2011 campaign in GP3.

Alfa Romeo
F1 TEAM
ORLEN

In his first interview as an official Alfa driver, Bottas was in candid form and revealed details about his move from Brackley to Hinwil

"I would say the highlight in F3 was probably winning the Zandvoort Masters two times," Bottas continues. "Then GP3 was a really good year. I remember by the halfway of the season I was not even in the top 10 in the drivers' championship, and as a team we were struggling a bit. So we worked really hard together, we turned around completely the setup philosophy of the car, and after that we were winning pretty much every race.

"That was a great memory, winning the title. Because that pretty much sealed for me the opportunity to become the official test and reserve driver for Williams. So it was really a key year in my career.

"The thing with Fred is that when he is committed to some kind of project, always by the end, sooner or later, it has become a successful story. He definitely likes to keep in the loop with everything. Like every day I've had at the factory here he always wants feedback from me, [to know] what I think. He's demanding, which you need as a boss. But he is also really fair to people. And he is just a good guy. So Fred was actually a big reason why I joined this team."

It was Vasseur himself who initiated talks early last year, as Alfa Romeo sought a fast and experienced driver to replace Kimi Räikkönen. For Vasseur, Bottas ticked every box ahead of what some call the biggest regulation change in Formula 1 history.

"The first discussion we had [was] at the beginning of the season, when I understood that it would be difficult for him [to keep his seat] at Mercedes," Vasseur told *GP Racing* at the end of last year. "I think Valtteri will bring his mega huge reference. If you have a look at the gap between Lewis [Hamilton] and Valtteri in qualifying, in terms of speed he is one of the best references of the paddock. And this is important for us. He will bring also the experience he has of F1, of the Mercedes team and so on. And I think it's a good step forward."

But Bottas needed some convincing.

"For sure, I had the information on when the team started to focus for the new rules", says Valtteri. "And I think it is not a secret that the team didn't really develop last year's car much at all. And the focus was always for this new era of the rules. So for sure, that was quite a big factor for me making the decision, and yeah, I really hope that it's going to help us then in the coming year."

Clearly, that alone won't have been enough. After all, Vasseur was trying to sign a driver from Mercedes, the leading team of the current Formula 1 era. But he had something to offer that Bottas never got at Mercedes – a long-term contract.

"I was sure that I wouldn't commit to anything, if it was just a one-year deal," Valtteri says. "Because I take this as a project, and there's definitely work to do. That is a fact. And you can't do all that in one year, it means multiple years [are needed].

"And also for me to have that stability, knowing that all the efforts that I put in now, you know, it's still gonna benefit all of us in the coming years. That's why I wanted the continuity. And also, the point of where I am in my

career, I feel like it's about time to get [a] more long-term project [rather] than one-by-one."

It was a condition he'd set not just for Fred – but also Toto Wolff, as the Mercedes boss was making his final decision on his 2022 line-up.

"I made it clear that one-year is a no-go anymore for me," claims Valtteri.

When asked about the timing of that conversation with Wolff, he adds calmly: "Not very early. I would say more like middle of the season or before the summer break.

"I LEARNED A LOT FROM LEWIS, HOW CONSISTENT HE CAN BE ON HIS FORM, ESPECIALLY HIS RACECRAFT, IT'S REALLY IMPRESSIVE. SO AT LEAST IN THE NEAR FUTURE I DOUBT HE WILL BE BEATEN WITH THE SAME MACHINERY"

"But I think he knew also that for me, yeah, after being five years always [having] one[-year deals] and then every spring, summer it's always the same speculation... It's yeah, for me, that was kind of, you know, enough of it."

Was it a way for Bottas to end the Mercedes part of his career on his own terms? Probably. After all, Wolff was faced with the possibility of losing George Russell 'on a free', which would've been hard to stomach after the Brit's convincing performance at the 2020 Sakhir Grand Prix. Valtteri simply made Toto's choice a bit easier.

And it might not have been too difficult to accept for Bottas, either. Perhaps he'd come to terms with the fact that he achieved all he could at Mercedes? He took poles, he won races. But the main question is: does he still believe Lewis Hamilton could be beaten over a full season in the same car?

"I doubt. I doubt that," Valtteri concedes, taking very little time to think. "Of course, you know, it's always possible... but, yeah. Of course, when I joined Mercedes, I was like committed that I'm gonna beat Lewis. Five years after that still didn't happen. So...

"That is [still] nice to know that when I'm at my best I can beat anyone. So for sure, that's a good confidence boost. But I also accept the fact that Lewis' consistency and ability to adjust for certain elements, yeah, it's... it's another level, really.

"I learned a lot from Lewis, how consistent he can be on his form, especially his racecraft, it's really impressive. So at least in the near future I doubt he will be beaten with the same machinery."

So, no regrets then?

"I think now that I've had a bit of time to reflect," Bottas continues, "I tend to remember all the good things and I less remember the negative things. And there's so many positive things that I can take from those five years. All the achievements and, you know, losing the count of how many podiums I had, it's pretty cool!

"I've learned so much with them [Mercedes]. I've definitely become a much better driver and also a stronger human being with the team and, you know, my technical knowledge, everything has developed a lot. And I take it as a strength. And it will help me in the future, also trying to help this team to get higher."

Now it's time to work hard on this new project, but also enjoy himself – which wasn't always possible before, when his performances were always compared with Hamilton's and his seat was so often speculated about.

"For sure I learned a lot about myself," Bottas adds, "like, what works for me as a driver and what not. I've also learned how much the pressure can actually subconsciously disturb you. And you only realise it once you're released out of the pressure how much better you feel and how much more enjoyable things become.

"It's easy to say 'don't stress', but actually how to be comfortable in a situation it's a different story. I think now in my career, I've come to a phase that I really don't care what people say and what they think. And I'm just living for myself and for my enjoyment and for my goals."

And as much as Bottas represents a perfect driver for the team, Alfa Romeo was always Valtteri's first choice – apart from the surely implausible scenario of a new multi-year contract with Mercedes. Unlike after the 2018 season, when he seriously considered quitting F1, this time that wasn't an option at all.

"I did think about every opportunity," he says, "but never seriously thought about not staying in F1. Because I still really enjoy it. And I still have the passion for it. And I feel like I still have more to give for F1.

"Fred being here, then just learning about all the facts, what is the plan for the future and how to get to the top, and also the early switch to the new regulation, development and all those combined, it felt good. And actually, it was also nice to jump into a car without Mercedes power.

"Obviously, possibly, you know, there would have been a chance to stay with Williams, but then, in a way, I would have been still linked to Mercedes. But I felt like I just wanted a complete fresh new start."

This all sounds good, but cynics might say that the real reason Valtteri is here is to make his bank account look even nicer before his retirement.

"They're wrong, because I'm in Formula 1 because I enjoy it," he smiles. "And, of course, because I also have an opportunity for it, which is not guaranteed in the world of motorsport. And I feel like I still have a lot to give, like I said, to F1, but at the moment I have lot to give to Alfa Romeo, trying to bring the team to the top.

"It's a different kind of motivation. Yeah, the fact is probably we're not gonna fight every race for wins this season. But it's a different kind of excitement because there are so many unknowns, and it almost feels like the only way is up. And I feel like by working hard together as a team, whatever we're going to achieve, it's going to be really rewarding. I'm really excited. And people can say whatever they want."

> "WE SHOULDN'T, AS A TEAM, PUT ANY UPPER LIMIT OF WHAT WE CAN OR CAN'T ACHIEVE. INITIALLY, [THE] IMPORTANT THING IS TO TRY AND GET CONSISTENTLY INTO THE POINTS"

This "new fresh start" with Alfa Romeo includes, for the first time in his F1 career, Valtteri Bottas becoming the undisputed leader and number one driver in a team.

"It's exciting and so far I'm really enjoying it," he says of this new role, "like all the effort I've been putting in the simulator here at the factory. And I really feel that people react and listen. And I'm definitely ready for it. Because it's my 10th season in Formula 1. So it's a good feeling. And I'm ready to do my part for the success for us together and guide the team and help the team the best I can.

"We shouldn't, as a team, put any upper limit of what we can or can't achieve. Initially, [the] important thing is to try and get consistently into the points. I think that is realistic, and that is possible. So that's the first step. But eventually, definitely I want to be up on the podium with the Alfa Romeo logo on the race suit."

That's a big target. And it's not going to be easy to achieve – it's not just the coffee that will need to be refined and perfected.

But he's on it.

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YEAR OF THE TIGER

Guanyu Zhou is the first Chinese driver to secure a full-time F1 drive – and he's got there ahead of Oscar Piastri, who beat him to the F2 title last year. But he's determined to prove he's earned his stripes...

WORDS OLEG KARPOV
PORTRAIT ALFA ROMEO

When Guanyu Zhou scored his first European karting victory, the awards ceremony didn't involve a Chinese flag – simply because the organisers hadn't anticipated a driver from China would be among the podium contenders.

"It was in France, in Salbris", Zhou tells *GP Racing*. "I won my first-ever European race, and then there was a British flag [on a podium]. So I wasn't really happy about it. What was nice is that afterwards you could see it [the Chinese flag] everywhere. There would not just be the flag for the podium, there'd be flags on the circuits, like displayed on the main straight, where you have flags of most drivers' nationalities."

Zhou moved from Shanghai to Sheffield at the age of 12 with the goal of becoming F1's first Chinese driver. "Normal people," he says, "would go to London or at least Manchester. But the race team I joined are based there, and you don't want to be somewhere far from them."

The team was Strawberry Racing, and together with Zhou it made sure the Chinese flag was a regular requirement for podium ceremonies at races in the UK and Europe. By the age of 14 Guanyu was spotted by Ferrari, and he moved to single-seaters as a member of its Academy.

There was a good season in F4 in 2015 followed by a transition to European F3. Then his career stalled somewhat – and a potential title shot in what was his third season in the category fell apart beginning with a torrid outing at Spa where he'd arrived a point off the series lead.

"At Spa I had my best qualifying, but I came out of the weekend with zero points, and in two of the races I was taken out by a team-mate," Zhou explains. "And then things just went a little bit weird on my side."

That team-mate, whose name Zhou omits, was Mick Schumacher. The German was much further down the standings coming to Spa, but then it seemed he – along with another team-mate, Robert Shwartzman – simply moved up a gear. Schumacher won seven out of the next eleven races and was crowned champion, while Zhou would slip to eighth.

"Even now I don't know what happened there," Zhou says. "All I can say is that I lost all the speed I had without changing my driving too much. I was fighting for the championship and [then was] struggling to make top 10 in qualifying. So it was a very tough season."

That was a good moment to change everything. In 2019 Zhou not only moved to F2, switching from Prema to UNI-Virtuosi, but also left the Ferrari Driver Academy to align with Renault.

"With Renault there were a lot more F1 opportunities," he explains, "a lot more private testing days, a lot more simulator [time], where in Ferrari things are very complicated. With Renault you do feel you're like number one or number two [driver] in the programme, they believe in you. They want to use you even as an opportunity to try and develop the car, try to do stuff with you. So you do test for the F1 team, rather than just be an Academy member."

Zhou's strong debut F2 campaign was followed by a disappointing 2020 in which, as he puts it, he "lost like 50 points just breaking down while leading or just being on the podium position in several races".

Last season, he admits, represented probably his final opportunity to move to F1 – though the

CV

Guanyu Zhou
Age 22
Born Shanghai

2021
3rd in FIA F2 (4 wins); 1st in F3 Asian (4 wins); F1 practice with Alpine (1 session); Alfa Romeo F1 tests (2 days)
2020
6th in FIA F2 (1 win); Renault F1 test (1 day)
2019
7th in FIA F2; joins Renault Sport Academy
2018
8th in FIA F3 Euro (2 wins)
2017
8th in FIA F3 Euro
2016
13th in FIA F3 Euro; 6th in Toyota Racing Series NZ (1 win)
2015
2nd in F4 Italy (3 wins); 15th in ADAC F4; joins Ferrari Driver Academy
2014
CIK-FIA World & European KF karting

backing from China meant it wasn't quite 'title or bust'. Zhou did take an early lead in the standings, before some technical issues and his own mistakes dropped him behind Oscar Piastri and Shwartzman.

Some of his mistakes, such as spinning out on his way to the grid at Sochi, Zhou admits came as a result of increased pressure as he closed in on the Alfa Romeo seat.

"In general I'm okay to deal with it, but last year I did feel quite a lot of pressure," he says. "It was quite tough, because there was talk about opportunities for me to be taking the [F1] seat. People talk about you, and you have to be doing everything perfect. If you do little mistakes, they try to make it a lot bigger than what it is. The pressure gets you."

The Alfa deal, announced a few weeks after Sochi, left many disappointed given it effectively meant runaway leader Piastri wouldn't be on the 2022 F1 grid.

"In general I was able to do the job on track, but people weren't too happy for some reason," says Zhou. "But it's not my problem. My goal is to be myself and try to do what I can for my nation, to have that Chinese flag [on the podium], Chinese national anthem on the top step, that's what makes me proud."

Will the pressure to deliver and prove critics wrong be worse in F1? Zhou doesn't think so.

"Last year I had more pressure than this year," he insists, "because last year if I don't get a seat in F1 and don't become the [first] Chinese [F1] driver, I don't think there will be one in the next five-10 years. I wanted to do that.

"So I'm happy I achieved that, and now it's just [about] making people proud."

OMP
A. ALBON

2.4

IN CONVERSATION WITH

WORDS OLEG KARPOV
PORTRAIT WILLIAMS

ALEX ALBON

He may not have been racing in F1 last year, but Alex Albon had a busy 2021 competing in the DTM, coaching Yuki Tsunoda, and working in Red Bull Racing's F1 simulator. But is a race drive with Williams his ticket back to the big time?

Alex, this is sort of a fresh start for you. If you compare yourself with the version of you from 2019, what's different?

I've come from two years of experience in Formula 1, which isn't a huge amount, but I've also spent a year in between where I've been able to digest that information, have time to reflect and see what I could have changed. So I feel like I've come into this year a lot more prepared than in 2019, but also even 2020, I feel more prepared than then. Of course, there's a bit of this shaking off the rust, we saw it a little bit with Esteban [Ocon] and Fernando [Alonso], that you do need a bit of a time to get back into things, but that's inevitable. And I think actually, with these new cars, these new regulations, I hope it's a bit more of a reset – as this is a reset for everyone, it's less impactful [for me] than it would be otherwise. Yeah, I do feel prepared, I feel like I'm here to prove a point and show people what I can do.

What point are you aiming to prove?

That I'm good enough for whatever it takes. And yes, you know, I feel like I'm here to stay long-term and I'm focused on my duties of being a Formula 1 driver.

Did you have any chats with George Russell about what to expect at Williams? Since you're effectively replacing him...

Yeah, exactly. We talk a fair bit anyway, but we did [chat], just seeing how each other is doing with new teams. In a way I am replacing his side of the garage, [working with] his engineers and his personnel. And it's interesting, because things that he would do would be different to how I would do things, just because it's a different car. You know, a Red Bull doesn't respond the same as a Williams, and vice versa. And that's just the characteristics within the car. You know, when I speak with my engineers – George did certain directions with the car, it's nice to understand why he would do these things. We've got just six days [of testing] before the first race, so any kind of shortcuts, speeding up the process as much as I can, you know, I'll take it. So it's been valuable.

Red Bull played a crucial role in your comeback. But was it difficult to accept a reserve role at the end of 2020? Why did you choose to stay with them?

Well, it was very clear to me there's only one goal I had in mind and that was to get back to Formula 1. Of course, I had a Plan B and Plan C, but my Plan A was very strong in my heart. So it's quite simple. It was all about 'what will give me the best chance of getting into F1?'. And I knew that doing the best job I could on the simulator, working with the guys, helping them as much as I can, that's what would get me the chance. And, of course, in that respect, it wasn't hard for me to find that motivation. I feel like I am a very hungry person, I am very motivated..

"AS MUCH AS I WAS MAKING SURE MY OTHER OPTIONS ARE COVERED, I NEVER SAW F1 AS NOT AN OPTION"

Did Dr Marko and Christian Horner promise you anything at the end of 2020?

No.

Was there a moment when you thought you'd never make it back into an F1 drive?

I mean, time goes, and you're hoping for something to happen. There was a period when I went to America to look at IndyCar as well. Plan A was all I wanted to do but you have to be smart, you have to be logical with your decisions. I knew I needed the backup plan. But to be honest, I never lost sight of my goal. And as much as I was making sure my other options are covered, I never saw F1 as not an option.

Is there a plan for the future? Do you want to try and stay at Williams long-term, or do you see this year as sort of an audition to come back to Red Bull?

I've been given this opportunity by Williams, I feel like I got to know the team within a couple of months, I see the direction where they go for their new start, their new beginning. It's a new management under Jost [Capito], it's exciting, it's a great place to be, and on my job I want to do all I can do. And on that side, no, I think there's no point to look at the future beyond that. I'm focused purely on doing a good job this year, making sure I did the very best I can do for the team and of course for myself. And that's it.

2022 SEASON PREVIEW | CHAPTER 3

SLEEPING GIANTS

3.1 PRANCING AGAIN: FERRARI POISED TO STRIKE
3.2 THE ORANGE ARMY RISES: McLAREN ON A MISSION

It's now been 12 seasons since a team other than Mercedes or Red Bull won either of Formula 1's world championships, but two former winners from before that era are on the rise once more

3.1

CHANGING THE PICTURE

Design failures and a costly controversy over its engines pushed Ferrari to the sidelines of Formula 1, but last season it quietly recovered to third place. Does it have what it takes to bridge the gap to Mercedes and Red Bull?

WORDS ROBERTO CHINCHERO PICTURES motorsport IMAGES FERRARI AND McLAREN

You might not have seen quite how much has changed at Ferrari. It's not a picture you can judge on results alone because, while the body of the team has undergone a huge transformation over the past year, the efficiency of its new frame didn't have a heart quite fit for purpose.

This last element is what Ferrari is pinning its hopes on for the new season: the car, the pulsating heartbeat of any team's championship challenge, but the one thing Ferrari was powerless to change – until now.

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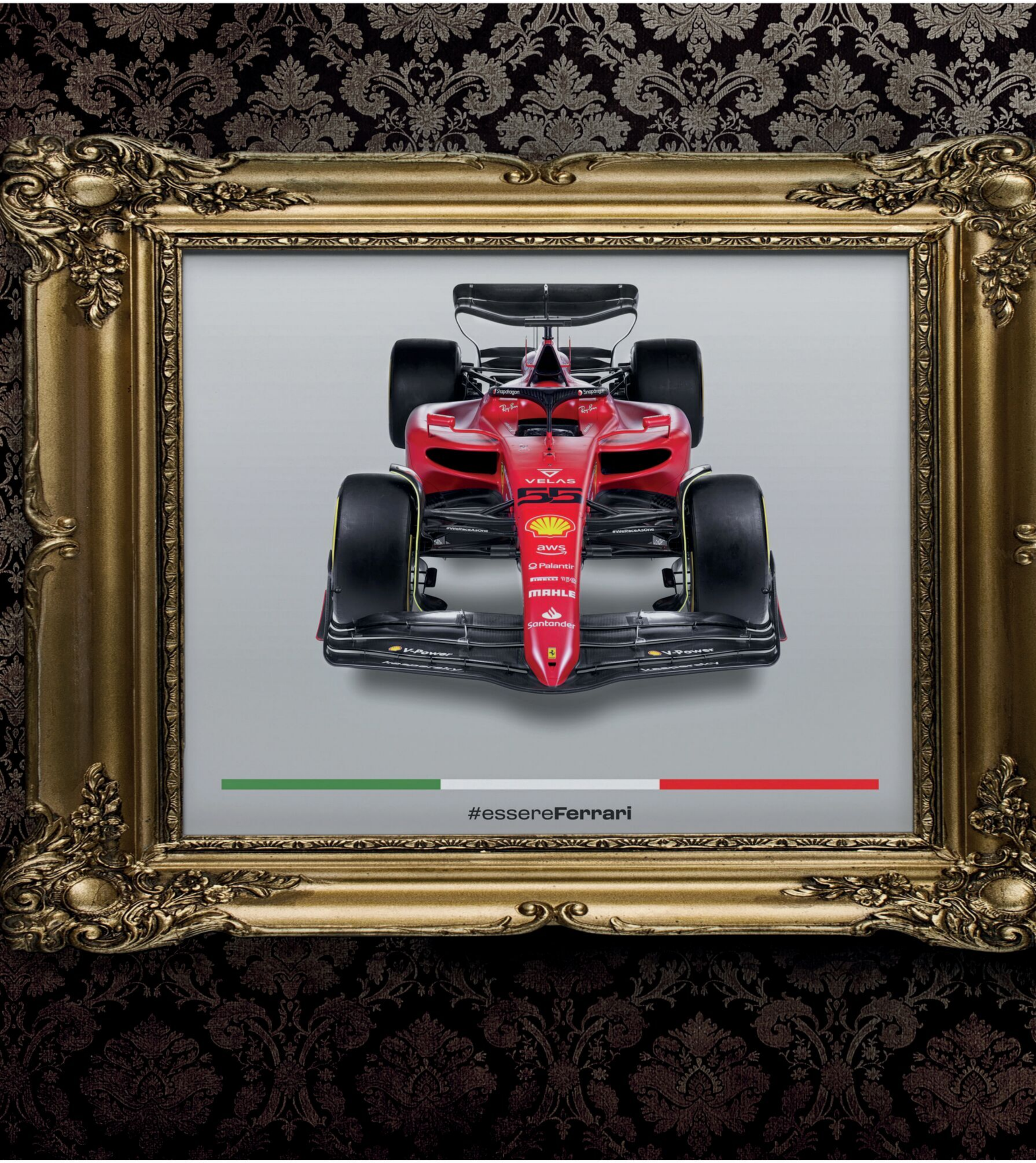
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For Ferrari, 2021 was all about controlling what it could control. 2020 had been one of the Scuderia's worst seasons in living memory, competitively speaking, and its reaction was important. The Ferrari of old, eternally beholden to pressure from the boardroom and from the media and the public, might have felt tempted – compelled, even – to try to execute a quick fix on its basket-case car and demonstrate enough improvement to remove some of the heat. Instead, team principal Mattia Binotto continued to restructure the management and spend resources prudently as Ferrari adapted to the incoming budget cap.

THE ON-TRACK DEBUT OF THE LATEST FERRARI, THE F1-75, WAS SO GREATLY ANTICIPATED, BECAUSE THIS CAR WILL PLAY A CRUCIAL ROLE IN THE FUTURE OF THE SCUDERIA

Since the technical regulations made it impossible to radically change the unsuccessful SF1000 car, Ferrari focused on identifying which weak points could be changed cost-effectively within the rules, knowing its best opportunity for long-term success lay in making a quantum leap for the 2022 rules package. This would entail some pain, for there was no way of making the SF1000 a winner. But that didn't mean Ferrari couldn't learn and develop through 2021.

This is why the on-track debut of the latest Ferrari, the F1-75 (codenamed '674'), was so greatly anticipated, because this car will play a crucial role in the future of the Scuderia. Much of what happened last season validated Binotto's vision and enabled the plan to unfold: the technical department worked in the right direction and was successful in improving, where possible, the difficult 2020 car, enabling it to pivot towards 2022 early. At the beginning of last summer Ferrari was able to commit to stopping developments on the 2021 car which would have no bearing on the season to follow.

The only development brought to the track post-summer last year was a new hybrid system for the engine, introduced at the Russian and Turkish Grands Prix (on Charles Leclerc's and Carlos Sainz's cars respectively) and with the clearly stated aim of proving it in race conditions.

Ferrari will be hoping that it has nailed F1's new regulations with the F1-75

The success of the new hybrid system was particularly important to Ferrari since it, like Alpine, is introducing a new internal combustion engine for 2022, and it has to be right first time since the specifications will be frozen until 2026.

Hybrid components require a greater depth of 'field testing' because of their susceptibility to extremes of heat and vibration which are difficult to simulate on the dyno. Evaluating the new items was deemed so mission-critical that Ferrari was willing to accept the consequence of Leclerc taking a grid penalty at Sochi. As a result of the knowledge gathered over the final rounds of 2021, the powertrain is the aspect of the F1-75 which has troubled Ferrari's engineers the least this winter. It's understood that the only failures encountered on the test bench have come when the units have been pushed beyond their planned service lives just to see how far they can go.

Rather less certainty surrounds the car itself. As per standard race engineering practice, the technicians set targets for all the important parameters – aerodynamic loads, drag, overall weight, etc – at the outset of the F1-75 project. While Ferrari has achieved these hardpoints before hitting the track, there's always an important caveat – one which will be echoed by all the other teams until the lights go out for the start of the Bahrain GP at the end of March. As a source inside the Scuderia commented: "The data we have is in line with expectations, but the unknown factor is how efficient our opponents will be. Who can say that our 100% does not equal 90% of Mercedes or Red Bull, or vice versa? The first races will be needed to get an idea."

AS A RESULT OF THE KNOWLEDGE GATHERED OVER THE FINAL ROUNDS OF 2021, THE POWERTRAIN IS THE ASPECT OF THE F1-75 WHICH HAS TROUBLED FERRARI'S ENGINEERS THE LEAST

The power unit wasn't the only improvement in the Ferrari garage last year. Mattia Binotto remained the conductor as team principal, but reshuffled the responsibilities of those reporting to him in order that he might spend more time at the factory overseeing the 2022 project – and ultimately be able to skip races in order to do so. Sporting director Laurent Mekies took on the new role of racing director and 'shadowed' Binotto for the first half of the season with a view to taking on his pitwall responsibilities. At the same time, strategy manager Iñaki Rueda's role expanded to include some areas of Mekies' sporting director brief, and a new chief strategist role was created for Ravin Jain, an Oxford graduate who has been with the team since 2016.

Better teamwork was the mandate and the results were palpable in the form of more consistent pitstops and better pre-event co-ordination between trackside engineers and the Maranello simulator, which enabled the team to start practice with a better baseline setup. Not infrequently in previous years, Friday's free practice sessions would end with what became in effect an engineering post mortem, resulting in whoever was the chosen sim jockey (a rotating cast of Antonio Giovinazzi, Daniil Kvyat and latterly Antonio Fuoco) working overnight to evaluate drastic setup changes. In 2021 there was a clear step forward on this front, even before the new simulator came on-line in the autumn.

Last season Binotto (far right) missed a number of races to concentrate on 2022

By the time of the Azerbaijan Grand Prix, the new management structure was considered to be working well enough for Binotto to make his planned step away from the pitwall, leaving Mekies and Rueda fully in charge of their new beats and freeing up a seat for Jain to occupy. Binotto was also later able to miss the races in Turkey, Mexico and Brazil so as to be at the factory for what he called "a crucial stage" in the 2022 car's development.

There have been less visible improvements, too, including the optimisation of expenses falling under the budget cap, and quicker trackside engineering solutions to car problems. Excessive front tyre wear was a feature of the SF21 in the opening races, culminating in a difficult French GP in which Sainz and Leclerc started fifth and seventh but finished outside the points. While the problem with the front end of the SF21 was fundamental to the car concept, intensive ▸

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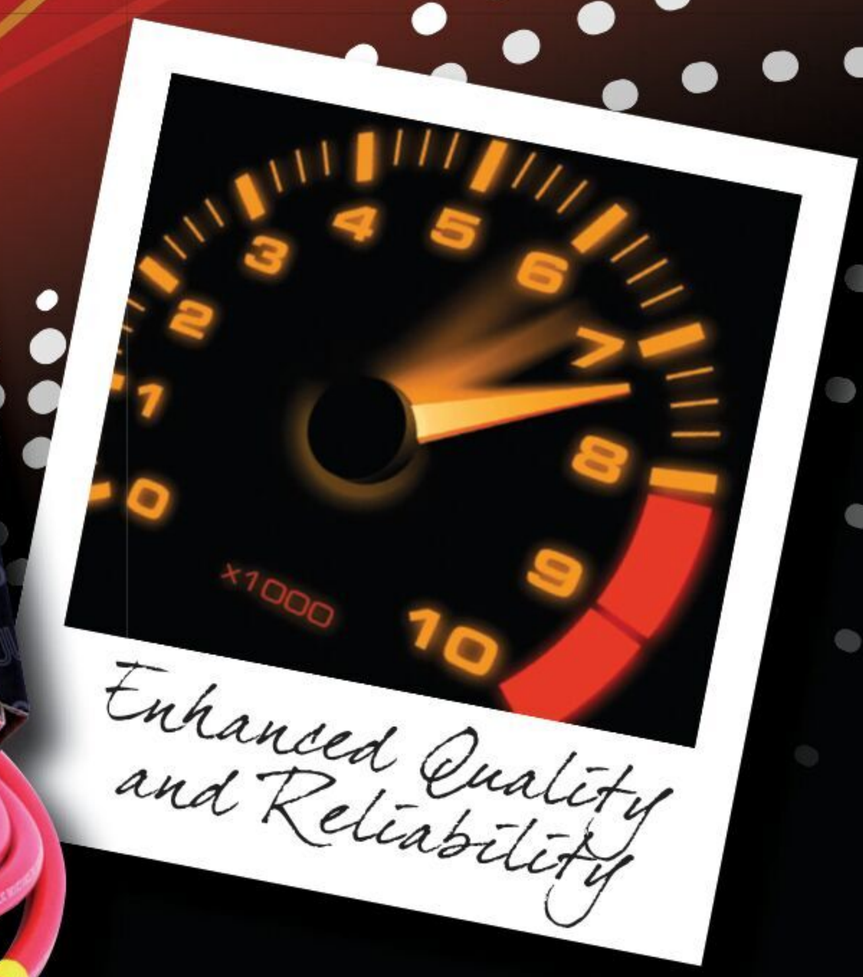

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In a management re-jig Rueda (above) took on some of Mekies' sporting director role...

... which allowed Mekies (above) to step up when Binotto stayed at Maranello

simulator work identified a setup workaround to rebalance the car from understeer to oversteer. This entailed sacrificing one-lap pace, which compromised the drivers in qualifying, but reducing the front axle's tendency to slide had the desired effect of punishing the tyres less. The result was an immediate uptick in results.

"It is a precious step forward we will be able to count on again this year [2022]," says our source in Maranello. Part of this improvement is down to an important change in the garage: the total sharing of work between the two cars.

In 2020, the divorce with Sebastian Vettel didn't help relations between the two sides of the garage, and in this respect the arrival of Carlos Sainz in the team has been transformative. Problems between team-mates generally begin when they can both aim for victory; at Ferrari in 2021 this scenario didn't exist, and the team took advantage of it to push in one direction.

The Sainz-Leclerc duo worked, and both have grown a lot. Sainz has a very meticulous working method which has been instructive for Leclerc, while Sainz has taken advantage of the total sharing of data between the two areas of the garage to carefully study Leclerc's driving style. Carlos has pushed his limit forward, and in some cases had accidents while he searches for limits his team-mate has confirmed the car can reach. While this process has occasionally looked messy,

Leclerc's data has made Sainz faster while Sainz has improved Leclerc technically

QUESTIONS REMAIN OVER THE POSSIBLE EVOLUTION OF THE SAINZ-LECLERC RELATIONSHIP IF THE NEW CAR OFFERS THEM THE OPPORTUNITY TO FIGHT FOR VICTORIES

it's led to an important improvement in Sainz's performance; Ferrari is now convinced it has one of the strongest driver combinations in F1.

Questions remain over the possible evolution of the Sainz-Leclerc relationship if the new car offers them the opportunity to fight for victories. There are many recent examples of harmonious relations dissolved by the arrival of a competitive car: at Mercedes in 2013 Nico Rosberg and Lewis Hamilton were good friends, a scenario which did not last long once Merc achieved technical ascendancy in the hybrid era. But this is a problem Ferrari hopes to have to face, since it would confirm its objectives have been achieved on the technical front.

This is where we circle back to: the car. For all the reasons to be optimistic about the season which is about to start, one great fear stalks the corridors of Maranello – that the 2022 project doesn't start in line with expectations. Two years without victories have been 'accepted' by the team itself, by enthusiasts and by the tifosi in the hope that the learning experience will enable Ferrari to find itself again and have its say in the world championship this season.

If the new car doesn't live up to these expectations in the opening races, pressures which have been held in abeyance over the past two years will appear again, and no one in the team will be able to feel safe from the consequences. Questions will be asked whether the new management structure is genuinely working and heads may roll.

Ferrari is a uniquely emotional brand. The passion surrounding it can be joyous and perilous. If it starts its journey at its best, leaves no question marks over the quality of its work and processes, it will have some assurance of being able to continue in relative peace. This season Ferrari won't have the luxury of another 'interim year' – it must do well, and do it immediately.

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3.2

THE ORANGE ARMY RISES

McLaren is out of the doldrums – but there's still a gulf to bridge if it wants to return to its dominant glory days of the 1980s and 1990s...

WORDS STUART CODLING PICTURES MCLAREN

Daniel Ricciardo's victory at Monza last September was momentous – and not just because the ever-present Netflix camera crews got to capture Daniel's first podium 'shoey' in what felt like an age. McLaren might be Formula 1's second most successful team in terms of race wins but this, victory number 183, had been a longer time coming than Ricciardo's stunt champagne-quaffing exercise: nearly nine years separated Monza 2021 from win number 182, at the 2012 Brazilian Grand Prix.

The team fell far and fast after Jenson Button's victory at Interlagos but now, after innumerable false starts and much bloodletting, it's a very different McLaren which enters the 2022 F1 season: leaner, humbler, less complacent, exuding confidence tempered by realism. For all that its launch was big on excitement – a physical reveal of the MCL36 rather than a render or a show car, plus much fanfare surrounding McLaren's IndyCar and Extreme E programmes – the froth was kept in check by some careful expectation management. This is a team which has learned to avoid over-promising and under-delivering.

Why so measured? Like every other team on the grid, McLaren is entering this new technical era unsure of how effective its solution to the revised rules will be. It's adopted a suspension configuration for the new car which is somewhat unconventional. On top of that there's what executive director Zak Brown euphemistically describes as an "infrastructure technical deficit". Put more plainly, the windtunnel renovation project is behind schedule because of the pandemic, so McLaren's aerodynamicists are still working in Toyota's Cologne facility and are likely to do so until at least the middle of next year. The new driver-in-loop simulator isn't finished either. But the successful refinancing McLaren has completed in the wake of its mid-2020 financial crisis has enabled it to commit to those long-term projects, as well as upgrading its computational fluid dynamics hardware.

"We have everything we need now," says Brown, "or it's been ordered and it's on its way.

"When we brought in MSP Sports Capital [the US company which is investing £185m in McLaren via a minority shareholding], they gave us what we need to execute the business plan we need to get back to competing for a world championship. That is something Andreas [Seidl, team principal] laid out – power unit, drivers, technical infrastructure...

"You also need the best people in the business committed to the journey. That's another reason it's great to have signed up Lando [Norris] for the length we have. We're a team fully committed to executing the journey we started a few years ago."

This underlying theme that McLaren knows it isn't quite there yet, but is confident about the

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ANALYTICS
Hilton
Gulf
CASTORE
McLaren
FORMULA 1 TEAM
DARKTRACE
DEWALT
webex
by cisco
PIRELLI
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ARROW
DELL Technologies
ACCELERATING
TRANSFORMATION
sparco
3
Tezos
DataRobot
smartsheet
CNBC
DELL Technologies
ACCELERATING
TRANSFORMATION™
sparco

Monza was cause for celebration (above), as is a new long-term deal for Norris (below)

direction of travel, explains its urgency to agree a contract extension with Lando Norris which will tie him to the team until the end of the 2025 season. Given less than 12 months have elapsed since Norris signed a new contract taking him until the end of 2023, this latest deal is freighted with significance on many levels. It's a recognition of how his stature in F1 has increased during an impressive 2021 season which confirmed him as a star of the future – and that not only does McLaren recognise this, so too does the rest of the grid and the driver himself. It's telling that when the previous contract extension was announced in the run-up to last year's Monaco Grand Prix, Norris alluded to being nervous about opening talks – "It was a bit awkward, I didn't know how to start the conversation" – but now he's been able to push for a greater commitment and, most likely, more money. He has even spoken about having "little chats here and there" with other teams during the past year.

In theory Norris's new deal sets up a virtuous circle as McLaren navigates two further seasons before its new technical resources come online.

"THIS IS FOR THE SOLIDARITY OF ME AND THE TEAM, TO REALLY PUT THE CONFIDENCE IN BOTH OF US FOR THE LONG TERM, BECAUSE I SEE THAT AS A BENEFIT – ONE FOR MYSELF, TO HAVE THIS LONGER CONTRACT AND STAY HERE FOR A WHILE. AND THEN FOR THE TEAM, I SEE IT AS A PERFORMANCE BENEFIT AND MOTIVATION BENEFIT FOR THE MECHANICS, FOR THE ENGINEERS, FOR EVERYONE IN THE MTC"

LANDO NORRIS

It gives continuity on both sides which breeds mutual confidence, potentially yielding improvements on track, while acting as a "hands off" to other teams. Norris won't be distracted by worries about where his next contract is coming from, while the technical team sees its work validated.

"This is for the solidarity of me and the team," Norris says, "to really put the confidence in both of us for the long term, because I see that as a benefit – one for myself, to have this longer contract and stay here for a while. And then for the team, I see it as a performance benefit and motivation benefit for the mechanics, for the engineers, for everyone in the MTC [McLaren Technology Centre].

"If I want to try and find every bit of performance, it's not just purely in the race car, there's the other areas as well. And this is definitely one of them."

The drivers will retain equal number-one status. Daniel Ricciardo is contracted until the end of 2023 but, as a proven GP winner whose 30th birthday is now in the rear-view mirror,

The performance of the clean-sheet designed MCL36 will show just how far McLaren has climbed back to the summit of F1, despite delays to a couple of infrastructure projects

Ricciardo is signed until the end of 2023, which only adds to the team's stability

he's in a different position to Norris career-wise.

For McLaren, stability will provide the foundation as it builds back towards being a world championship contender again. Just as significant as the long-term signing of Norris is the acknowledgement that the current leadership team has signed on for the long-term as well, a signal that the new structure set in place by Seidl – who essentially tore up the 'matrix management' system put in place by the previous regime and replaced it with a conventional one – is working.

"The key for us here, after creating stability over the last couple of years within the team, is not just continuity and consistency in the driver line-up but throughout the entire team," says Seidl. "I'm very happy to announce that the long-term signing of Lando goes hand in hand with long-term commitments from Zak's side, from my side and my entire leadership team. This is a great sign of belief from everyone that is involved in the journey, the entire team, that we have everything in place, or everything is coming into place over the next couple of years which we need to get this team back to the front in Formula 1."

But if the team's sights are trained on 2024 and beyond, what of the next couple of seasons? As a clean-sheet design to new regulations, the MCL36 will be a clear measure of how well the new structure is working because it represents a clean break with the past. Last year's car was compromised by McLaren having to spend its tokens modifying the chassis to accommodate the Mercedes engine, and the fundamentals of the vehicle it was based on were laid out while tech director James Key was still getting his feet under the table. Its performance characteristics made it faster at some circuits than others, and McLaren largely maximised its opportunities at the venues where the MCL35 was most effective. At others it was nowhere, resulting in a late-season slump which enabled Ferrari to bag third place in the constructors' championship.

Knowing this would be the case, McLaren, in common with most other teams, ceased development mid-season to focus on the 2022 car. While the new regulations are tightly worded, leading to a broad convergence in philosophies across the grid, the MCL36's suspension is sprung and damped via pullrods at the front and pushrods at the rear – an unusual combination and the opposite to most rivals. Key says it's for aerodynamic reasons and front-end packaging, though it could also have been influenced by the adoption of 18-inch wheels this season. McLaren will no doubt have been encouraged to see Red Bull also adopt the front pullrod concept for its RB18, albeit with different wishbone geometry.

"It's the only thing you have to play with between the entrance of the floor and the front wing," explains Key. "For us it seemed like a good solution to try. With our car, we've made an effort to try and give ourselves a platform which is very well future-proofed for development, so it offers opportunities beyond just getting the here and now right."

That may be so, but the effects of the budget cap will limit the development trajectory of any team which hasn't got the 'here and now' more or less nailed. And so far as that unusual front end is concerned, as Key admits: "...we've either got it really, really right, or..."

2022 SEASON PREVIEW | CHAPTER 4

THE RACES

4.1 IS THIS REALLY SUSTAINABLE?
4.2 WELCOME TO MIAMI: F1'S NEWEST RACE

F1 undertakes a record schedule of 23 races this season, including a brand new race on the streets of Miami, but how does all this fit with the championship's mission to become environmentally conscious, socially aware and fully sustainable?

F1 held its first triple-header in 2018 and the calendar – and the pressure – continues to grow

4.1

IS THIS REALLY SUSTAINABLE?

Formula 1 is beginning to tackle serious questions about its environmental credibility and sustainability with firm action, but against a backdrop of burnout and a relentlessly expanding schedule. Something's gotta give...

WORDS MARK GALLAGHER PICTURES motorsport IMAGES

The earth is warming, seasons are changing, extreme weather conditions are becoming more prevalent, and some countries face the prospect of becoming uninhabitable.

While the United Nations Framework Convention on Climate Change seeks to implement the 2016 Paris Agreement to restrain global warming to between 1.5°C and 2.0°C above pre-industrial levels, Formula 1 enters its new season and new era with a record 23-race calendar.

This includes its most recent addition, Saudi Arabia, whose giant, state-owned oil company Aramco is now an official partner – of F1 and of the Aston Martin team. As we add a second grand prix in the United States, a third is under discussion. The oft-quoted target of reaching 25 races per season edges ever closer.

Inevitably the question arises as to how F1 can expand its business, meet its net zero carbon emissions target by 2030 and not break the teams in the process?

The answer lies in a new three-letter acronym making its way into the Formula 1 lexicon – ESG – the Environmental, Social and Governance criteria by which F1 is being measured.

F1 can't happen without a plethora of support staff, with mechanics the most visible example of this, and their physical and mental health needs looking after

Companies such as F1's owner Liberty Media are dealing with a world in which investors, shareholders and customers demand the highest standards of governance in order to protect the climate, society and business sustainability in the broadest sense.

This is one reason why the fossil fuel industry is witnessing divestment. The Global Fossil Fuel Divestment Commitments Database estimates that 1500 institutional investors have pulled US$40trillion out of fossil fuels in recent years.

Meanwhile, in 2021, US$330billion was committed to sustainable investment funds on the basis of ESG criteria. The message is clear: if you are on the wrong side of the ESG conversation you won't attract long-term support.

It is now more than two years since F1 announced its ambitious plan to become a net zero carbon sport by 2030. While becoming carbon neutral is one thing – reducing emissions by as much as you can and then off-setting remaining emissions – the net zero carbon target means eliminating emissions altogether.

It's a tall order.

Formula 1 has joined the FIA in signing up to the United Nations' Sports for Climate Action Framework which, among other things, requires members to promote environmental responsibility, reduce climate impact and educate for climate action. Formula 1 met the requirements to sign. It now must deliver on its stated goals.

The FIA has already driven a plethora of initiatives aimed at tackling environmental challenges, not least with the 2014 launch of Formula E – the same year in which it introduced the current hybrid engine formula into F1. Its Environment & Sustainability Commission is driving environmental initiatives while regulating to inspire the innovative technologies which will help the world achieve the targets set under the terms of the UNFCCC.

F1 is therefore working closely with the FIA to ensure that the sport meets its commitments. This includes finalising regulations governing the next generation of powertrains due in 2026. These hybrid engines will continue to feature an internal combustion engine mated to a much larger KERS system, but the intriguing part will be the shift to a fully sustainable synthetic fuel.

Abandoning fossil fuels in favour of a synthetic-fuelled hybrid powertrain is the reason behind the VW Group's much-heralded new interest in Formula 1. It is a central pillar in F1's sustainability strategy. Add in the commitment to use renewable energy across all sites, increase remote working and reduce freight volume, and the picture becomes clearer.

One example was F1's decision to permanently locate its Media & Technology Centre in Biggin Hill during the early stages of the pandemic. That single move eliminated 70 tonnes of freight and reduced staff travel by 36%.

Simply put, a successful net zero carbon emissions strategy means that F1 can continue to grow and still meet its ESG targets.

For the teams, ESG initiatives vary in their ambition. Through the FIA most, but not all, have achieved 3-Star Environmental Accreditation. This is the highest level, demonstrating that a team has put in place an environmental management system and operates best practices as regards its ongoing implementation and improvement.

Williams has gone a step further by announcing that it will be climate positive by 2030. This includes not only reducing carbon emissions caused by travel and energy consumption at the factory, but a biodiversity initiative which will include the preservation of Letcombe Brook, one of only 240 chalk streams the world.

As a result, Williams has become the first team to join F1 and the FIA in becoming a signatory to the UNFCCC Sports for Climate Action Framework. But, unfortunetely, not everyone is moving at the same speed.

Cristiana Pace, founder and CEO of Enovation Consulting, represents Motorsport UK on the Environmental & Sustainability Commission. Her clients include Williams and Haas.

"To achieve net zero the industry needs greater collaboration and transparency among stakeholders," she says simply. "The industry will ultimately not reach its target unless championships, teams and suppliers cooperate and exchange best practice. Teamwork and partnership are essential to enable a sustainable transition for the sport."

Just as safety is not an area of competitive advantage, so too environmental policies and technologies will need to be shared so Formula 1 can move forward as one.

The societal impact of F1's We Race As One and the FIA's Purpose Driven initiatives speak to an ambition to make the sport more diverse, inclusive and socially responsible through education and communication. At team level the message is less uniform, often reflecting individual circumstances and structures.

While Mercedes gets behind Lewis Hamilton's drive for greater diversity and inclusion, including establishing the Mulberry STEM Academy, McLaren has championed mental health through its relationship with the charity MIND. It contributes to a positive message that F1 teams care about important social issues, even if critics point out that social 'PR' is all too easy.

This why initiatives such as the Hamilton Commission are so impactful, announcing specific investments in measurable programmes.

As F1 and its teams drive improved social responsibility and pursue their quest to achieve the net zero carbon target, the prospect of staging even more grands prix grows.

A generation ago the world championship calendar consisted of 16 races, 11 of which were conveniently held in Europe. The five long-haul events were packaged into a trio of southern hemisphere openers followed by the mid-year trip to Canada and the end-of-season sign-off in Japan. Most of the time, personnel got home on a Sunday night.

This year's schedule features 12 races in Europe (including Azerbaijan and Russia) – one more than in 1998 – but with a staggering 11 long-haul events on top. There are no fewer than seven ▶

F1's TV compound used to be transported around the world but is now based permanently at Biggin Hill, which means freight and staff travel has reduced

McLaren's 'Brand Centre' hospitality unit (above) is no more. A modest and sustainable alternative first appeared at Imola in 2021 (above, right)

McLaren is one of the teams that has invested in mental health support, not only among its own employees but also in the wider world (below)

PERSONNEL ARE FAR MORE SEPARATED IN TIME AND SPACE FROM FRIENDS AND FAMILY. THE IMPACT ON PHYSICAL AND MENTAL HEALTH, WELLBEING, FAMILY RELATIONSHIPS AND SOCIAL LIFE IS VERY REAL

double-headers and two triples, requiring staff to extended stays away from home.

While it's true that in the pre-2010 days of unlimited testing race team personnel would often stay on or transfer to another circuit for a three-day test, staff were seldom more than a one-hour time difference or two-hour flight from home. Furthermore, specific test team personnel took the pressure off the race team. Non-technical staff simply went home.

With a full 24 hours of travel now commonplace, personnel are far more separated in time and space from friends and family. The impact on physical and mental health, wellbeing, family relationships and social life is very real.

In an anonymous blog for *motorsport.com* back in December, one insider explained the physical and mental impact of life on the road in 2021, not helped by the myriad COVID rules and complex testing regimes. It made for a difficult read – a picture of relentless travel and work, with little down time. Relying on the team doctor for pain-relieving drugs or turning to alcohol to sooth the mind drew a desperate picture.

For the HR departments the increasing demands on travelling staff are clear. Teams such as McLaren and Mercedes have invested significantly in mental health support, including the recruitment of mental health first aiders.

Efforts to support travelling staff through a range of measures are increasing, including the potential for some to rotate out of race commitments. Formula 1 itself has responded by reducing the race weekend from four days to three (by cancelling Thursday's traditional media day), although this may well lead to more work compressed into a shorter time, increasing the pressure.

Individual team doctors, physios and trainers have been part of Formula 1's make-up for 30 years, but companies such as Hintsa Performance and Formula Health are taking on a central role in helping team management ensure staff welfare and support.

It was Mika Häkkinen who first turned to Dr Aki Hintsa for support, and the Hintsa Performance organisation today supports many teams and drivers. This includes Lewis Hamilton, whose Hintsa support comes from the ever-present Angela Cullen.

Gemma Fisher, founder of Formula Health, works with Alfa Romeo and has 10 years of motorsport experience. Her approach is to provide each member of staff with bespoke support based on nutrigenic screening – essentially a DNA-based assessment which allows the development of a tailored solution.

"Individualised programmes are absolutely the way forward and you can't get more bespoke than your own DNA," she says. "I've seen teams battling the same challenges and coming up against the same hurdles in their implementation of the most well intended fitness programmes."

With a nine-month race schedule set to become part of F1's 'new normal' in the post pandemic world, the need to support those who deliver the show has never been greater. It's a fundamentally important requirement for a sport eager to meet its ESG targets during a decade of profound change.

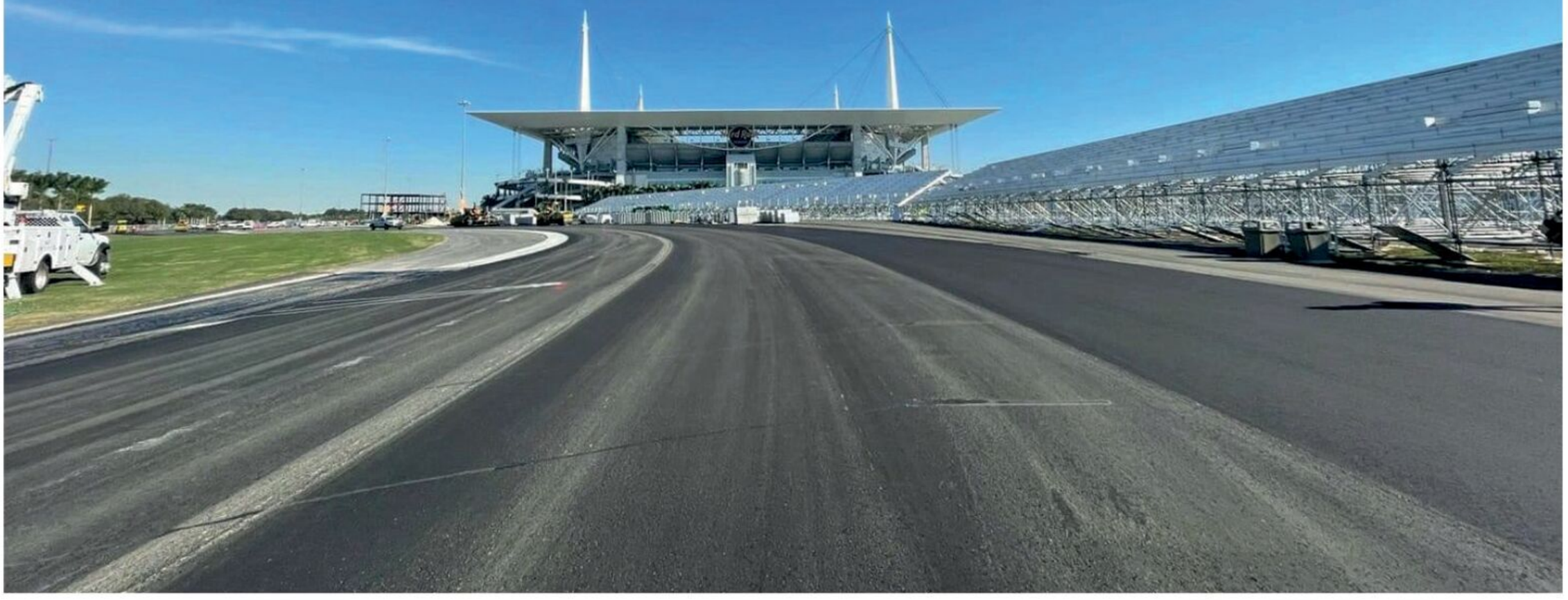
4.2

WELCŌME TO MIAMI

F1'S NEWEST RACE

Formula 1 has long coveted a second race in the United States and, after several false dawns, the Miami Grand Prix is finally set to fill that void

WORDS MARK GALLAGHER PICTURES MIAMI GP, RED BULL & motorsport IMAGES



George Russell has already visited Miami (left). He was aged two when F1 returned to Indianapolis in 2000 (above)

As Formula 1 stumbles blinking into the sunlight from under the shadow of COVID-19, the world championship enters its most ambitious season with a new jewel in its crown. A second grand prix in the United States – in Miami, capital of the Sunshine State of Florida – and one which features an almost unprecedented level of partnership between Formula One Management and the race promoter.

"The US is a key growth market for us," was F1 CEO Stefano Domenicali's succinct summary when the race was confirmed last April. With a Las Vegas event also under consideration you have to believe it will not be too long before America can boast a trio of events.

Students of Formula 1 will recall that Bernie Ecclestone long held ambitions to stage multiple events in the USA. It's been a somewhat tortuous journey, but the importance of the American market has never been in doubt.

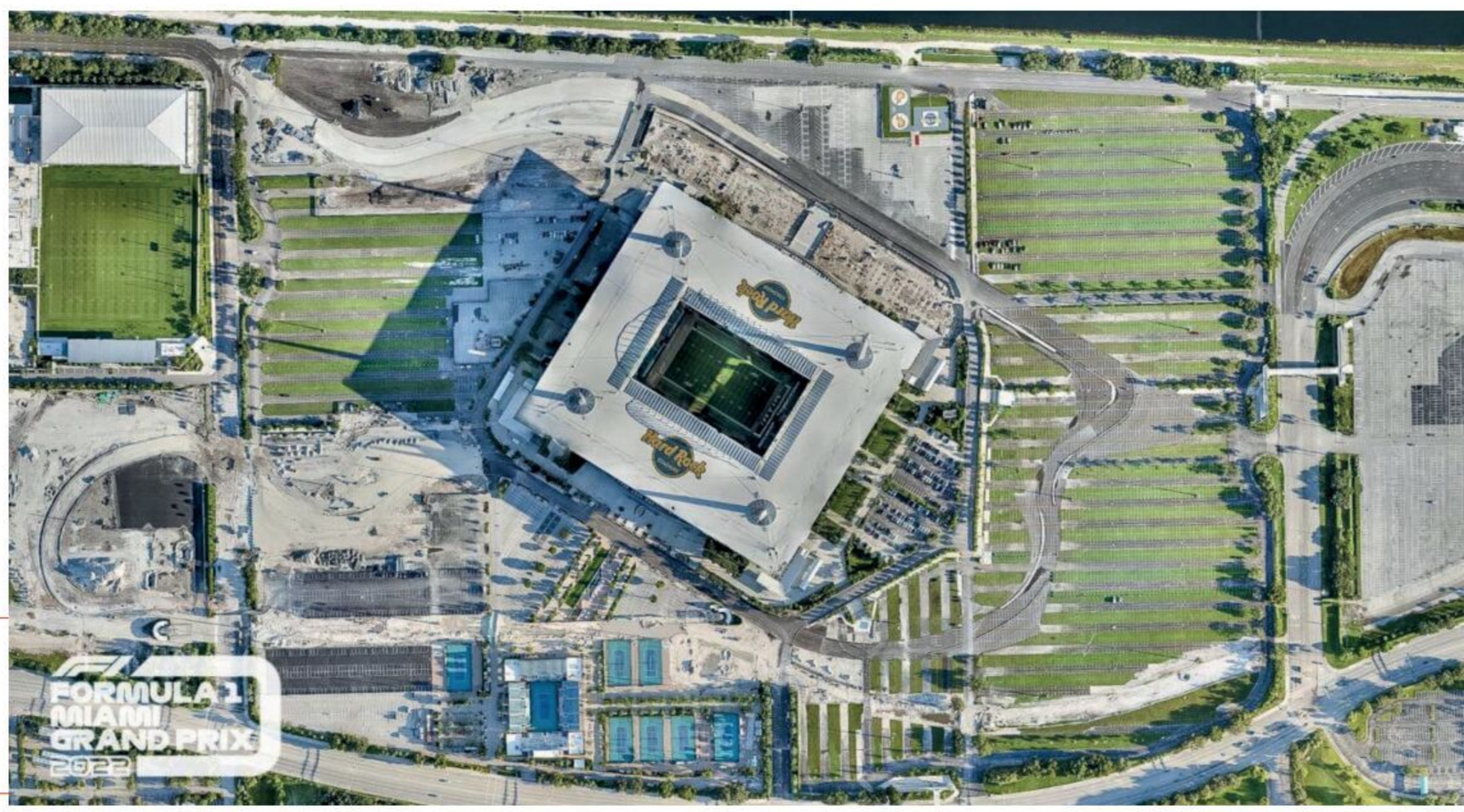
Short-lived events at Riverside and Sebring at the end of the 1950s were followed by two decades of racing at Watkins Glen in the state of New York. Then followed an unsatisfactory series of experiments ranging from the car park of Caesar's Palace in Las Vegas to the square-blocked street circuits of Dallas, Detroit and Phoenix. Only Long Beach touched F1's heart, but the lack of money and commitment failed to secure it in the longer term.

Indianapolis held so much promise in 2000. Anyone who stood on the starting grid for that inaugural event will never forget the scale of the place and its packed grandstands. That was before F1 committed commercial suicide with the ill-tempered, mismanaged and disgraceful spectacle that was served up in 2005, when all Michelin-tyred cars aborted the race citing safety concerns. It's a mystery why Indy's Tony George allowed F1 to return for two more years.

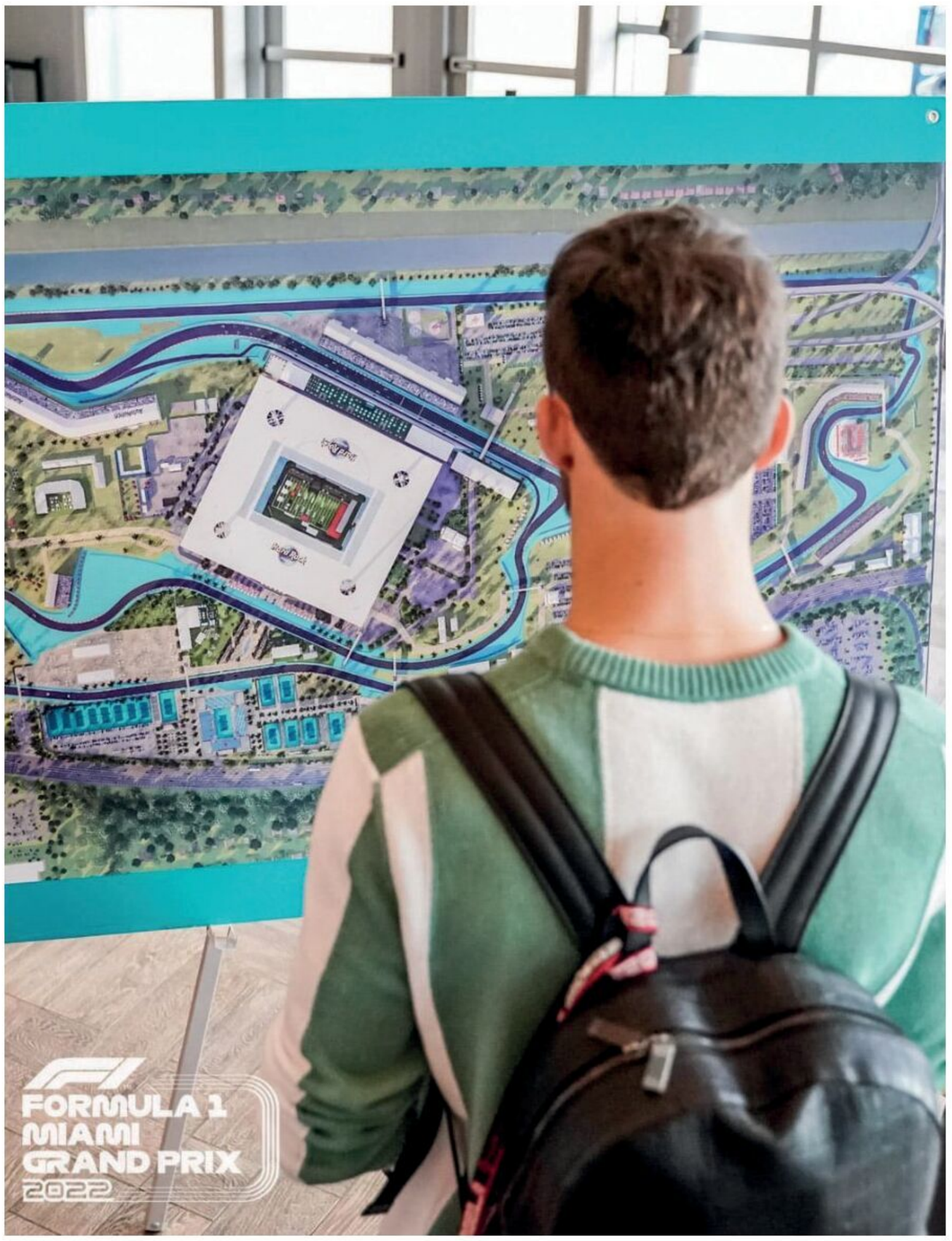
The arrival of Austin's Circuit of The Americas has given Formula 1 a permanent track, a city that gets behind the race and a fanbase that supports the event. Though questions are often raised over its future, it seems unlikely that COTA can fail to capitalise on America's new-found love affair with Formula 1.

Why the need for a second race? Simply put, the demand is there. While the size of Formula 1's fan base in the world's largest economy has always been characterised as small but passionate, its commercial clout has always been significant. Now, at a time of surging growth in US-based sponsorship deals – think Cognizant (Aston Martin) and Oracle (Red Bull) – on top of the dramatic growth in the fan base thanks to the Netflix effect, Miami is set to ride F1's new wave of popularity.

It has taken time for the planets to align. When David Coulthard drove a Red Bull through the Lincoln Tunnel joining New Jersey and the city of New York in 2012, the stunt was held against the backdrop of a much-anticipated Grand Prix of America scheduled for 2013. With Austin having heralded the start of a ▸



After eight races, Indy fell out of love with F1 (above). The Hard Rock Stadium is the Miami track's focal point (right)



Pierre Gasly is another current driver who has taken a trip to the Hard Rock Stadium and surveyed the work going on ahead of the inaugural Miami GP (left, above and right)

new era, the prospect of having a second race set against the backdrop of the New York skyline was an enticing one – particularly as it would form a double-header with the ever-popular Canadian GP in nearby Montréal.

The proposed event, set to take place on a Port Imperial street circuit, never came to pass. Despite the best efforts of promoter Leo Hindery Jr, a former gentleman racer at Le Mans with a stellar career in private equity, the finances were never quite there. Inevitably, Ecclestone's binary approach to matters of finance meant that the event soon went from 'on' to 'off'.

Formula 1's focus shifted to Miami, accelerated by Liberty Media's takeover of F1's commercial rights in late 2016 and the arrival of Americans Chase Carey and Sean Bratches to lead the commercial charge. Within months options were being considered.

Vicente Betancourt, Miami's film and culture administrator, visited the 2017 Monaco Grand Prix to discuss F1's interest in staging an event. The following November, Bratches reciprocated with a visit to Miami, meeting with Betancourt and City of Miami Mayor Francis Suarez.

Initial thoughts included using the seafront FTX Arena as a base with cars traversing a causeway to reach Dodge Island before looping back through the Port Miami Tunnel – a route which the *Miami Herald* soon described as 'a non-starter.' With the Miami Port authorities lukewarm and Betancourt telling local media: "I was very blunt with Formula 1 and said we'd love to entertain it but we have no money", that initial discussion seemed doomed to fail.

Liberty remained undaunted, and for good reason. Although Miami is not even in the top 40 of American cities in terms of population size, it substitutes quantity with quality. A 2018 'rich cities' report by Swiss banking group UBS stated that Miami was second only to Los Angeles and eighth in the world.

One reason is that its bustling commercial and financial centres act as a hub for Latin America. A swathe of companies prefer to run their south American operations from a cosmopolitan, stable US city in which 70% of the population identify as being of Hispanic origin.

Florida's sub-tropical climate and relatively low tax regime is attractive, particularly to the mega-wealthy. This has driven a sustained growth in luxury developments. This includes those offered by former Ferrari driver Eddie Irvine, who flies in from his private island in the Bahamas, 200 miles by seaplane from the very Miami waterfront which F1 initially targeted.

As the plans for a bay area street track met with practical, logistical and political issues, attention shifted to other metropolitan areas. Enter Stephen Ross, billionaire real estate

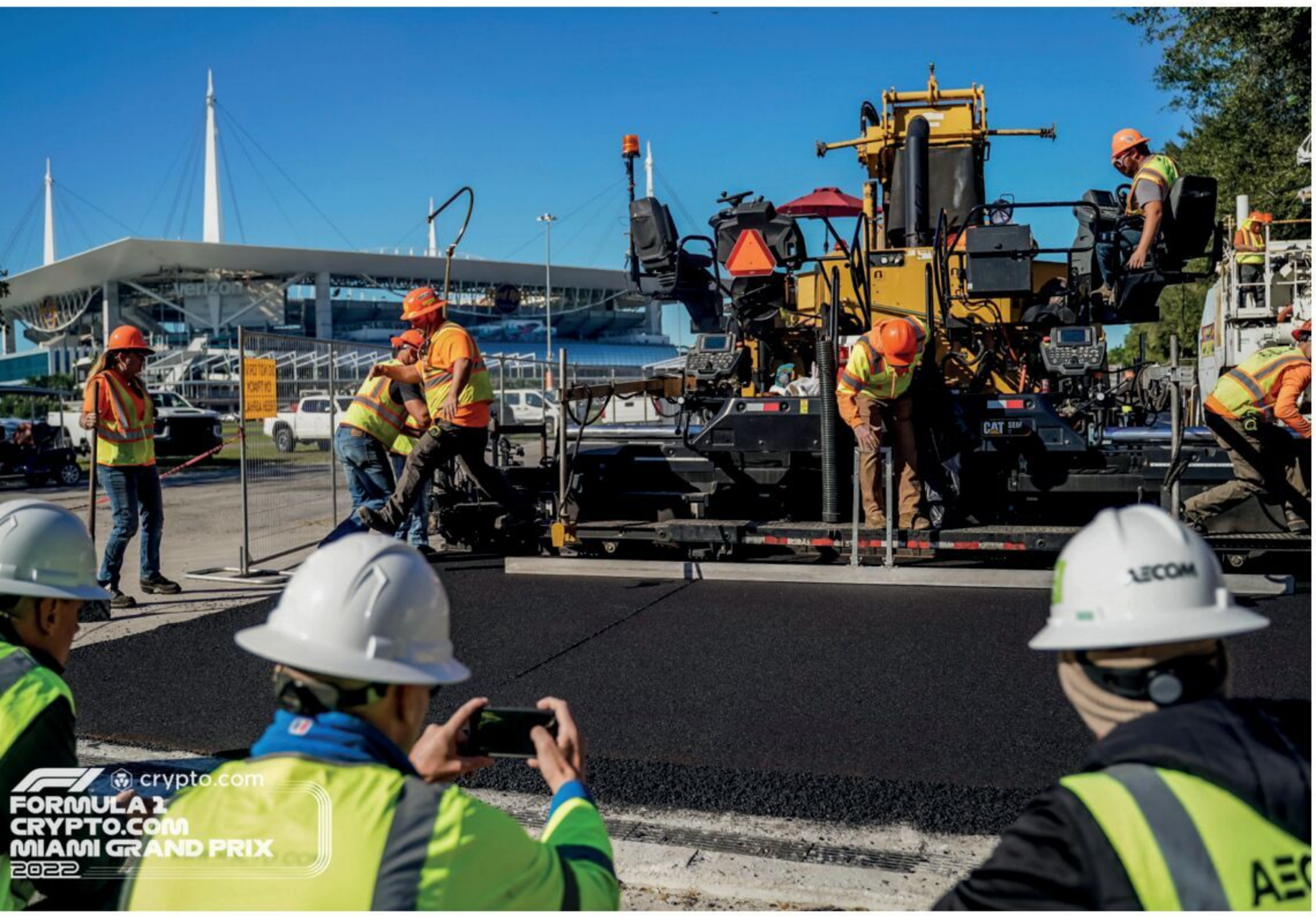
developer, serial entrepreneur and owner of both the Miami Dolphins NFL team and the Hard Rock Stadium. His deal to buy the Dolphins and its stadium was concluded in two tranches totalling US$1.1billion during 2008 and 2009, securing for Ross 95% of Florida's oldest professional sports team.

It was around this time that he also invested in Kangaroo Media, the company behind the FanVision consoles which enabled spectators at sports events to watch live content and replays. It looked like a game changer. Even F1 struck a deal to offer the technology to racegoers. But the growth in live-streaming, the computing power of modern mobile phones and a plethora of apps – F1TV included – sounded its death knell. COVID-19 killed it off completely.

That investment, however, illustrates Ross's passion for sports-related deals, combining his interests in telecommunications, media and content creation. He speaks Liberty's language. That one of his companies had already touched upon the world of F1 comes as no surprise. Nor the fact that he was well known to Liberty Media long before its takeover of F1. They both invested in the Drone Racing League, for example.

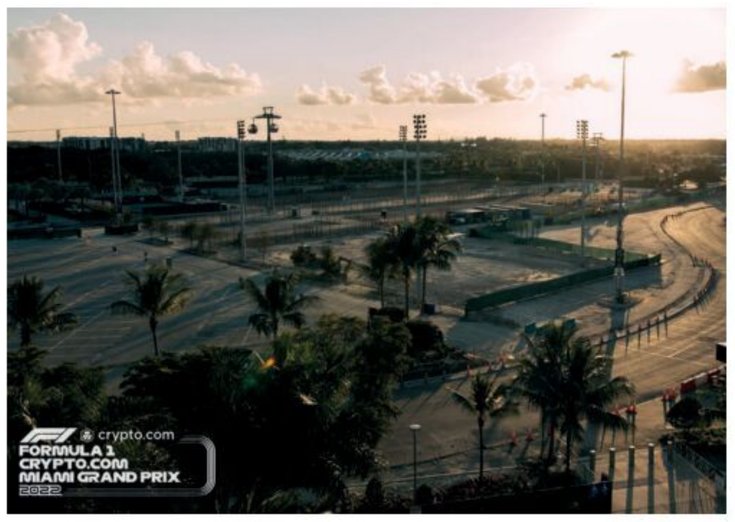
Ross and John Malone, founder and Chairman of Liberty, have much in common. Both are aged 81, both are billionaires, both are financial supporters of the Republican Party and influential contributors to Donald Trump's presidential campaign. Perhaps the only surprise is that it has taken until now for their sports businesses to find a way to work together. Even if these things take time, patience and a great deal of money make them happen.

Red Bull chose the boulevard outside the stadium as the venue for some RB7 donuts, to celebrate Max Verstappen's world title back in December (below)



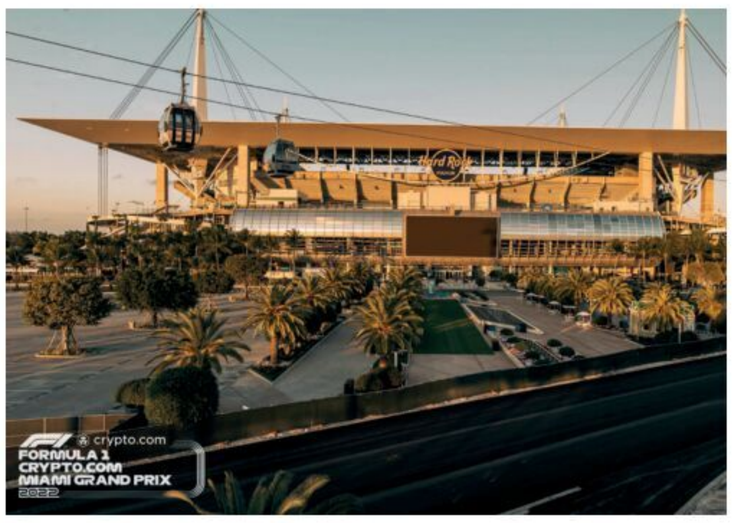
The 3.36-mile temporary circuit contains 19 corners, is 14 miles north of downtown Miami, and has been designed by Apex Design in conjunction with F1

Although Miami's City Commission gave the go ahead for a deal with F1 to be negotiated with Downtown Miami in the summer of 2018, Mayor Suarez announced a delay in the process as more input was sought from residents and businesses in the port area. Resistance to the event included a small group of residents who appointed a lawyer and demanded the city cease its negotiations with F1. The solution, when it came, involved moving the location of the race 14 miles



north of the Miami Downtown area to Miami Gardens city, home to Ross's Hard Rock Stadium complex. It is here that the Miami International Autodrome was conceived.

Once again there was local opposition. Miami Gardens campaigners Betty Ferguson and Karen Hunter-Jackson alleged the event amounted to environmental racism given that it's being held within a predominantly black community. Noise, pollution and disruption to school buses and



Experienced F1 consultant Richard Cregan (left) and Tom Garfinkel, CEO of the Hard Rock Stadium, have been instrumental in delivering the project

PUBLIC AND CORPORATE DEMAND FOR THE RACE HAS BEEN OFF-THE-SCALE, WITH 275,000 PEOPLE PRE-REGISTERING FOR 80,000 TICKETS. THE INITIAL WAVE SOLD OUT IN 40 MINUTES

transport were cited in their attempts to have the race halted. In an Op-Ed for the *Miami Herald* Ferguson complained staging an F1 event 'would be like having a Super Bowl every year for four consecutive days'. An unusual approach when it came to dissuading the city authorities. Even the critics acknowledge how big this event will be.

Key to bringing the deal to fruition and enabling Miami to join F1 for the next decade are a pair of heavyweights – Richard Cregan and Tom Garfinkel. Cregan is a familiar name to F1. An engineering graduate from Dublin's Technical University, he worked for Toyota Motorsport from 1985 until 2008 as team manager across the World Rally Championship, sportscars and F1.

At Ecclestone's request, Cregan quit Toyota to take on the task of delivering the Abu Dhabi GP, working closely with F1 as it sought to create a template to deliver events in new markets. Cregan's success in Abu Dhabi won him a bigger challenge from Ecclestone, to put Sochi on the map by bringing the Russian GP to fruition.

As F1's go-to man in helping deliver new grands prix, Cregan has continued to work closely with F1 throughout the transition from CVC to Liberty ownership – evaluating potential venues, including in Las Vegas and Miami. Appointed CEO of the Miami event last August, Cregan is supported by a team comprising former Dolphins staff along with experienced Abu Dhabi GP colleagues Mark Boyd and Ashley Davies.

Through his day job as vice chairman, president and CEO of the Miami Dolphins and Hard Rock Stadium, Garfinkel is managing partner of the Miami Grand Prix. He is no stranger to racing. Between 2001 and 2006 Garfinkel worked for Chip Ganassi Racing, overseeing business operations, then moving into Major League Baseball before being lured to Miami by Ross in 2013.

Simply put, the Miami Grand Prix represents the best that F1 under Liberty could throw at a partnership with Ross's operation. Although any addition to the F1 calendar is important, Miami is close to home – for Liberty, as F1's owners, and for men like John Malone and Steve Ross, who tend not to do things by half.

The circuit is fast nearing completion, a 3.36 mile street track featuring 19 corners, three straights, the last of which seems to go on forever and leads into a tight left hander. Overtaking is guaranteed, particularly when the DRS zones are confirmed and 2022-spec cars take to the circuit. Turns 1, 11 and 17 carry the promoter's hopes for plenty of action. More than one person has described it as looking 'something like Melbourne, only quite a lot quicker.'

Opposition to the race has not entirely disappeared, but South Florida Motorsports – the official name for the company tasked with organising the race – is working hard to engage with the local community, minimise disruption and bring measurable benefits to Miami Gardens city. An F1 in Schools programme was announced last October and will be administered through the city's Parks and Recreation Department, aimed at children aged 7-17.

Businesses are being encouraged to tap into the opportunity created by F1 coming to town. "It is... rewarding to have partners who are committed to investing in our community and youth," said Rodney Harris, Miami Gardens Mayor. "These initiatives align with the City's overall goal of creating meaningful, sustainable programs for residents and businesses."

Public and corporate demand for the race has been off-the-scale, with 275,000 people pre-registering for 80,000 tickets. The initial wave sold out in 40 minutes.

Many additions to F1's calendar have met with little enthusiasm. Others, like Singapore's night race, have really added to grand prix racing's appeal and spectacle. Miami seems likely to become one of the latter, a grand prize for Liberty and another boost for F1 Stateside.

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TEAMS, DRIVERS AND RACES

Max Verstappen

Age 24
Debut Australia 2015
Starts 141
Wins 20
Podiums 40
Titles 1

F1's new number one (and he will wear #1) defends one of F1's most controversial titles – but there can be no doubting the exceptional level Max reached in wresting that crown from Lewis Hamilton's head.

The level of aggression is not to everyone's taste, and rule makers may intervene to rein him in again, but Verstappen is nonetheless superb in all departments. Some of his qualifying laps last year made Fernando Alonso's jaw drop...

Max should be right in the mix again provided Red Bull's 'kitchen sink' approach to 2021 hasn't set back its all-new car.

GP RACING VERDICT

Carries the ego boost of being champion. Will be tough to stop if RB18 (with slightly reduced Honda support) is up to scratch.

Sergio Pérez

Age 32
Debut Australia 2011
Starts 213
Wins 2
Podiums 13
Best season 4th (2020, 2021)

Quietly got on with the job, put his team (and team-mate) first, won a race, earned plenty of public praise from Red Bull's bosses – but was Pérez a convincing replacement for Pierre Gasly and Alex Albon?

Failing to qualify in the top four 12 times from 21 genuine attempts (discounting Zandvoort), in a car always good enough for the podium, suggests Pérez fell short.

Unfamiliarity and F1's restrictive testing regime played its part, but Valtteri Bottas scored 36 more points, also won a race, scored 11 podiums to Pérez's five, plus four pole positions – and Bottas lost his drive...

GP RACING VERDICT

Uncertainty remains over whether Pérez is good enough to be in a top team. Will have nowhere to hide now the grace period is up.

KEY RED BULL STATS

2013
was the last time Red Bull managed 10 wins or more in a season until 2021

TWO WINS
in 24 races for Sergio Perez after 189 without a victory

59.36%
of Red Bull points have been scored by Max Verstappen since he joined the team in 2016

TEAM STATS

2021 RESULTS
Position 2nd
Points 585.5
Wins/podiums 11/12
Poles 10
Fastest laps 8

LAST 5 YEARS
2021 2nd
2020 2nd
2019 3rd
2018 3rd
2017 3rd

TEAM DETAILS
Base Milton Keynes, UK
Chassis Red Bull RB18
Power unit RBPT-H001
Team principal Christian Horner
Technical director Adrian Newey

TEAM HISTORY
Debut Australia 2005
Races started 325
Wins 75
Poles 73
Fastest laps 76
Points 5,629
Drivers' titles 5
Constructors' titles 4

Lewis Hamilton

Age 37
Debut Australia 2007
Starts 288
Wins 103
Podiums 79
Titles 7

Has every right to feel disillusioned with the FIA's governance of F1 after what transpired in Abu Dhabi, but the way he lost the world championship doesn't detract from the phenomenal performances he produced in trying to retain it.

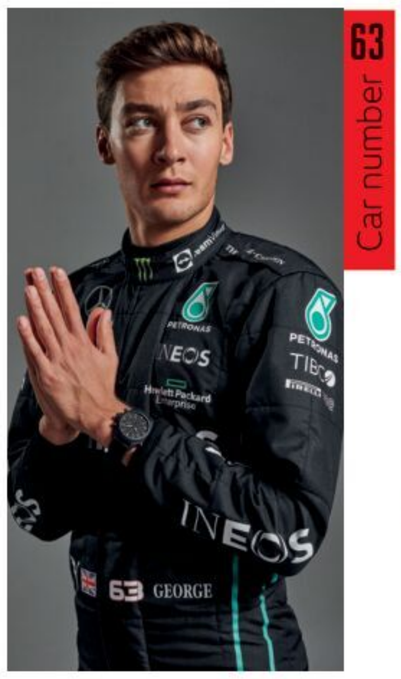
Showed again why he's one of the best F1 drivers ever – raising his game for the toughest of battles with Verstappen. Once fully fit after that late-2020 bout of COVID-19, Hamilton arguably reached his highest level yet in taking the fight to 2021's final lap. He's 37 now, but still absolutely at the peak of his powers.

GP RACING VERDICT

Always strongest in adversity, Lewis could be fuelled by the bitter disappointment of 2021 in a renewed bid for an eighth title.

George Russell

Age 24
Debut Australia 2019
Starts 60
Best result 2nd
Podiums 1
Best season 15th (2021)



After several seasons being outstanding – particularly in qualifying – in underwhelming Williamses, now we get to see what George Russell can really do.

He's already shown his ability to lead a team, so it will be interesting to see how the new dynamic at Mercedes evolves. Hamilton is on record saying he sees Russell as the future of Mercedes – and wants to help George on that journey.

Russell is a huge admirer of Hamilton, so their relationship won't easily descend into toxicity, but Russell's speed should give Lewis more to think about.

GP RACING VERDICT

A big step up, but Russell is more than ready. Job number one is to get closer to Hamilton more often than Valtteri Bottas did.

KEY MERCEDES STATS

FIVE POLES
for Lewis Hamilton in 2021, his joint lowest haul in a season for Mercedes

100
races as Mercedes team-mates for Lewis Hamilton and Valtteri Bottas

TENTH
Lewis Hamilton's São Paulo victory was only the second time in 103 wins where he has started 10th or lower

TEAM STATS

2021 RESULTS
Position 1st
Points 613.5
Wins/podiums 9/19
Poles 9
Fastest laps 10

LAST 5 YEARS
2021 1st
2020 1st
2019 1st
2018 1st
2017 1st

TEAM DETAILS
Bases Brackley and Brixworth, UK
Chassis
Mercedes F1 W13
Power unit
Mercedes M13 E
Team principal
Toto Wolff
Technical director
Mike Elliott

TEAM HISTORY
Debut France 1954
Races started 249
Wins 124
Poles 135
Fastest laps 94
Points 6,437.64
Drivers' titles 9
Constructors' titles 8

Charles Leclerc

Age 24
Debut Australia 2018
Starts 80
Wins 2
Podiums 11
Best season 4th (2019)

It's been a while since Ferrari spoke so enthusiastically about a driver as it does about Leclerc. The Ferrari family compares him to Gilles Villeneuve, while present team management views Leclerc as a champion in waiting, with the ability and mentality to compete with, and beat, F1's very best.

Even Leclerc's current team-mate Carlos Sainz is somewhat in awe, describing Leclerc as "the best qualifier on the grid" and "one of the greatest if not the greatest talent in F1 now". The scary thing is, Ferrari says Leclerc is still getting better...

GP RACING VERDICT

Two poles and a near-win at Silverstone in midfield machinery in 2021 – let's hope Ferrari steps up this year, because Leclerc's remarkable ability deserves better.

Carlos Sainz

Age 27
Debut Australia 2015
Starts 140
Best result 2nd
Podiums 6
Best season 5th (2021)

It's testament to Sainz's determination and tenacity that he's forged such an impressive career for himself, despite starting life in F1 in Verstappen's shadow.

Sainz more than held his own against Leclerc in his first season at Maranello. Ferrari arguably has the strongest pairing of any on the current grid – save perhaps for the new Hamilton/Russell partnership.

A couple of the podium finishes were fortunate, but no one beats Leclerc in a championship without driving superbly well – and Sainz was also ahead in four out of the final five qualifying sessions of last season.

GP RACING VERDICT

Leclerc is elite company, but Sainz settled quickly at Ferrari and is pushing him hard. Could win races if the car is good enough.

TEAM STATS

2021 RESULTS

Position 3rd
Points 323.5
Wins/podiums 0/5
Poles 2
Fastest laps 0

LAST 5 YEARS

2021 3rd
2020 6th
2019 2nd
2018 2nd
2017 2nd

TEAM DETAILS

Base Maranello, Italy
Chassis
Ferrari F1-75
Power unit
Ferrari 066/7
Team principal
Mattia Binotto
Technical director
David Sanchez

TEAM HISTORY

Debut Monaco 1950
Races started 1030
Wins 238
Poles 230
Fastest laps 254
Points 9,613.77
Drivers' titles 15
Constructors' titles 16

KEY FERRARI STATS

THIRTY-EIGHT
points finishes for Ferrari in 2021, an increase of 21 from 2020

4
races led by Charles Leclerc in 2021: Azerbaijan, Britain, Italy and Turkey

ZERO
retirements for Carlos Sainz, the only driver to finish all 22 races in 2021

Daniel Ricciardo

Age 32
Debut Britain 2011
Starts 210
Wins 8
Podiums 24
Best season 3rd (2014, 2016)

Found the challenge of adapting to McLaren's idiosyncratic 2021 car a humbling experience, as he took regular pastings from Lando Norris in the early part of last season – while also feeling homesick in F1's COVID-19 bubble.

Winning at Monza was the highlight, and Ricciardo's drive to fifth at the US GP was decent, but otherwise he was very much second best. Often, Dan couldn't understand how Norris made the lap times he did.

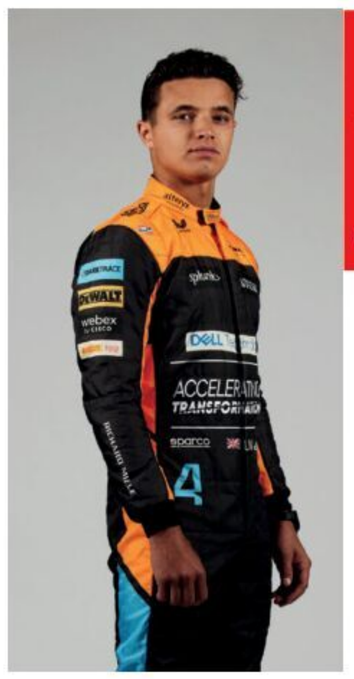
Given how difficult Ricciardo found the MCL35M to drive, 2022's rules reset comes at an opportune time.

GP RACING VERDICT

Ricciardo needs to rediscover the driver Red Bull once feted as a future world champion. His reputation is at stake here.

Lando Norris

Age 22
Debut Australia 2019
Starts 60
Best result 2nd
Podiums 5
Best season 6th (2021)



Outside the title protagonists, Norris was the standout driver of 2021. His results were excellent, the performances even better. In Austria, Norris was faster than the Mercedes drivers, prompting praise from Hamilton. Even beyond mid-season, Norris was ahead of Bottas and Pérez in the standings.

Norris took pole and should have won in Russia; should have had pole at Spa too. McLaren tailed off over the final third of the season, but Norris still managed to beat Pérez to third in Q3 in Abu Dhabi.

No wonder McLaren has extended his contract to ward off potential suitors.

GP RACING VERDICT

Has grown in confidence with each passing season. Now looks a driver capable of being one of F1's leading lights for years to come.

TEAM STATS

2021 RESULTS
Position 4th
Points 275
Wins/podiums 1/4
Poles 1
Fastest laps 2

LAST 5 YEARS
2021 4th
2020 3rd
2019 4th
2018 6th
2017 9th

TEAM DETAILS
Base Woking, UK
Chassis
McLaren MCL36
Power unit
Mercedes M13 E
Team principal
Andreas Seidl
Technical director
James Key

TEAM HISTORY
Debut Monaco 1966
Races started 902
Wins 183
Poles 156
Fastest laps 159
Points 6,148.5
Drivers' titles 12
Constructors' titles 8

KEY McLAREN STATS

17th
Lando Norris is the 17th McLaren driver to claim an F1 pole position

ONE HUNDRED AND SEVENTY
winless races for McLaren after Jenson Button's 2012 Brazil victory, until Daniel Ricciardo's Monza success

22
The number of seasons McLaren has raced with Mercedes engines

Fernando Alonso

Age 40
Debut Australia 2001
Starts 333
Wins 32
Podiums 66
Titles 2

Kimi Räikkönen's retirement means Alonso is now the oldest driver on the grid, and the only one in his forties, but he showed in his comeback season that he's lost none of his guile, speed, or tenacity.

It took a few races to shake off the rust, while Alpine knocked its car into shape, but Alonso more than pulled his weight.

Being nip and tuck with Esteban Ocon in the intra-team qualifying battle shows Alonso is still quick, and his race against Hamilton in Hungary, and drive to the podium in Qatar, were up there with the best of anyone all season.

GP RACING VERDICT

Still one of F1's best, Alonso returned in part because of what these new rules promise, so this is a big year for him, and Alpine.

Esteban Ocon

Age 25
Debut Belgium 2016
Starts 89
Wins 1
Podiums 1
Best season 8th (2017)

For the first part of last season Ocon was absolutely blowing Alonso away, prompting Alpine to fully extract Esteban from Toto Wolff's Mercedes tent and make his loan deal permanent to the end of 2024..

There was a small dip thereafter, but a chassis switch for Silverstone resolved the problem in time for Ocon to score that opportunistic maiden win in Hungary and finish the season strongly.

Ocon scored 35 of his 74 points after that 25-point Budapest haul, proving an excellent partner for Alonso as Alpine beat AlphaTauri to fifth in the constructors' championship.

GP RACING VERDICT

More at ease now he has security with a major team, and racing with Alonso seems to be helping Ocon reach new heights.

TEAM STATS

2021 RESULTS

Position 5th
Points 155
Wins/podiums 1/1
Poles 0
Fastest laps 0

LAST 5 YEARS

2021 5th
2020* 5th
2019* 5th
2018* 4th
2017* 6th

*as Renault

TEAM DETAILS

Bases Enstone, UK & Viry, France
Chassis Alpine A522
Power unit Renault E-Tech RE22
Team principal Otmar Szafnauer
Technical director Pat Fry

TEAM HISTORY

Debut Britain 1977
Races started 422
Wins 36
Poles 51
Fastest laps 33
Points 1,932
Drivers' titles 2
Constructors' titles 2

KEY ALPINE STATS

101
Esteban Ocon became the 101st winner of a world championship F1 race with his Hungarian GP victory (excluding the 10 Indy 500 winners)

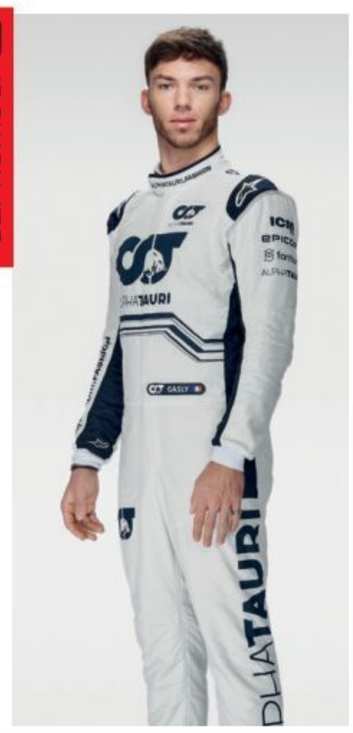
TWENTY SEVEN
Hungarian GP laps led by Fernando Alonso in 2014, the last time he led a race until 2021

5TH
The highest qualifying position for an Alpine driver last season

Pierre Gasly

Age 26
Debut Malaysia 2017
Starts 86
Wins 1
Podiums 2
Best season 7th (2019)

Car number 10



Voiced some displeasure that he was overlooked by Red Bull in favour of Pérez getting a one-year contract extension. Considering the disparity in equipment, and the fact Gasly outqualified Pérez in Bahrain, Monaco, Baku, Spa, Monza, Istanbul and Qatar – and was a whisker away in a few other places too – perhaps he has a point...

But Gasly doesn't want to be a dutiful number two driver. He desires to be number one. At Red Bull, he got chewed up and spat out by Verstappen. At AlphaTauri, Gasly is king of the hill, and he's driving better for it.

GP RACING VERDICT

Has become one of F1's most effective and consistent drivers recently, but still sometimes makes unforced errors in a car that's better than people think.

Yuki Tsunoda

Age 21
Debut Bahrain 2021
Starts 21
Best result 4th
Podiums 0
Best season 14th (2021)

Car number 22

It's odd to think that a driver who doesn't really like Formula 1, never watched it properly until he was in F2 himself, and who had no idea who the likes of Ukyo Katayama and Takuma Sato were during his formative years in motor racing, should end up a fully fledged grand prix driver.

But here we are. Tsunoda was lazy and crash-prone during his rookie season, and even he couldn't believe his contract was extended. But it was, and now he must knuckle down, block out the noise and make the most of his opportunity of a lifetime.

GP RACING VERDICT

Clearly fast – and funny – but Formula 1 is serious business so he must step up. Can't count on Alex Albon as a coach now either. Use it or lose it.

TEAM STATS

2021 RESULTS

Position 6th
Points 142
Wins/podiums 0/1
Poles 0
Fastest laps 1

LAST 5 YEARS

2021 6th
2020 7th
2019* 6th
2018* 9th
2017* 7th

*as Toro Rosso

TEAM DETAILS

Base Faenza, Italy
Chassis
AlphaTauri AT03
Power unit
RBPT-H001
Team principal
Franz Tost
Technical director
Jody Egginton

TEAM HISTORY

Debut Bahrain 2006
Races started 307
Wins 2
Poles 1
Fastest laps 2
Points 749
Drivers' titles 0
Constructors' titles 0

KEY ALPHATAURI STATS

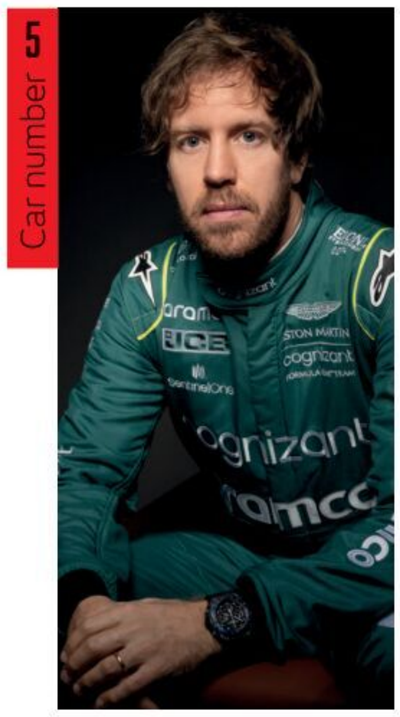
TWO THOUSAND
Yuki Tsunoda's birth year, the only driver on the grid born this century

16
times Pierre Gasly qualified 6th or better in 2021

SIX
Q3 appearances for Yuki Tsunoda in the final seven races

Sebastian Vettel

Age 34
Debut USA 2007
Starts 279
Wins 53
Podiums 69
Titles 4



Bee farmer, diversity campaigner, eco warrior, and all-round good egg – Sebastian Vettel looks again like the fun-loving guy with the sharp sense of humour that first bedazzled F1 audiences in the late-2000s, now he's free of the Ferrari straitjacket and enjoying the relative freedom of F1's midfield.

Aston Martin endured a tough re-entry into F1, struggling to adapt 2020's 'Pink Mercedes' to 2021's rules package and then developing a car with too much drag – but Vettel kept his head down, drove the team on, nearly won the Hungarian GP and bagged an opportunistic podium in Baku.

GP RACING VERDICT

Clearly enjoying his new home, but it remains to be seen what effect the management overhaul at Aston could have on Vettel.

Lance Stroll

Age 23
Debut Australia 2017
Starts 100
Best result 3rd
Podiums 3
Best season 11th (2020)

Is always going to struggle to shake off the 'rich kid' tag that follows him wherever he goes – when your dad owns the F1 team you race for and you get chauffeured everywhere in your own private helicopter he paid for, what chance is there really?

Gave a solid account of himself against Vettel, scoring more points finishes (though fewer overall points) in 2021. Stroll was more often in Q3 in the early part of last season too but looks ultimately to still carry a performance deficit. And what on earth was he doing on lap one in Hungary?

GP RACING VERDICT

A solid driver, who's at last knuckling down and showing real desire to improve – and there's work still to do. Remains strongest in adverse weather.

TEAM STATS

2021 RESULTS

Position 7th
Points 77
Wins/podiums 0/1
Poles 0
Fastest laps 0

LAST 5 YEARS

2021 7th
2020* 4th
2019* 7th
2018* 7th
2017** 4th

*as Racing Point
**as Force India

TEAM DETAILS

Base Silverstone, UK
Chassis
Aston Martin AMR22
Power unit
Mercedes M13 E
Team principal
Mike Krack
Chief technical officer
Andrew Green

TEAM HISTORY

Debut Holland 1959
Races started 27
Wins 0
Poles 0
Fastest laps 0
Points 77
Drivers' titles 0
Constructors' titles 0

KEY ASTON MARTIN STATS

100
The number of GPs Lance Stroll has started, one more than Jackie Stewart

ONE THOUSAND AND FORTY ONE
Azerbaijan in 2021, the race at which Aston Martin claimed its first podium, was the 1041st world championship F1 GP

2019
The year of Sebastian Vettel's last F1 win, at the Singapore GP

Nicholas Latifi

Age 26
Debut Austria 2020
Starts 39
Best result 7th
Podiums 0
Best season 17th (2021)

Car number 6

Was massively overshadowed by Russell at Williams again last season, escaping Q1 only once in the first 11 races, but showed improvement and now has an opportunity to emerge from that shadow and try to step up.

To be fair to Latifi, he made Q2 at Imola; was just 0.002s behind Russell in Q1 in France; within 0.1s in Hungary; 12th overall at Spa (career best); was fifth in Q1 at Zandvoort; just 0.035s adrift at Monza; and beat Russell in Q1 at Sochi, Interlagos and Yas Marina.

But can he find the self-belief to hit that level more often?

GP RACING VERDICT

Williams remains loyal for now, but tough to see how Latifi justifies his seat if and when the team becomes more ambitious.

Alex Albon

Age 25
Debut Australia 2019
Starts 38
Best result 3rd
Podiums 2
Best season 7th (2020)

Car number 23

Esteban Ocon will know something of Alex Albon's recent predicament: talented enough to be on the grid; not quite good enough to be automatic choice for a top team; not well-funded enough to secure a seat easily within F1's midfield; now loaned to one such team while the parent company figures out its longer-term strategy.

Albon spent last season on the fringes – racing in DTM, doing sim work, coaching Yuki Tsunoda – but Red Bull's conveyor belt of talent has somewhat stalled in recent years, so it's farmed Albon out, giving him a chance to resurrect his F1 career.

GP RACING VERDICT

Red Bull could recall Albon for 2023, if he pushes Williams (and himself) on, but good pal George Russell is no easy act to follow...

KEY WILLIAMS STATS

2 The number of times Nicholas Latifi outqualified George Russell in 38 GPs together at Williams

NINE times in 2021 Nicholas Latifi managed a higher finishing position than his grid slot

2239 laps raced in Formula 1 by Alex Albon

TEAM STATS

2021 RESULTS
Position 8th
Points 23
Wins/podiums 0/1
Poles 0
Fastest laps 0

LAST 5 YEARS
2021 8th
2020 10th
2019 10th
2018 10th
2017 5th

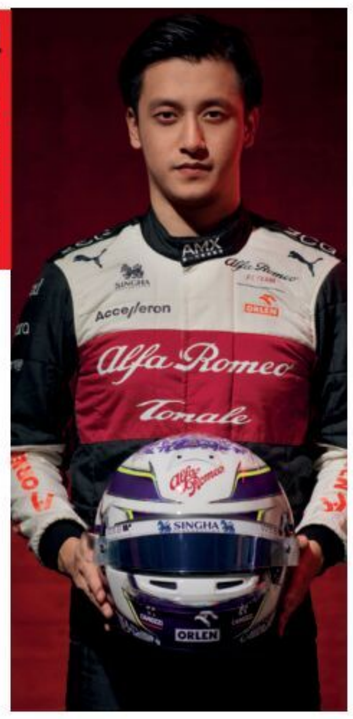
TEAM DETAILS
Base Grove, UK
Chassis
Williams FW44
Power unit
Mercedes M13 E
Team principal
Jost Capito
Technical director
François-Xavier Demaison

TEAM HISTORY
Debut Argentina 1975
Races started 771
Wins 114
Poles 128
Fastest laps 133
Points 3,590
Drivers' titles 7
Constructors' titles 9

Guanyu Zhou

Age 22
Debut Bahrain 2022
Starts N/A
Best result N/A
Podiums N/A
Best season N/A

Car number 24



In a parallel universe, one where Fred Vasseur doesn't answer to a board of directors and has carte blanche (and cash) to do what he likes, this seat probably goes to Alpine reserve Oscar Piastri – or even the Sauber Academy's own Théo Pourchaire.

But Formula 2 champion Piastri must make do with an extensive test programme for Alpine, while Vasseur admits F1 now would be too much too soon for Pourchaire physically, so Zhou gets the chance to be China's first F1 driver after three seasons of steady but unspectacular progression in F2.

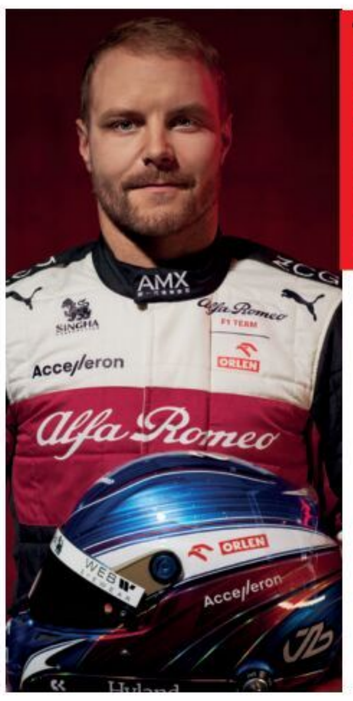
GP RACING VERDICT

Antonio Giovinazzi bemoaned commercial influence at play in handing Zhou this chance, but Piastri feels his ex-F2 rival will go well. Bottas provides a decent yardstick.

Valtteri Bottas

Age 32
Debut Australia 2013
Starts 178
Wins 10
Podiums 57
Best season 2nd (2019/2020)

Car number 77



Forget 2021, the writing was on the wall for Bottas at Mercedes after a laboured 2020 season. Mercedes was dominant in a way it hadn't been since 2016. Hamilton won 11 of 17 races (while missing one completely); Bottas won just two, and only narrowly beat Verstappen to second in the championship.

Bottas arrives at Alfa as a 10-time grand prix winner (one for every five Hamilton won during their five seasons together) with the chance, as Vasseur has said, to be a "central pillar" of this team as it looks to forge ahead after a couple of barren years.

GP RACING VERDICT

A clearly capable driver who will be boosted by becoming undisputed team leader after five years in Hamilton's shadow. Fast, but suspect when going wheel-to-wheel.

TEAM STATS

2021 RESULTS
Position 9th
Points 13
Wins/podiums 0/0
Poles 0
Fastest laps 0

LAST 5 YEARS
2021 9th
2020 8th
2019 8th
2018 8th*
2017 10th*
*as Sauber

TEAM DETAILS
Base Hinwil, Switzerland
Chassis
Alfa Romeo C42
Power unit
Ferrari 066/7
Team principal
Frédéric Vasseur
Technical director
Jan Monchaux

TEAM HISTORY
Debut Britain 1950
Races started 170
Wins 10
Poles 12
Fastest laps 14
Points 292
Drivers' titles 2
Constructors' titles 0

KEY ALFA ROMEO STATS

3 Alfa was the only team to have three different race drivers in 2021

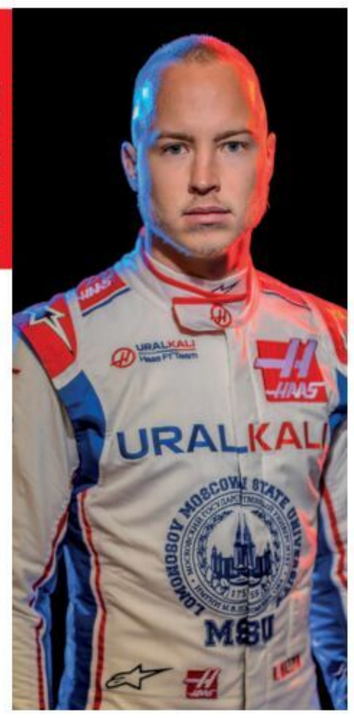
FOUR of Valtteri Bottas' 19 fastest laps were achieved in 2021

29 LAPS completed by Guanyu Zhou in his only free practice appearance in F1 so far: Austria 2021

Nikita Mazepin

Age 23
Debut Bahrain 2021
Starts 21
Best result 14th
Podiums 0
Best season 21st (2021)

Car number 9



Endured a difficult debut season in F1, in which – in a significantly underdeveloped car it must be said – he was pummelled by fellow rookie Mick Schumacher.

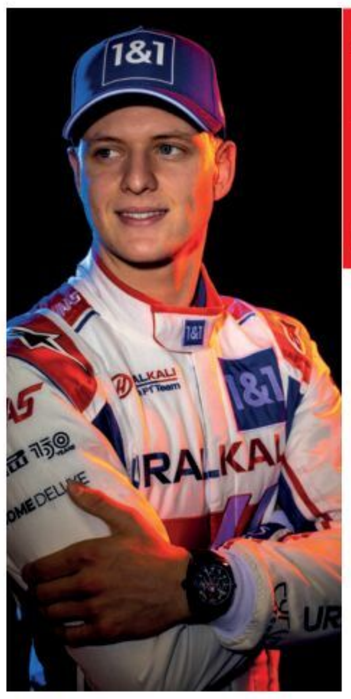
Got close in Baku (where the two first came to blows) and finished ahead a couple of times (at Silverstone and Interlagos), but generally struggled – while battling a weight disadvantage for the first half of the year.

Often over-aggressive and lacking awareness, Mazepin was rarely within 0.5s of Mick in qualifying (and many times 1s or more behind) and was so wild in the early races that Haas nicknamed him 'Mazespin'.

GP RACING VERDICT

Still looks short of F1 standard. May not get much chance to improve if Russia's invasion of Ukraine leads Haas to cancel his contract.

Car number 47



Mick Schumacher

Age 22
Debut Bahrain 2021
Starts 22
Best result 12th
Podiums 0
Best season 19th (2021)

Very difficult for a driver carrying the weight of the Schumacher legacy to showcase his ability in a car as poor as the Haas VF-21 – almost a copy and paste of the VF-20 so the team could focus on 2022 – but Schumacher impressed with his work ethic and attitude.

Highlights included surprise Q1 escapes in France and Turkey – the latter of which was particularly impressive. But there were also some costly shunts: in France (preventing others beating him in Q1), Monaco and Hungary (where he shunted in practice and couldn't make qualifying), and Jeddah. Needs to temper that.

GP RACING VERDICT

Was relaxed last year knowing his 2022 seat was all but guaranteed, but now needs to show he's worth long-term Ferrari backing.

TEAM STATS

2021 RESULTS

Position 10th
Points 0
Wins/podiums 0/0
Poles 0
Fastest laps 0

LAST 5 YEARS

2021 10th
2020 9th
2019 9th
2018 5th
2017 8th

TEAM DETAILS

Base Banbury, UK; Kannapolis, USA, Varano and Maranello, Italy;
Chassis Haas VF-22
Power unit Ferrari 066/7
Team principal Guenther Steiner
Technical director Simone Resta

TEAM HISTORY

Debut Australia 2016
Races started 122
Wins 0
Poles 0
Fastest laps 2
Points 200
Drivers' titles 0
Constructors' titles 0

KEY HAAS STATS

SEVEN TIMES
in 2021 the two Haas cars started a race 19th and 20th on the grid

28
pointless races for Haas since the 2020 Eifel GP

FIVE & SIX
Nikita Mazepin and Mick Schumacher are only the fifth and sixth drivers to race for Haas

FORMULA 1 CALENDAR 2022

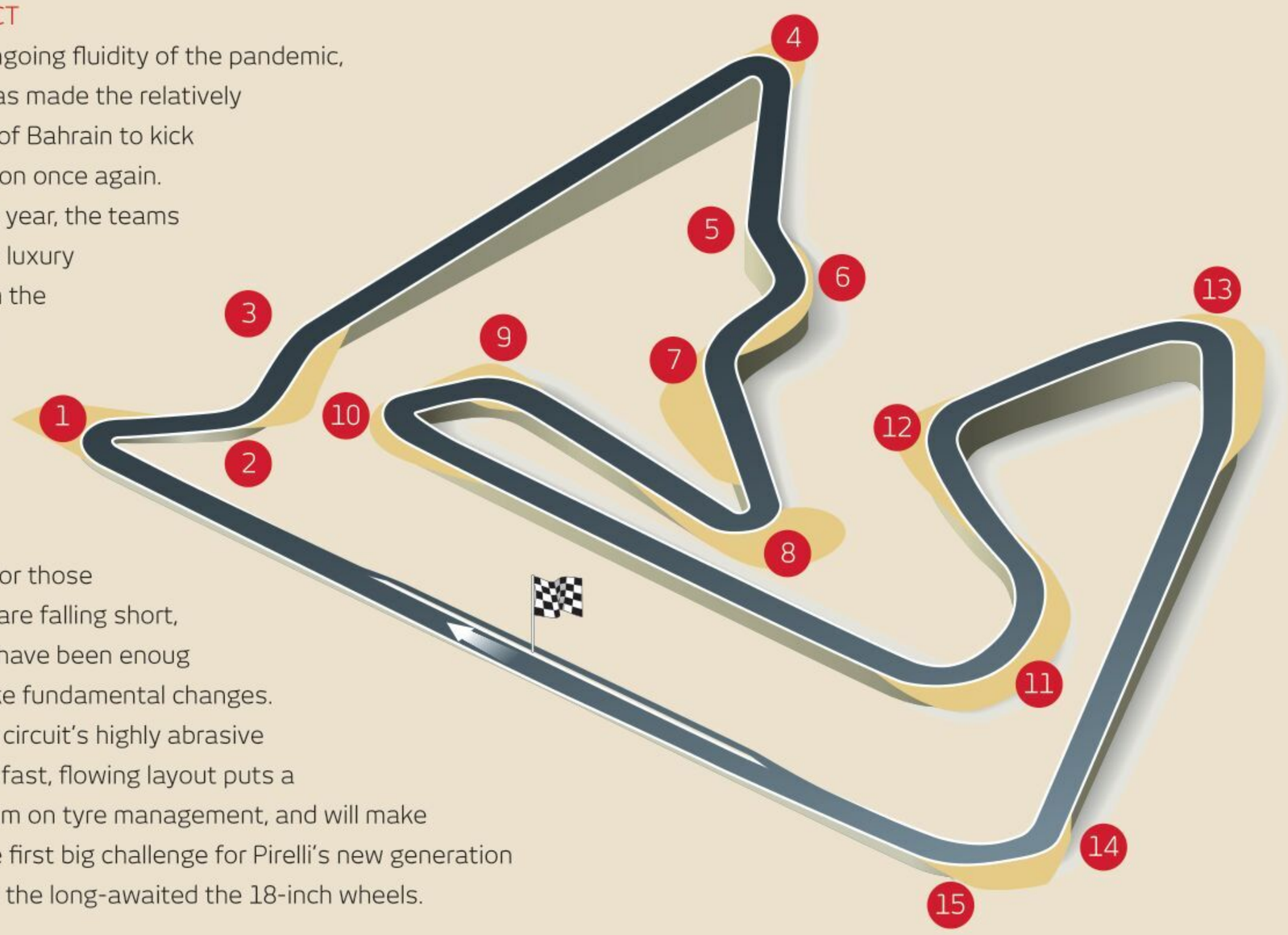
PICTURE: MARK SUTTON. ILLUSTRATIONS: ALAN ELDRIDGE

ROUND 1/23

Bahrain Sakhir, 18-20 March

OUR VERDICT

Given the ongoing fluidity of the pandemic, Formula 1 has made the relatively safe choice of Bahrain to kick off the season once again. Just like last year, the teams will have the luxury of data from the pre-season test here – a luxury, that is, for teams which are going well. For those whose cars are falling short, there won't have been enoug time to make fundamental changes. The Bahrain circuit's highly abrasive surface and fast, flowing layout puts a huge premium on tyre management, and will make this race the first big challenge for Pirelli's new generation of rubber on the long-awaited the 18-inch wheels.



RACE DATA

Circuit name
Bahrain International Circuit
First GP 2004
F1 races held 17
Laps 57
Circuit length 3.362 miles
Race distance
191.530 miles
Direction Clockwise
Winners from pole 7
Race start (UK time) 3pm

LAST RACE HERE (2021)

Winner
Lewis Hamilton (Mercedes)
Margin of victory
0.745s
Fastest lap 1m32.090s,
V Bottas
Race leaders 2
Pitstops 40
Overtakes 43

ROUND 2/23

Saudi Arabia Jeddah, 25-27 March

RACE DATA
Circuit name Jeddah Corniche Circuit
First GP 2021
F1 races held 1
Laps 50
Circuit length 3.836 miles
Race distance 191.662 miles
Direction Anticlockwise
Winners from pole 1
Race start (UK time) 6pm

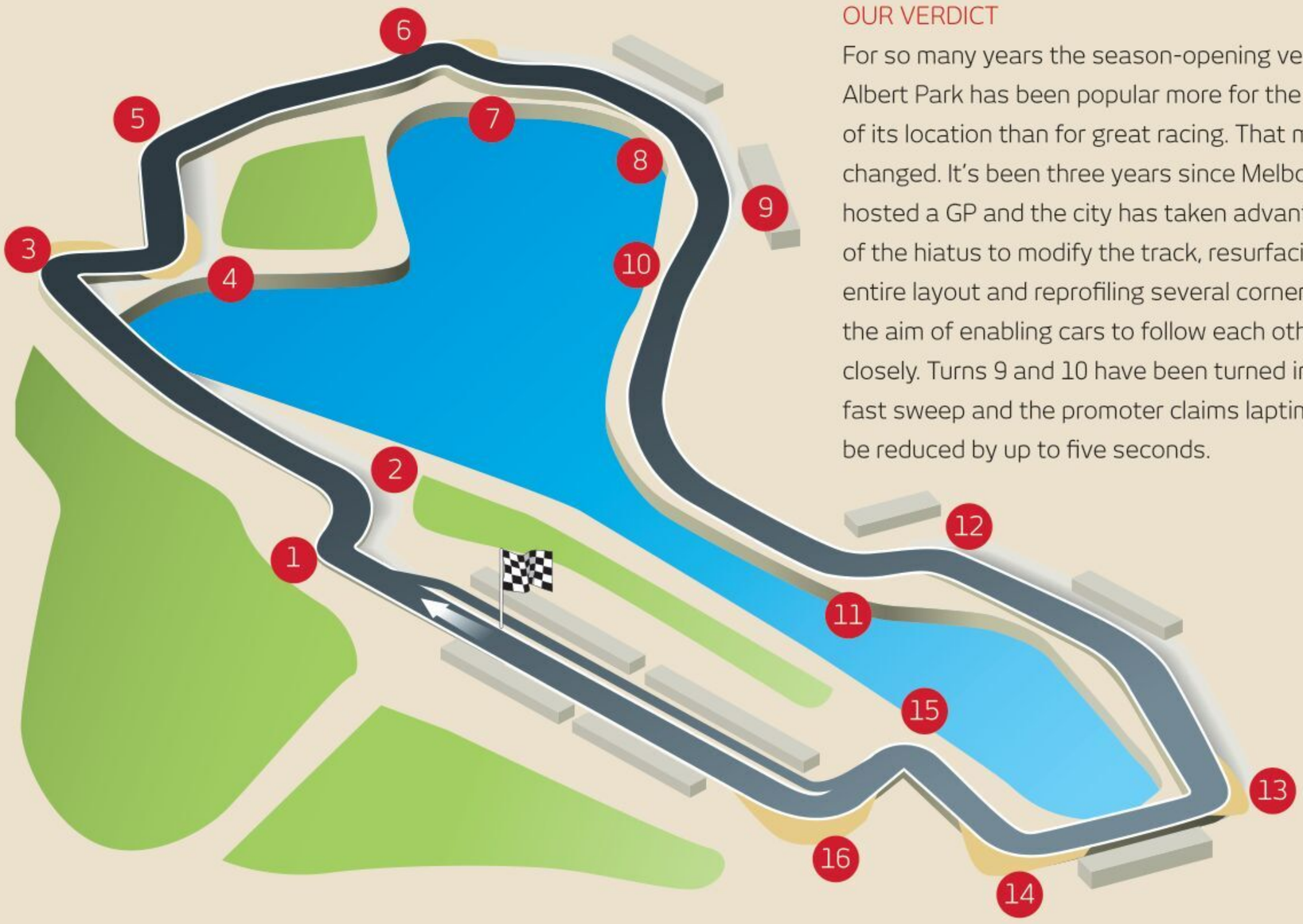
LAST RACE HERE (2021)
Winner Lewis Hamilton (Mercedes)
Margin of victory 21.825s
Fastest lap 1m30.734s, L Hamilton
Race leaders 3
Pitstops 47
Overtakes 20

OUR VERDICT

F1's newest venue moves nearer the front of the pack, having hosted the penultimate round of the 2021 season. Beneath all the pizzazz it's not a great racetrack. Overtaking opportunities are few and the general impression is that key elements of best design practice have been sacrificed at the altar of being able to boast of being F1's fastest street circuit. It's certainly quick, but there are too many dangerously blind corners. Because of this, the organisers are making minor track alterations to improve driver sightlines

ROUND 3/23

Australia Melbourne, 8-10 April



OUR VERDICT

For so many years the season-opening venue, Albert Park has been popular more for the charms of its location than for great racing. That may have changed. It's been three years since Melbourne hosted a GP and the city has taken advantage of the hiatus to modify the track, resurfacing the entire layout and reprofiling several corners with the aim of enabling cars to follow each other more closely. Turns 9 and 10 have been turned into a fast sweep and the promoter claims laptime will be reduced by up to five seconds.

RACE DATA
Circuit name Albert Park
First GP 1996
F1 races held 24
Laps 58
Circuit length 3.295 miles
Race distance 191.118 miles
Direction Clockwise
Winners from pole 9
Race start (UK time) 6am

LAST RACE HERE (2019)
Winner Valtteri Bottas (Mercedes)
Margin of victory 20.886s
Fastest lap 1m25.580s, V Bottas
Race leaders 2
Pitstops 22
Overtakes 10

ROUND 4/23

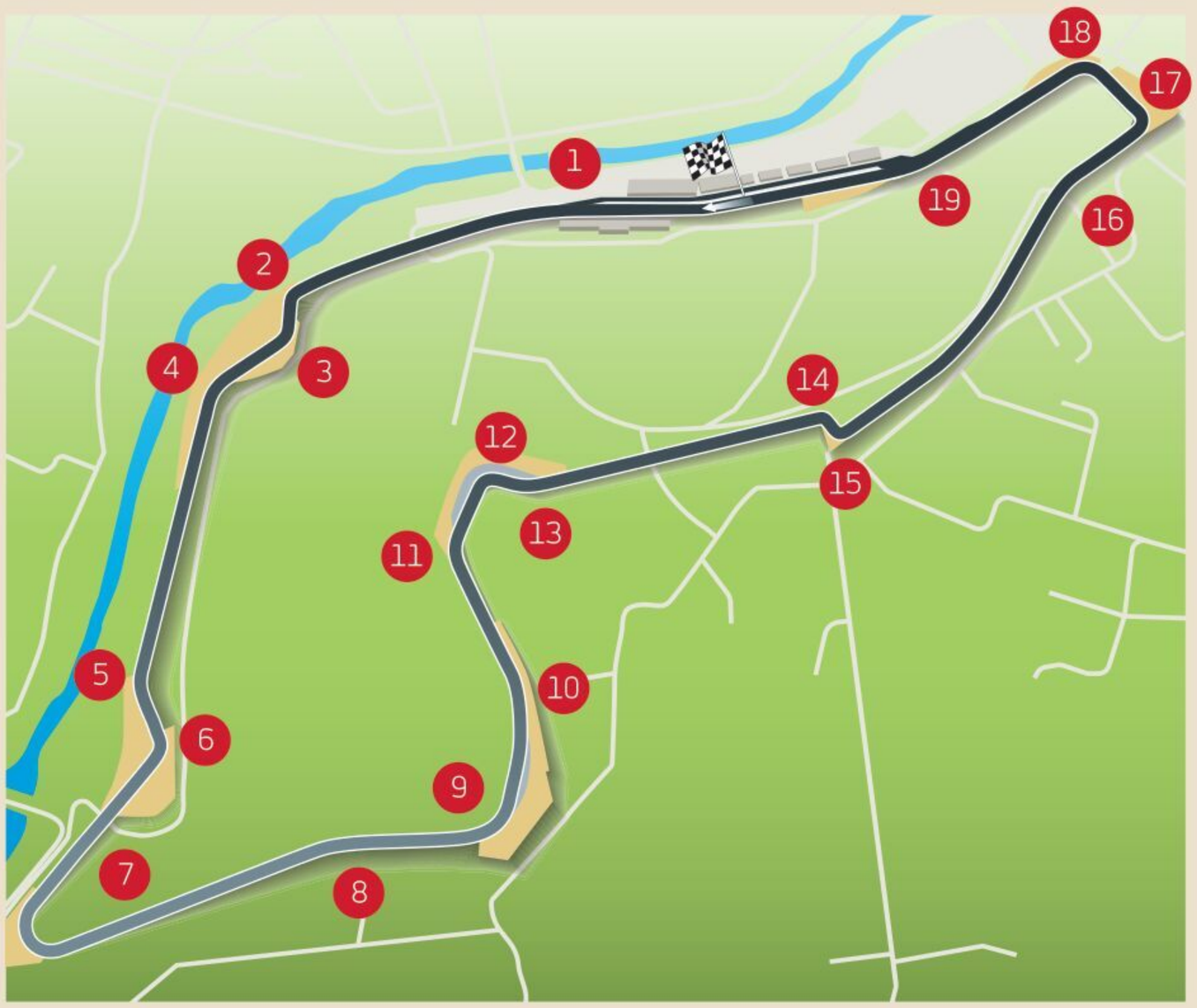
Emilia Romagna Imola, 22-24 April

RACE DATA

Circuit name
Autodromo Enzo e Dino Ferrari
First GP 1980
F1 races held 29
Laps 63
Circuit length 3.050 miles
Race distance
192.03 miles
Direction
Anticlockwise
Winners from pole 9
Race start (UK time) 2pm

LAST RACE HERE (2021)

Winner
Max Verstappen (Red Bull)
Margin of victory 22.000s
Fastest lap 1m16.702s,
L Hamilton
Race leaders 2
Pitstops 45
Overtakes 28



OUR VERDICT

Imola gets another weekend in the sun courtesy of the Chinese GP being absent again this year. It's a resolutely old-school track: narrow, undulating and technically challenging. Nailing the chicanes is tough but important, and the unpredictable weather at this time of year can add to the challenge. Overtaking opportunities are rare around the track so the removal of the corner before the pits, which has elongated the main 'straight', has really raised the stakes on the run to Tamburello. As George Russell and Valtteri Bottas demonstrated in 2021, this is now a major flashpoint.

ROUND 5/23

Miami Miami Gardens, 6-8 May

OUR VERDICT

Formula 1's commercial rights holder has been desperate to get a second US venue on the calendar and so F1 returns to Florida for the first time since 1959. After a false start in downtown, the Miami GP will now be held on a temporary layout around the Hard Rock Stadium, home of the Miami Dolphins NFL team. It's been created by Apex Circuit Design rather than Hermann Tilke's outfit, and gone through 36 iterations with input from F1's technical staff. Sounds promising...

RACE DATA

Circuit name
Miami International
Autodrome
First GP 2022
F1 races held 0
Laps 57
Circuit length 3.362 miles
Race distance
191.612 miles
Direction
Anticlockwise
Winners from pole N/A
Race start (UK time) 8.30pm

ROUND 6/23

Spain Barcelona, 20-22 May

OUR VERDICT

A track most F1 drivers can negotiate in their sleep, such is Barcelona's ubiquity as a testing venue. Its broad variety of corner types makes for a good car workout but rarely created the circumstances for great racing – for many years now DRS has been the chief facilitator of overtaking moves. The success or otherwise of F1's new technical package will be judged by its effects on the spectacle here: if the cars really can follow each other more closely around corners, more opportunities might eventuate, particularly through the curve of Turn 3 and into Turn 4.

RACE DATA

Circuit name
Circuit de Barcelona-Catalunya
First GP 1991
F1 races held 31
Laps 66
Circuit length 2.892 miles
Race distance
190.825 miles
Direction Clockwise
Winners from pole 23
Race start (UK time) 2pm

LAST RACE HERE (2021)

Winner
Lewis Hamilton (Mercedes)
Margin of victory 15.841s
Fastest lap 1m18.149s,
M Verstappen
Race leaders 2
Pitstops 37
Overtakes 44

ROUND 7/23

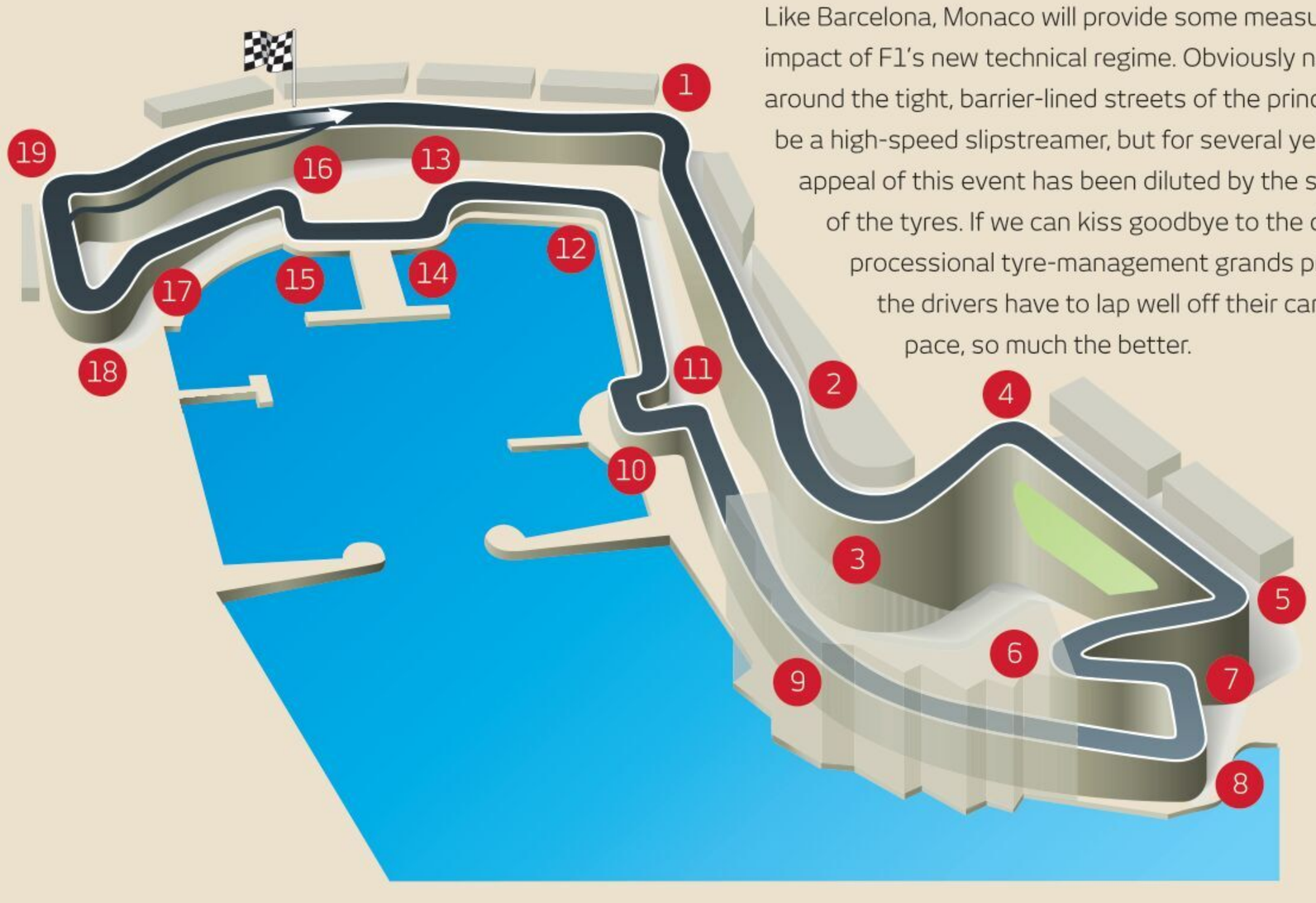
Monaco Monte Carlo, 26-29 May

RACE DATA

Circuit name
Circuit de Monaco
First GP 1950
F1 races held 67
Laps 78
Circuit length 2.075 miles
Race distance
161.879 miles
Direction Clockwise
Winners from pole 30
Race start (UK time) 2pm

LAST RACE HERE (2021)

Winner
Max Verstappen (Red Bull)
Margin of victory
8.968s
Fastest lap 1m12.909s
L Hamilton
Race leaders 1
Pitstops 19
Overtakes 4



OUR VERDICT

Like Barcelona, Monaco will provide some measure of the impact of F1's new technical regime. Obviously no race around the tight, barrier-lined streets of the principality will be a high-speed slipstreamer, but for several years now the appeal of this event has been diluted by the sensitivity of the tyres. If we can kiss goodbye to the days of processional tyre-management grands prix in which the drivers have to lap well off their cars' ultimate pace, so much the better.

ROUND 8/23

Azerbaijan Baku, 10-12 June

RACE DATA

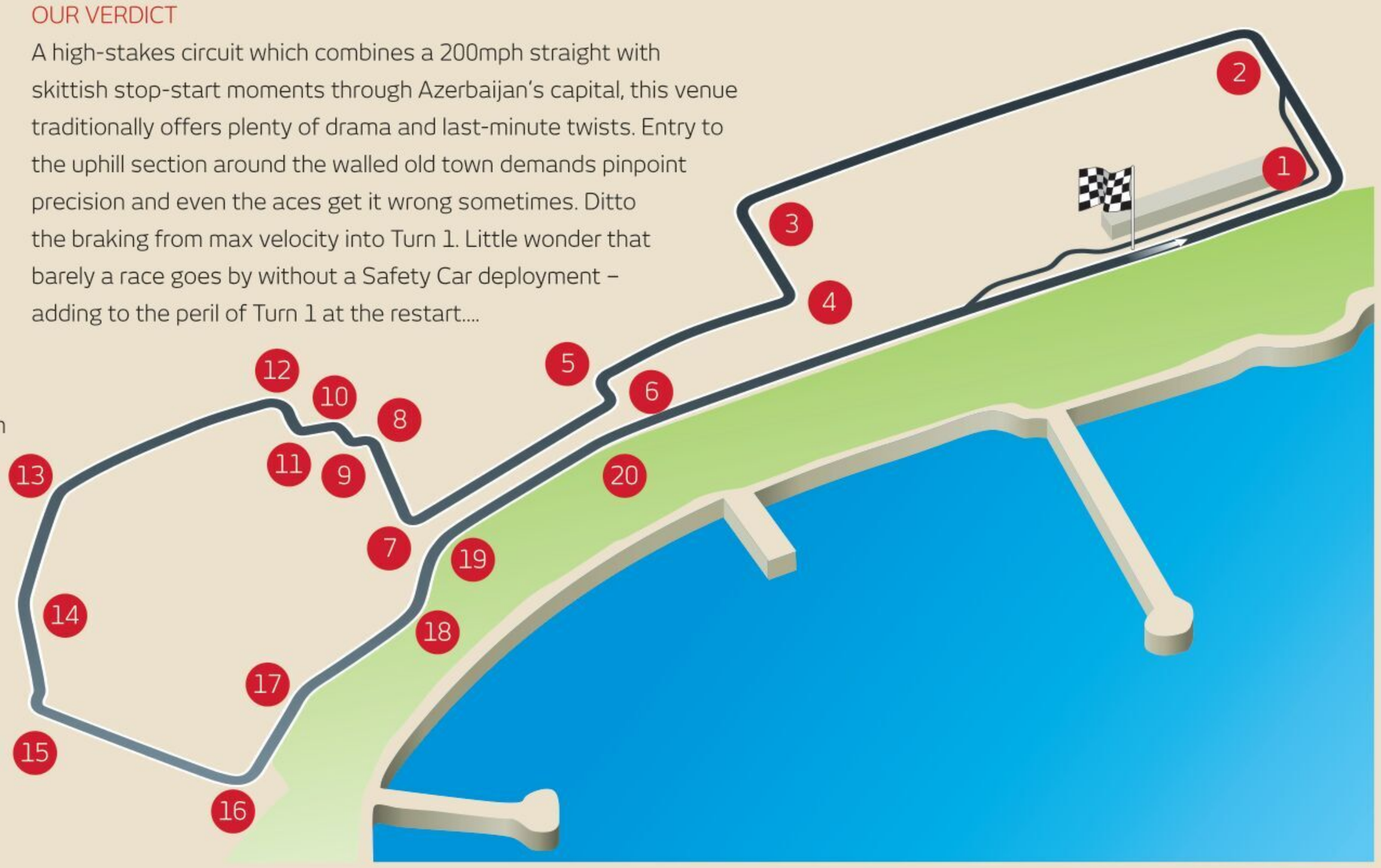
Circuit name
Baku City Circuit
First GP 2016
F1 races held 5
Laps 51
Circuit length 3.730 miles
Race distance
190.170 miles
Direction Anticlockwise
Winners from pole 2
Race start (UK time) 12pm

LAST RACE HERE (2021)

Winner
Sergio Pérez (Red Bull)
Margin of victory
1.385s
Fastest lap 1m44.481s,
M Verstappen
Race leaders 5
Pitstops 43
Overtakes 21

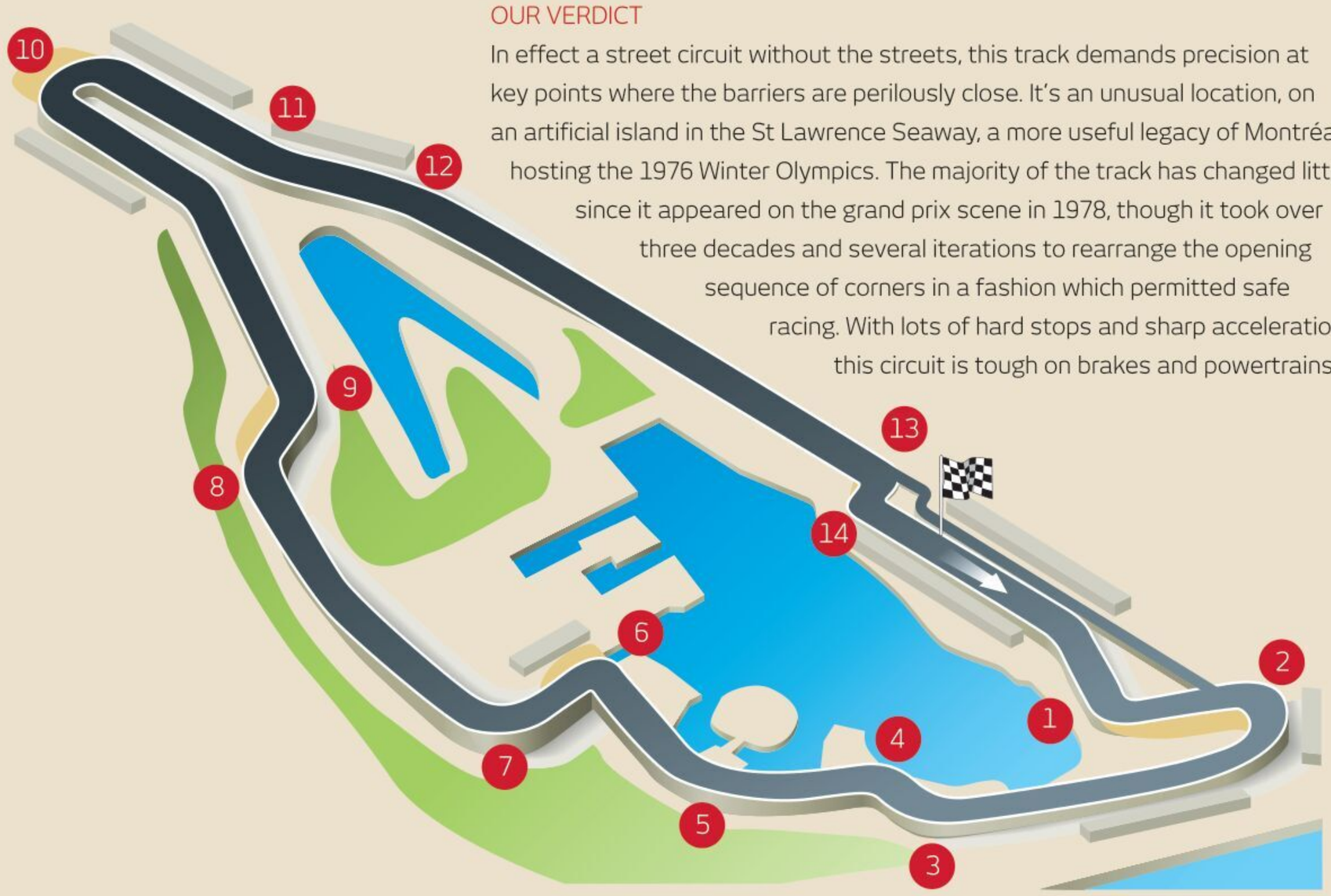
OUR VERDICT

A high-stakes circuit which combines a 200mph straight with skittish stop-start moments through Azerbaijan's capital, this venue traditionally offers plenty of drama and last-minute twists. Entry to the uphill section around the walled old town demands pinpoint precision and even the aces get it wrong sometimes. Ditto the braking from max velocity into Turn 1. Little wonder that barely a race goes by without a Safety Car deployment – adding to the peril of Turn 1 at the restart....



ROUND 9/23

Canada Montréal, 17-19 June



OUR VERDICT

In effect a street circuit without the streets, this track demands precision at key points where the barriers are perilously close. It's an unusual location, on an artificial island in the St Lawrence Seaway, a more useful legacy of Montréal hosting the 1976 Winter Olympics. The majority of the track has changed little since it appeared on the grand prix scene in 1978, though it took over three decades and several iterations to rearrange the opening sequence of corners in a fashion which permitted safe racing. With lots of hard stops and sharp accelerations, this circuit is tough on brakes and powertrains.

RACE DATA

Circuit name
Circuit Gilles Villeneuve
First GP 1978
F1 races held 40
Laps 70
Circuit length 2.709 miles
Race distance
189.685 miles
Direction Clockwise
Winners from pole 19
Race start (UK time) 7pm

LAST RACE HERE (2019)

Winner
Lewis Hamilton (Mercedes)
Margin of victory
3.658s
Fastest lap 1m13.078s,
V Bottas
Race leaders 3
Pitstops 22
Overtakes 28

ROUND 10/23

Great Britain Silverstone, 1-3 July

RACE DATA

Circuit name
Silverstone Grand Prix Circuit
First GP 1950
F1 races held 56
Laps 52
Circuit length 3.660 miles
Race distance
190.262 miles
Direction Clockwise
Winners from pole 20
Race start (UK time) 3pm

LAST RACE HERE (2021)

Winner
Lewis Hamilton (Mercedes)
Margin of victory 3.871s
Fastest lap
1m28.617s, S Pérez
Race leaders 2
Pitstops 41
Overtakes 22

OUR VERDICT

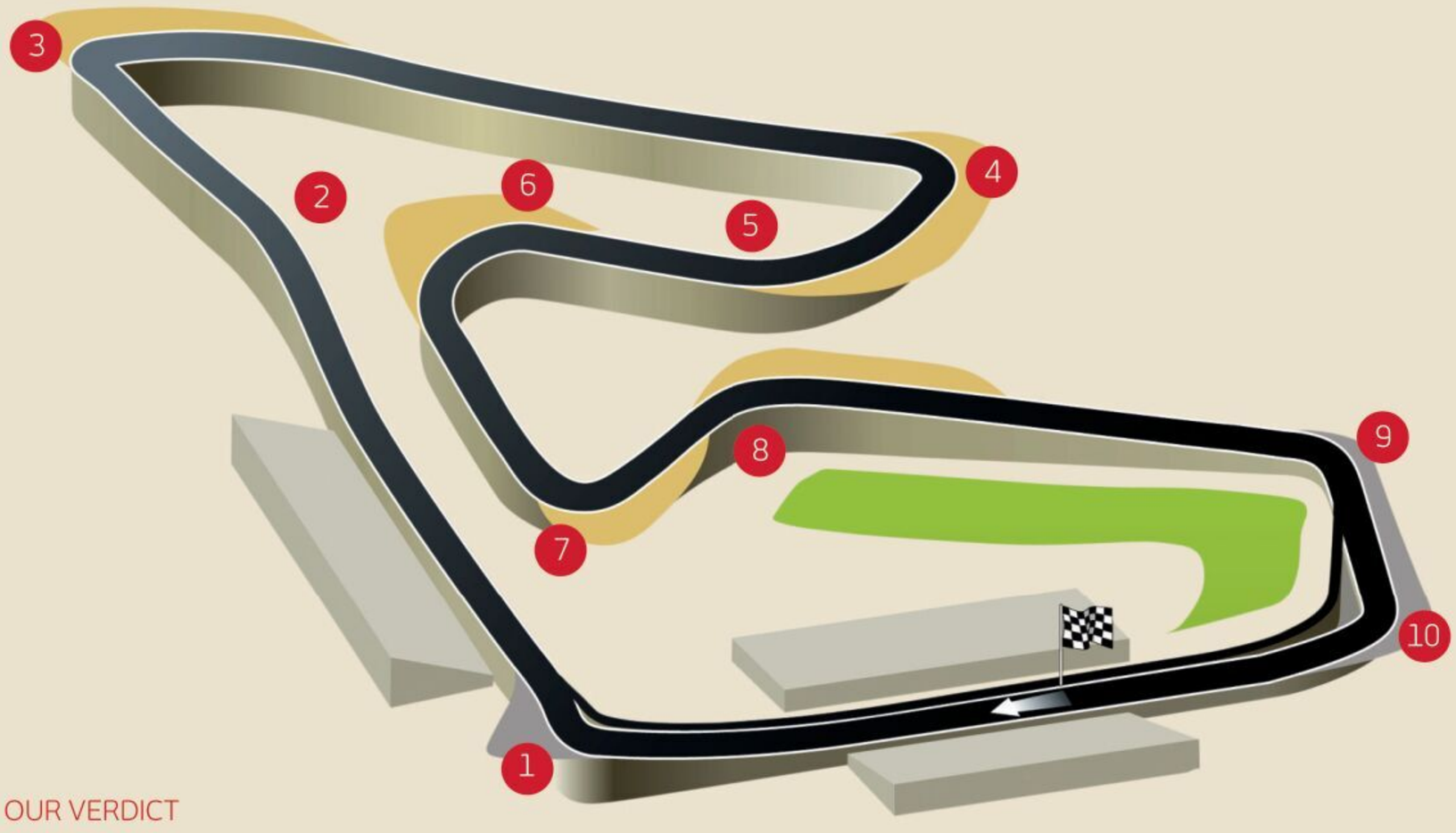
Last year's British GP was a turning point in many ways as the UK enjoyed a brief heatwave, and a capacity crowd was admitted to an F1 race for the first time since the pandemic began. On track, Mercedes fitted the upgrades which facilitated Lewis Hamilton's late-season resurgence – given that so many teams are based nearby, it's the logical location to do so. The ultra-fast and flowing layout should flatter what will be F1's heaviest generation of cars yet, but it's always brutal on tyres. By this point in the season, teams ought to know how hard they can push the new rubber...

ROUND 11/23

Austria Red Bull Ring, 8-10 July

RACE DATA

Circuit name
Red Bull Ring
First GP 1970
F1 races held 36
Laps 71
Circuit length 2.688 miles
Race distance
190.848 miles
Direction Clockwise
Winners from pole 13
Race start (UK time) 2pm



LAST RACE HERE (2021)

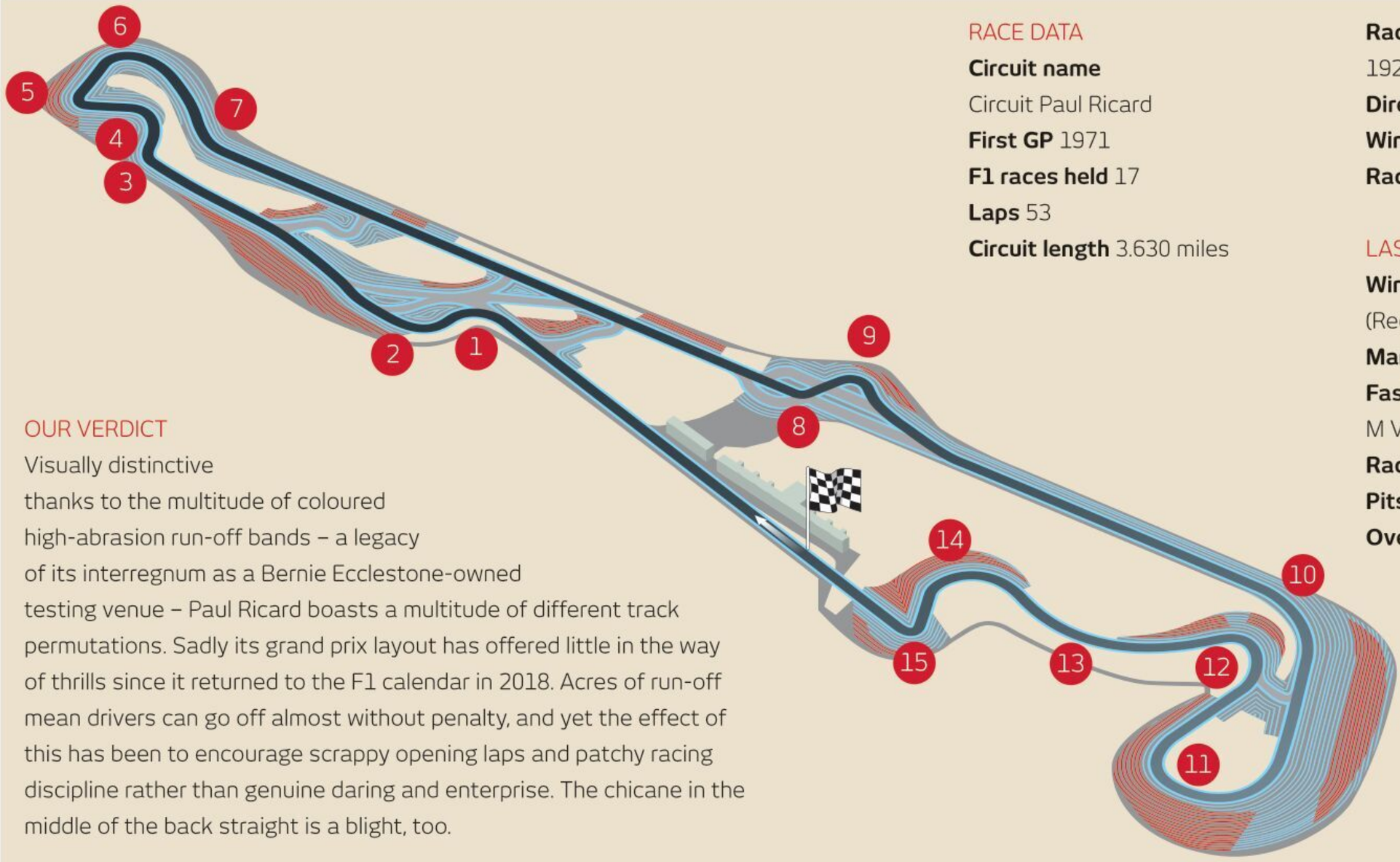
Winner
Max Verstappen (Red Bull)
Margin of victory
17.973s
Fastest lap 1m06.200s, M Verstappen
Race leaders 1
Pitstops 27
Overtakes 27

OUR VERDICT

F1's second-shortest circuit after Monaco, but the race here is nearly 30 miles longer despite encompassing fewer laps. The Red Bull Ring's slightly unfortunate history is well-documented – greedy landowners meant the current layout is a tightly pinched variation on the original – but it's a fun and atmospheric venue to visit. It's thrown up some remarkably interesting and exciting races, but the nature of the layout requires strict policing of track limits – one of the banes of recent F1 history.

ROUND 12/23

France Paul Ricard, 22-24 July



RACE DATA

Circuit name
Circuit Paul Ricard
First GP 1971
F1 races held 17
Laps 53
Circuit length 3.630 miles
Race distance
192.432 miles
Direction Clockwise
Winners from pole 11
Race start (UK time) 2pm

LAST RACE HERE (2021)

Winner Max Verstappen (Red Bull)
Margin of victory 2.904s
Fastest lap 1m36.404s, M Verstappen
Race leaders 3
Pitstops 22
Overtakes 52

OUR VERDICT

Visually distinctive thanks to the multitude of coloured high-abrasion run-off bands – a legacy of its interregnum as a Bernie Ecclestone-owned testing venue – Paul Ricard boasts a multitude of different track permutations. Sadly its grand prix layout has offered little in the way of thrills since it returned to the F1 calendar in 2018. Acres of run-off mean drivers can go off almost without penalty, and yet the effect of this has been to encourage scrappy opening laps and patchy racing discipline rather than genuine daring and enterprise. The chicane in the middle of the back straight is a blight, too.

ROUND 13/23

Hungary Hungaroring, 29-31 July

OUR VERDICT

Once a byword for processional racing, this undulating track east of Budapest underwent a resurgence in the hybrid era as car weights went up and tyre longevity headed the other way. Also a regular on the menu is the peculiarly changeable weather. It's still a tough prospect to overtake here, all other factors being equal, so the early laps can be a bunfight – last year Valtteri Bottas seemed to be emulating the trajectory of a bowling ball into Turn 1 after the start.

RACE DATA

Circuit name
Hungaroring
First GP 1986
F1 races held 36
Laps 70
Circuit length 2.722 miles
Race distance
190.530 miles
Direction Clockwise
Winners from pole 16
Race start (UK time) 2pm

LAST RACE HERE (2021)

Winner
Esteban Ocon (Alpine)
Margin of victory
2.736s
Fastest lap
1m18.394s, P Gasly
Race leaders 3
Pitstops 52
Overtakes 16

ROUND 14/23

Belgium Spa-Francorchamps, 26-28 August

RACE DATA

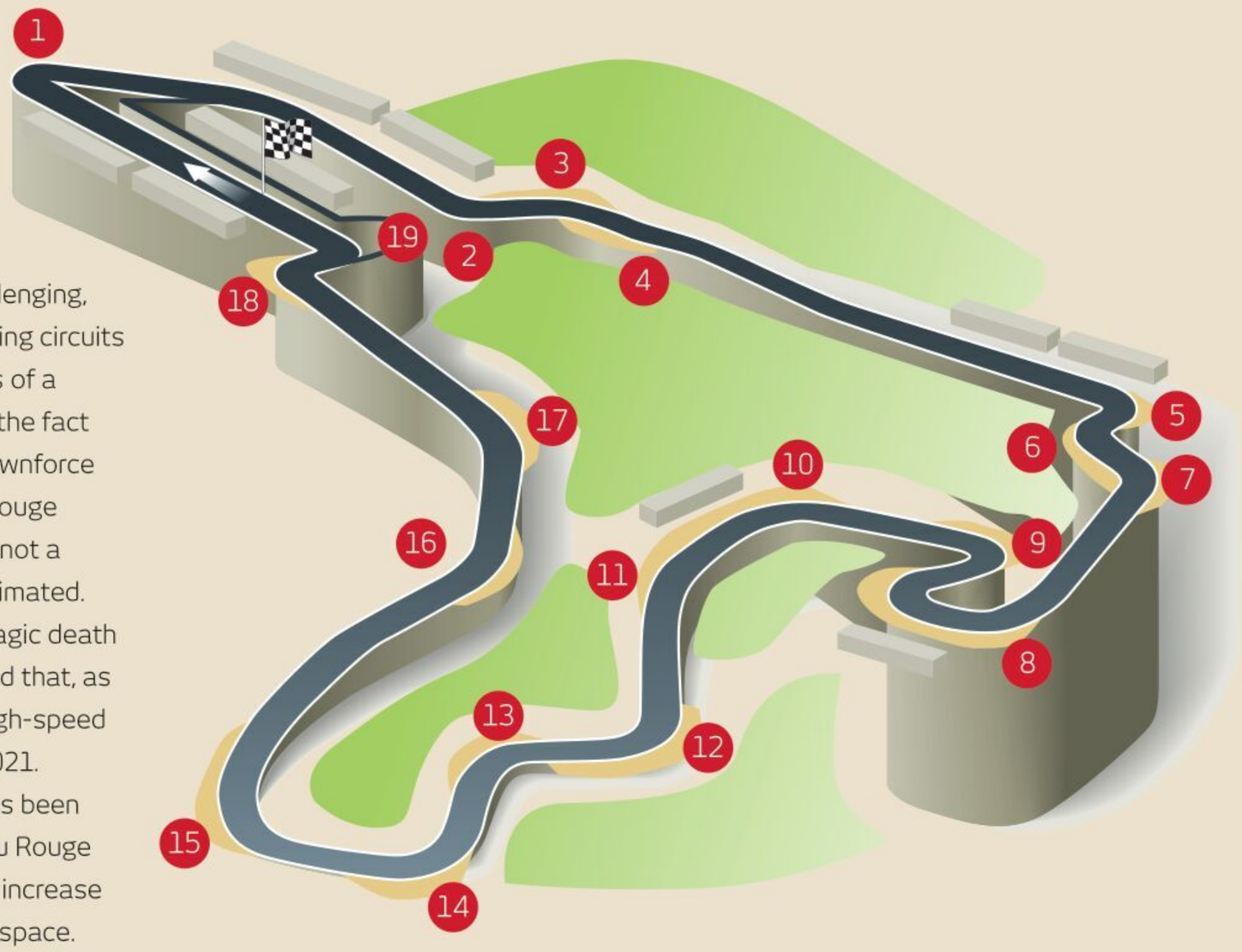
Circuit name
Circuit de Spa-Francorchamps
First GP 1950
F1 races held 54
Laps 44
Circuit length 4.352 miles
Race distance
191.414 miles
Direction Clockwise
Winners from pole 21
Race start (UK time) 2pm

LAST RACE HERE (2021)

Winner
Max Verstappen (Red Bull)
Margin of victory
1.995s
Fastest lap
N/A
Race leaders 1
Pitstops 0
Overtakes 0

OUR VERDICT

The gold standard of driver quality since before the world championship began, Spa remains one of the most challenging, daunting and rewarding circuits on the calendar. Fans of a certain age bemoan the fact that fat tyres and downforce have rendered Eau Rouge 'easy-flat' but this is not a place to be underestimated. Anthoine Hubert's tragic death in 2019 demonstrated that, as did Lando Norris's high-speed qualifying shunt in 2021. As such, the track has been remodelled in the Eau Rouge and Raidillon area to increase the available run-off space.



ROUND 15/23

Netherlands Zandvoort, 2-4 September

OUR VERDICT

Another classic circuit reinvigorated for the modern age – provided you can see it through the swathes of orange flare smoke let off by the passionate crowd who are only here to see one man. Max Verstappen did the honours on home turf last season and, while Max was largely unchallenged for the lead, there was a fair bit of action further down the field. It's a narrow track but a couple of corners permit more than one racing line, which adds an interesting dimension. We're not sure the banked final corner lived up to the hype, though.

RACE DATA

Circuit name
Circuit Zandvoort
First GP 1952
F1 races held 31
Laps 72
Circuit length
2.646 miles
Race distance 190.542
Direction Clockwise
Winners from pole 13
Race start (UK time) 2pm

LAST RACE HERE (2021)

Winner
Max Verstappen (Red Bull)
Margin of victory
20.932s
Fastest lap 1m11.097s,
L Hamilton
Race leaders 2
Pitstops 29
Overtakes 23

ROUND 16/23

Italy Monza, 9-11 September

OUR VERDICT

Monza's legendary whispering trees will have to rustle up even more atmosphere than usual this season since the Italian GP comes at the junction between two triple-headers. Seven races in six weeks promises to be brutal on F1 personnel, though this European leg comprises three of the most charming circuits on the calendar. Ferrari passion and ridiculous top speeds make for a potent cocktail at Monza, the original power circuit. The last two races here have been outliers in the wider context of championship form, Pierre Gasly winning for AlphaTauri in 2020 and Daniel Ricciardo leading a McLaren 1-2 last time out.

RACE DATA

Circuit name
Autodromo Nazionale Monza
First GP 1950
F1 races held 71
Laps 53
Circuit length 3.599 miles
Race distance
190.586 miles
Direction Clockwise
Winners from pole 25
Race start (UK time) 2pm

LAST RACE HERE (2021)

Winner
Daniel Ricciardo (McLaren)
Margin of victory 1.747s
Fastest lap 1m24.812s, D Ricciardo
Race leaders 5
Pitstops 22
Overtakes 19

ROUND 17/23

Russia Sochi, 23-25 September [CANCELLED]*

RACE DATA

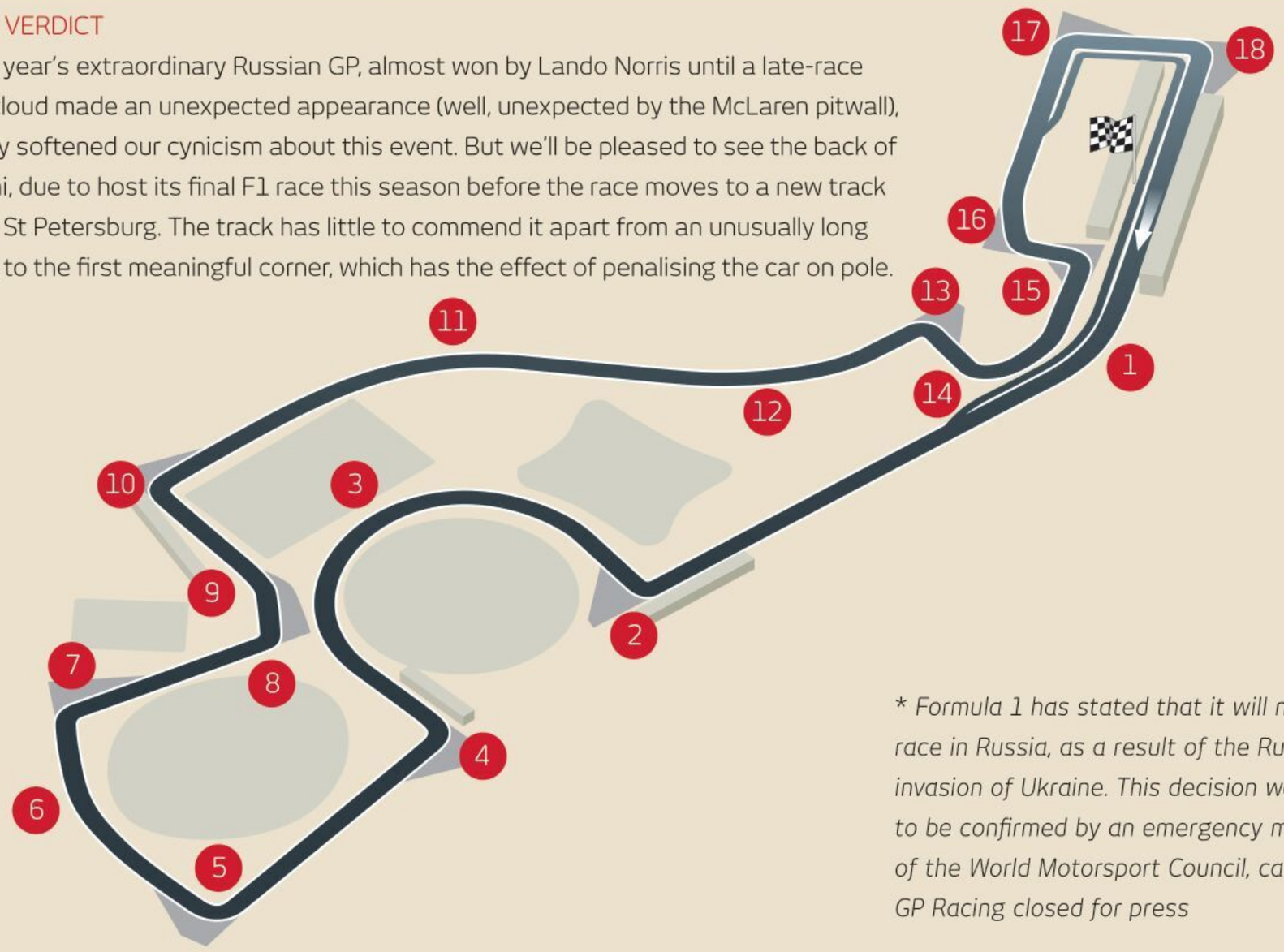
Circuit name
Sochi Autodrom
First GP 2014
F1 races held 8
Laps 53
Circuit length 3.636 miles
Race distance
192.708 miles
Direction Clockwise
Winners from pole 2
Race start (UK time) 12pm

LAST RACE HERE (2021)

Winner
Lewis Hamilton (Mercedes)
Margin of victory
53.271s
Fastest lap 1m37.423s, L Norris
Race leaders 4
Pitstops 39
Overtakes 49

OUR VERDICT

Last year's extraordinary Russian GP, almost won by Lando Norris until a late-race raincloud made an unexpected appearance (well, unexpected by the McLaren pitwall), mildly softened our cynicism about this event. But we'll be pleased to see the back of Sochi, due to host its final F1 race this season before the race moves to a new track near St Petersburg. The track has little to commend it apart from an unusually long drag to the first meaningful corner, which has the effect of penalising the car on pole.



** Formula 1 has stated that it will not race in Russia, as a result of the Russian invasion of Ukraine. This decision was due to be confirmed by an emergency meeting of the World Motorsport Council, called as GP Racing closed for press*

ROUND 18/23

Singapore Marina Bay, 30 Sept-2 Oct

OUR VERDICT

Stuffy, sweltering, and occasionally the victim of track invaders on four legs and two – that's F1's original night race for you. The track tours some of Singapore's signature locations, including the National Gallery and cricket club, and passes along Raffles Boulevard. Meanwhile, a handful of streets away, the business of the city proceeds as if there's no race going on at all. It's a fascinating place to visit but a hard race on drivers and machinery, given the stop-start track and humidity.

RACE DATA

Circuit name
Marina Bay Street Circuit
First GP 2008
F1 races held 12
Laps 61
Circuit length 3.147 miles
Race distance
191.896 miles
Direction Anticlockwise
Winners from pole 8
Race start (UK time) 1pm

LAST RACE HERE (2019)

Winner
Sebastian Vettel (Ferrari)
Margin of victory
2.641s
Fastest lap 1m42.301s,
K Magnussen
Race leaders 4
Pitstops 29
Overtakes 46

ROUND 19/23

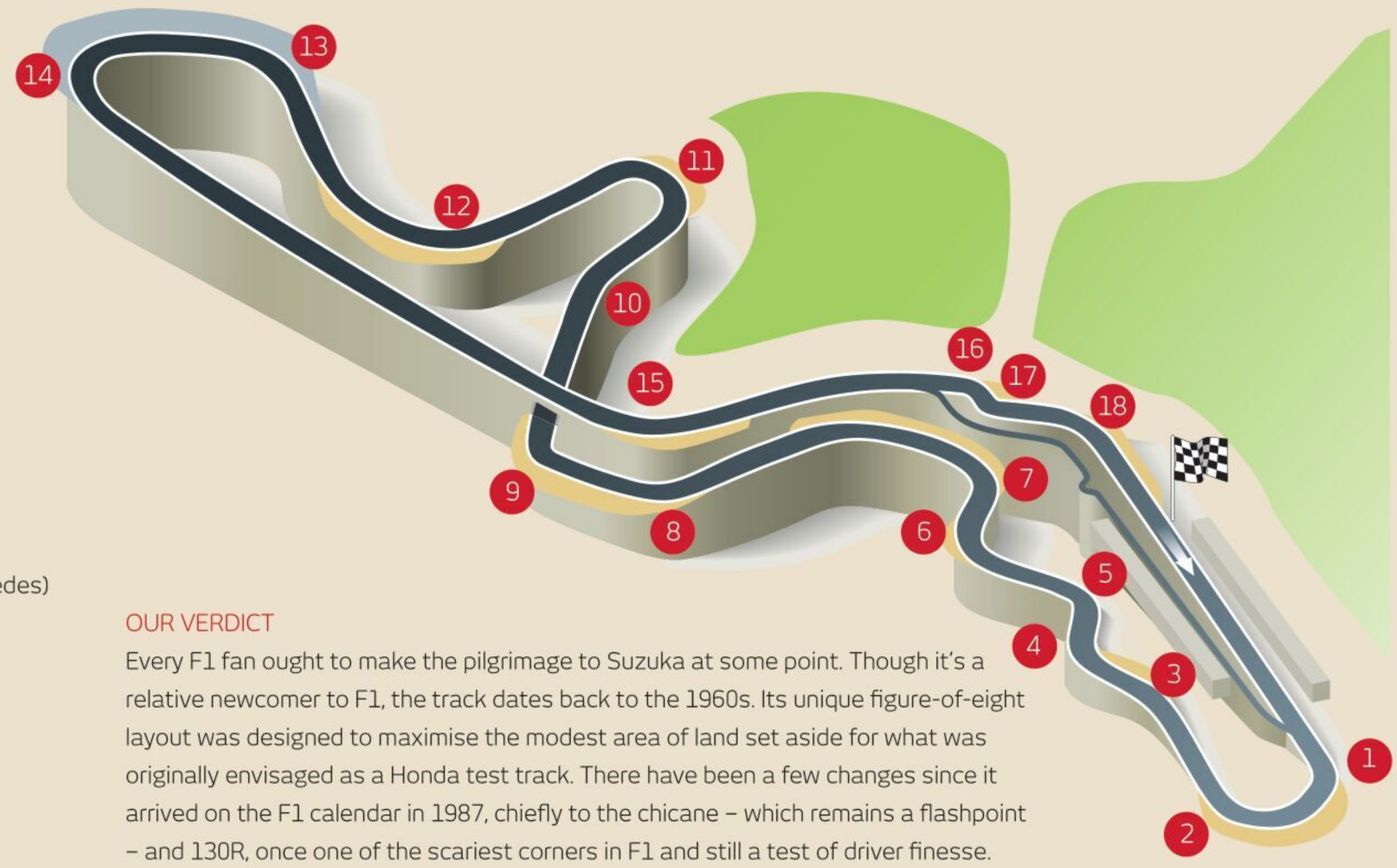
Japan Suzuka, 7-9 October

RACE DATA

Circuit name
Suzuka International
Racing Course
First GP 1987
F1 races held 31
Laps 53
Circuit length 3.608 miles
Race distance 191.053
Direction Clockwise
& anticlockwise
Winners from pole 15
Race start (UK time) 6am

LAST RACE HERE (2019)

Winner Valtteri Bottas (Mercedes)
Margin of victory
13.343s
Fastest lap 1m30.983s,
L Hamilton
Race leaders 2
Pitstops 31
Overtakes 46

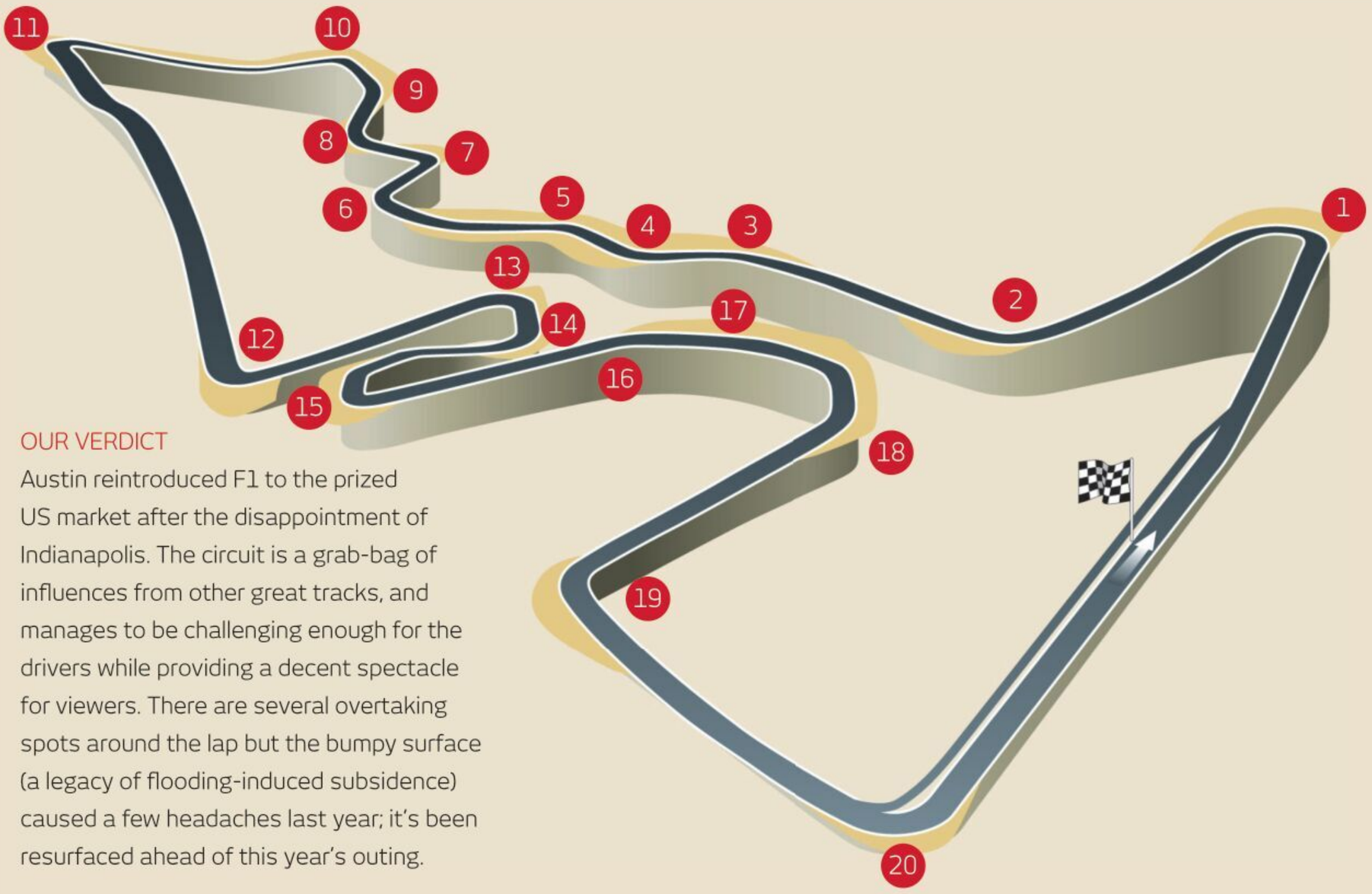


OUR VERDICT

Every F1 fan ought to make the pilgrimage to Suzuka at some point. Though it's a relative newcomer to F1, the track dates back to the 1960s. Its unique figure-of-eight layout was designed to maximise the modest area of land set aside for what was originally envisaged as a Honda test track. There have been a few changes since it arrived on the F1 calendar in 1987, chiefly to the chicane – which remains a flashpoint – and 130R, once one of the scariest corners in F1 and still a test of driver finesse.

ROUND 20/23

USA Austin, 21-23 October



RACE DATA

Circuit name
Circuit of The Americas
First GP 2012
F1 races held 9
Laps 56
Circuit length 3.425 miles
Race distance
191.633 miles
Direction Anticlockwise
Winners from pole 5
Race start (UK time) 8pm

LAST RACE HERE (2021)

Winner
Max Verstappen (Red Bull)
Margin of victory
1.333s
Fastest lap 1m38.485s,
L Hamilton
Race leaders 2
Pitstops 41
Overtakes 19

OUR VERDICT

Austin reintroduced F1 to the prized US market after the disappointment of Indianapolis. The circuit is a grab-bag of influences from other great tracks, and manages to be challenging enough for the drivers while providing a decent spectacle for viewers. There are several overtaking spots around the lap but the bumpy surface (a legacy of flooding-induced subsidence) caused a few headaches last year; it's been resurfaced ahead of this year's outing.

ROUND 21/23

Mexico Mexico City, 28-30 October

RACE DATA

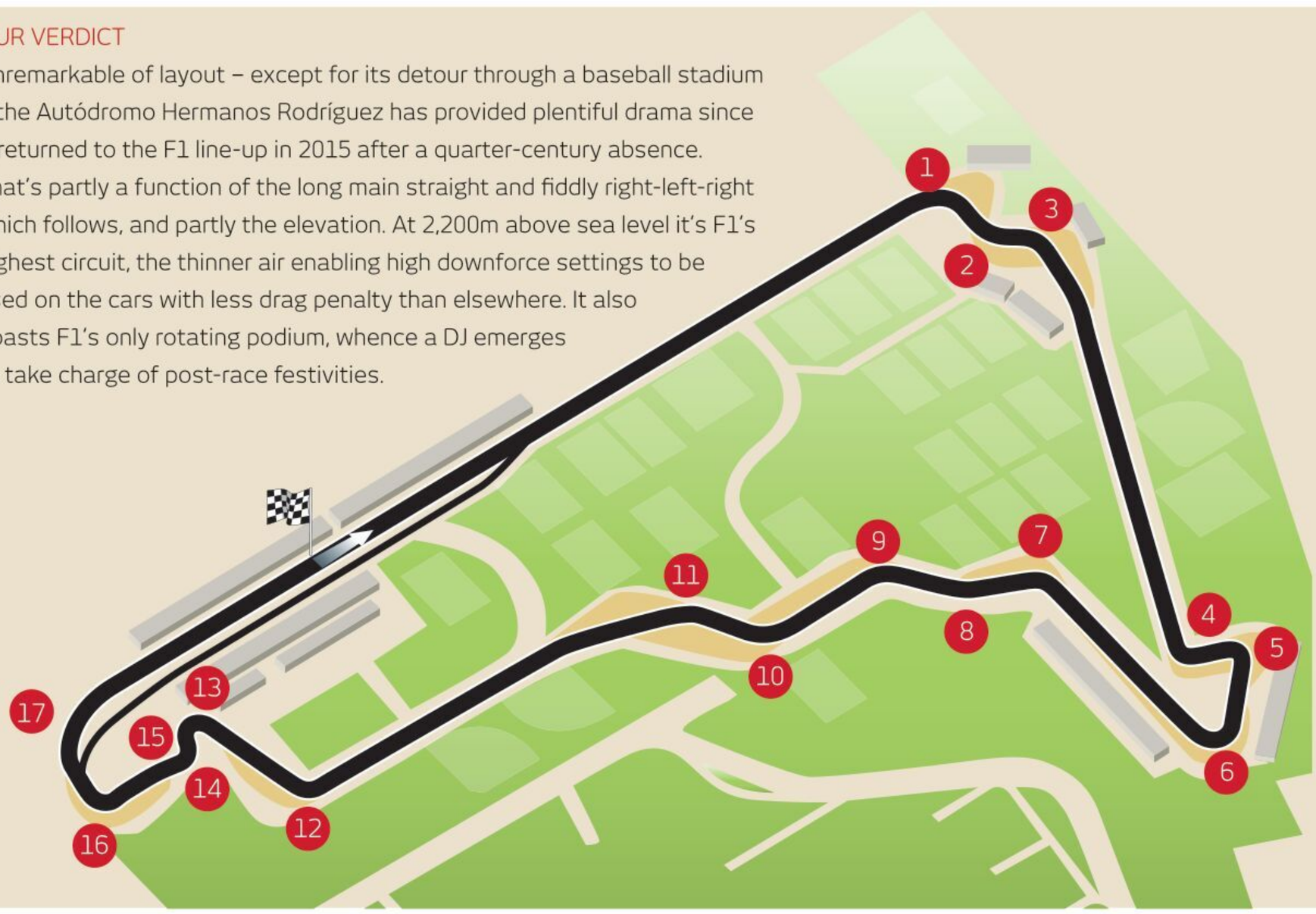
Circuit name
Autódromo Hermanos Rodríguez
First GP 1963
F1 races held 21
Laps 71
Circuit length 2.674 miles
Race distance 189.88 miles
Direction Clockwise
Winners from pole 9
Race start (UK time) 8pm

LAST RACE HERE (2021)

Winner
Max Verstappen (Red Bull)
Margin of victory
16.555s
Fastest lap 1m17.774s,
V Bottas
Race leaders 2
Pitstops 25
Overtakes 19

OUR VERDICT

Unremarkable of layout – except for its detour through a baseball stadium – the Autódromo Hermanos Rodríguez has provided plentiful drama since it returned to the F1 line-up in 2015 after a quarter-century absence. That's partly a function of the long main straight and fiddly right-left-right which follows, and partly the elevation. At 2,200m above sea level it's F1's highest circuit, the thinner air enabling high downforce settings to be used on the cars with less drag penalty than elsewhere. It also boasts F1's only rotating podium, whence a DJ emerges to take charge of post-race festivities.



ROUND 22/23

São Paulo Interlagos, 11-13 November

RACE DATA

Circuit name
Autódromo José Carlos Pace
First GP 1973
F1 races held 38
Laps 71
Circuit length 2.677 miles
Race distance
190.082 miles
Direction Anticlockwise
Winners from pole 16
Race start (UK time) 6pm

LAST RACE HERE (2021)

Winner
Lewis Hamilton (Mercedes)
Margin of victory
10.496s
Fastest lap 1m11.010s, S Pérez
Race leaders 3
Pitstops 37
Overtakes 56

OUR VERDICT

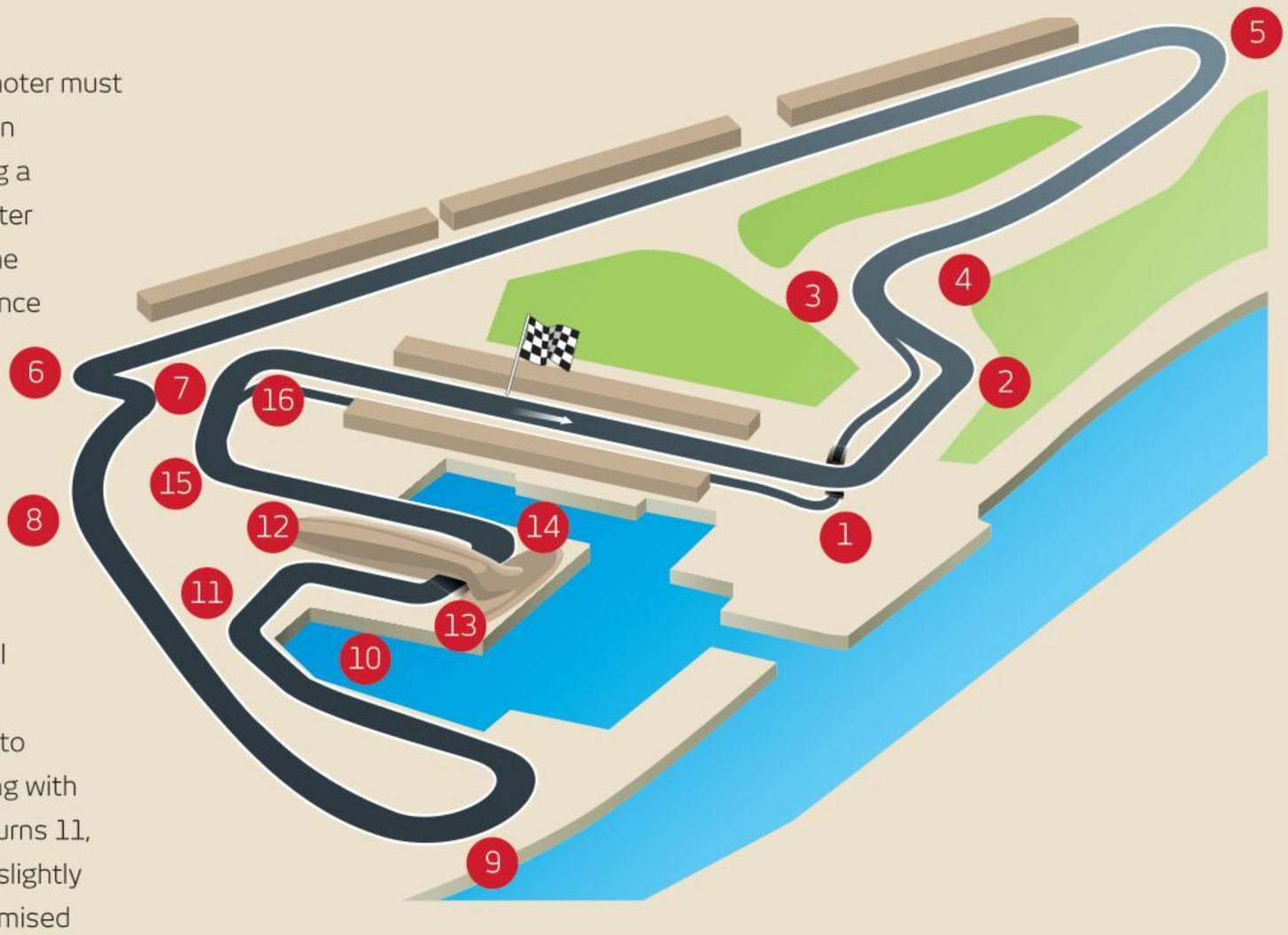
The race at Interlagos retains its new title of the São Paulo Grand Prix, named thus owing to contractual shenanigans related to the aborted Brazilian Grand Prix at an unbuilt circuit in Rio. This track is a glorious speedbowl, albeit one bordered by some of the city's rundown favelas, which can make the journey in and out a little hair-raising at times. Passionate fans and a swooping track layout make this a favourite of F1 regulars nevertheless.

ROUND 23/23

Abu Dhabi Yas Marina, 18-20 November

OUR VERDICT

How the Yas Marina promoter must have salivated last season at the prospect of hosting a winner-takes-all finale, after so many years in which the championship had long since been settled by the time the F1 circus arrived. And there was drama alright – just very little of it a result of the venue's intrinsic qualities, despite a high-profile redesign of several key areas. Consolidating the old Turns 5, 6 and 7 into one hairpin at Turn 5, along with remodelling the original Turns 11, 12, 13 and 14 into a new, slightly banked curve (Turn 9) promised much but has yet to deliver.



RACE DATA

Circuit name
Yas Marina Circuit
First GP 2009
F1 races held 13
Laps 58
Circuit length 3.281 miles
Race distance
190.259 miles
Direction Anticlockwise
Winners from pole 8
Race start (UK time) 1pm

LAST RACE HERE (2021)

Winner
Max Verstappen (Red Bull)
Margin of victory
2.256s
Fastest lap 1m26.103s
M Verstappen
Race leaders 3
Pitstops 29
Overtakes 20

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SHOWCASE

FORMULA 1 LAUNCHES

As F1 ends its 'show and tell' phase of team presentations before testing and racing, we take a look back at previous launches, from the understated to the seriously extravagant...

In March 1962 Ferrari decided to show off its full stable of racing cars at its base in Maranello, ahead of the racing season. The 156 'sharknose' F1 car has pride of place in the foreground

Jordan GP opted for culture in 2000 when it launched the EJ10, and new drivers Heinz-Harald Frentzen and Jarno Trulli, at the Theatre Royal in Drury Lane. For added drama, team boss Eddie Jordan was surprised by Michael Aspel and his famous red book to appear on 'This Is Your Life'

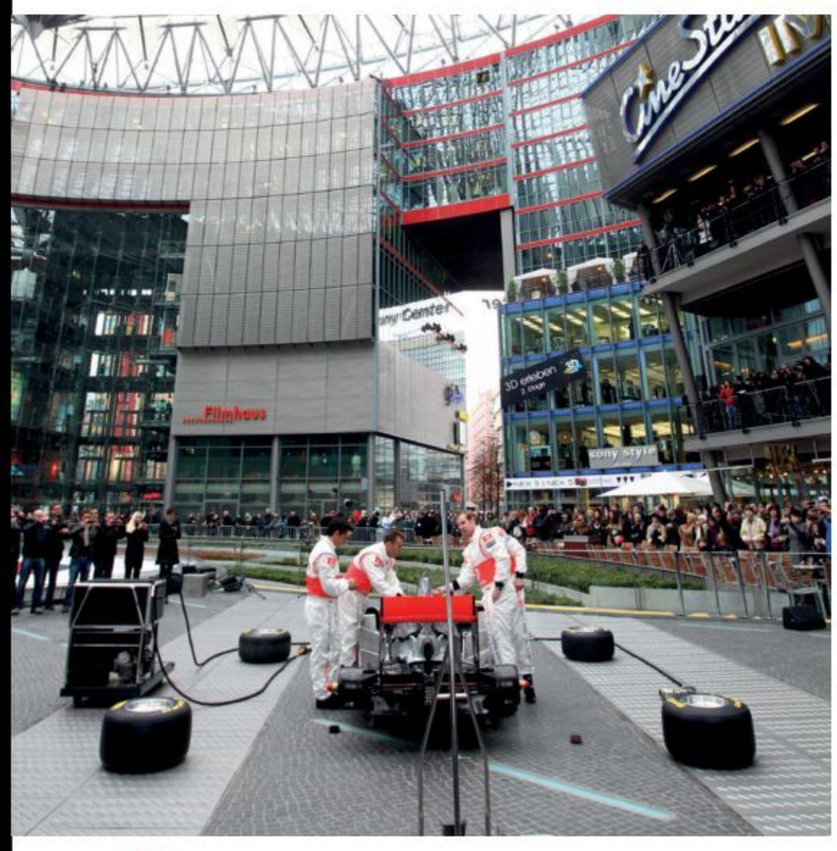
When McLaren unveiled the MP4/1 in 1981, it was more than willing to show the world what was under the skin of the car. McLaren wasn't the first team to use carbon-fibre in F1, but it was the first to manufacture a car's monocoque using the material. Compare that with the secrecy that surrounds modern-day launches

In 2000 Barcelona's Museu Nacional d'Art de Catalunya was the location for Benetton's reveal of its new car. The B200 appeared, attached to a rotating plinth, from underneath a sculpture of itself, followed by obligatory fireworks. And to top that Venice's St Mark's Square was the venue in 2001...

Car launches haven't always been restricted to pre-season. In 1975, during the British GP weekend, Hesketh Racing team owner Lord Alexander Hesketh and driver James Hunt showed off the updated 308C, at the team's Easton Neston base, near Towcester. The car only appeared in two races in 1975

McLaren decamped to Valencia to formally announce Vodafone as its new title sponsor at the team's 2007 launch. So it got its new drivers, double world champion Fernando Alonso and a rookie by the name of Lewis Hamilton, to show off Vodafone's latest hardware in front of the team's sleek new MP4-22

In 2012 Pirelli was just about to enter its second season as F1's sole provider of tyres, so decided it was time shout about its involvement, hence an official launch at Abu Dhabi's Yas Marina circuit. A more aggressive approach to compounds was divulged which, it was hoped, would lead to more exciting racing



In 1994 F1 launches had yet to expand into the glitz and glamour common at the end of the decade. Here, Michael Schumacher wasn't getting a feel for Benetton's car for the upcoming season. This was all about the introduction of Japanese tobacco brand Mild Seven as the team's new title sponsor

Ferrari has held most of its launches at the team's Maranello factory or Fiorano test track. And in 2001 the Scuderia rewarded some of the loyal tifosi by dressing them in smocks to witness the new car unveil. And yes those in white did actually spell out F2001...

McLaren opted for an interesting concept for its 2011 launch at the Potsdamer Platz in Berlin, the German base of team sponsor Vodafone. In the open air a partially finished MP4-26 was wheeled into the Platz, and mechanics and fans then added the bodywork and wheels

When Jordan was bought by a company owned by Alex Shnaider, a Russian-born Canadian businessman, of course it made sense to launch in Moscow's Red Square. Midland did just that in February 2005 and it will go down as one of F1's coldest-ever reveals

Fiorano isn't the only Italian private test track that has been used for launches. In October 1975, Brabham's Bernie Ecclestone announced he had secured free Alfa Romeo engines for 1976 and took the new car, the BT45, to Alfa's Balocco track. As a nod to Alfa's motorsport past, an unraced Tipo 512 was lined up alongside

Work had been underway on the Bahrain International Circuit since December 2002, but in November 2003 the organisers decided to officially launch the facility. Jenson Button was called upon to visit and, six months ahead of its first race, the circuit got the publicity it wanted. The track was barely finished come race day though...

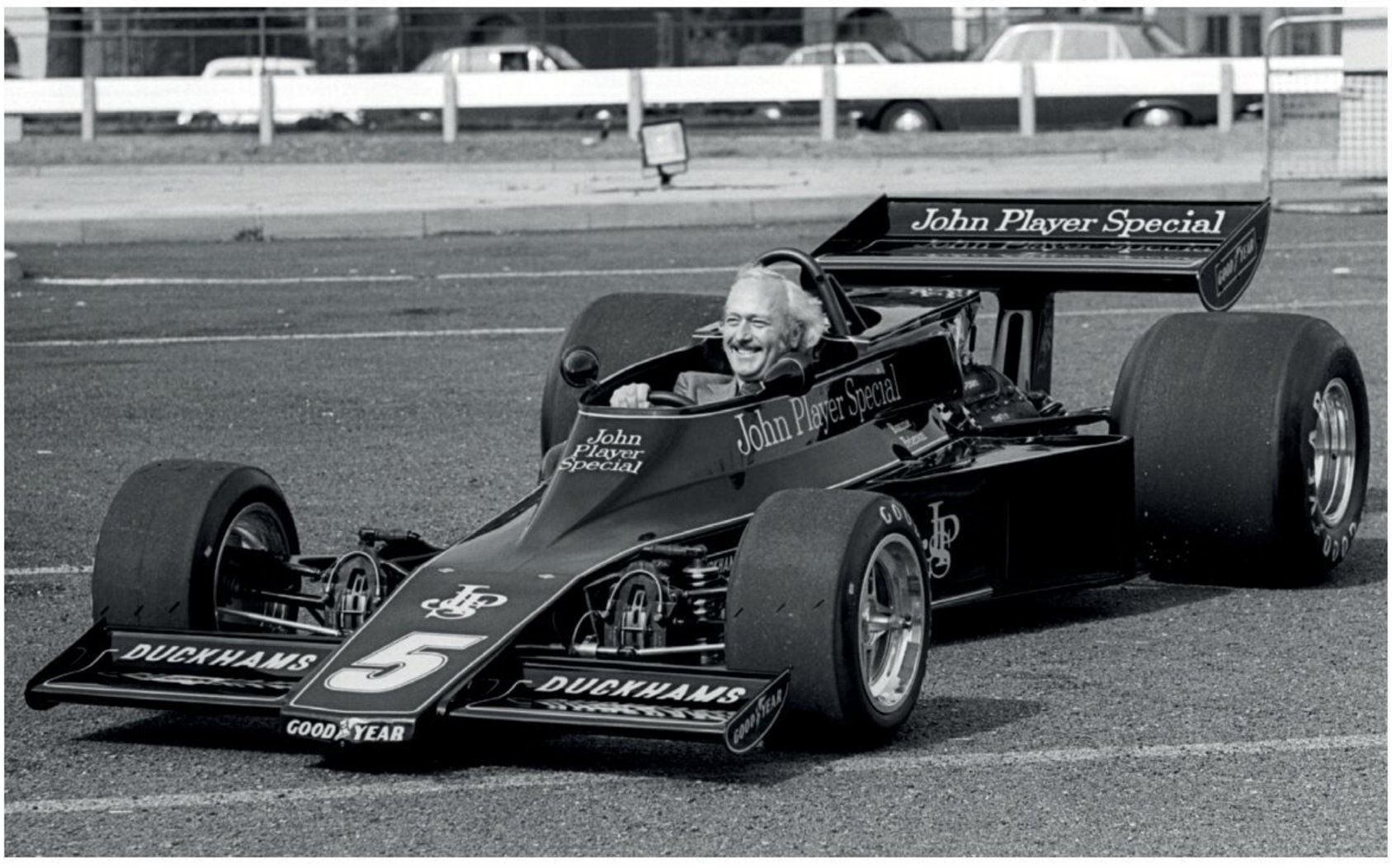
'Nearly there Gilles. Just need it in the right place for the photos.' Newly crowned world champion Jody Scheckter let Gilles Villeneuve do the work when Ferrari showed off its 312 T5 at Fiorano in November 1979, ahead of the 1980 season which started in mid-January

In early 1970 Tyrrell paraded the March 701 that world champion Jackie Stewart (in car), and Johnny Servoz-Gavin would use that season, the team having opted not to continue its association with Matra. However, Ken Tyrrell (on tyre, wearing cap) knew this would only be a stop-gap until the Tyrrell 001, already being developed in secret, was ready for action

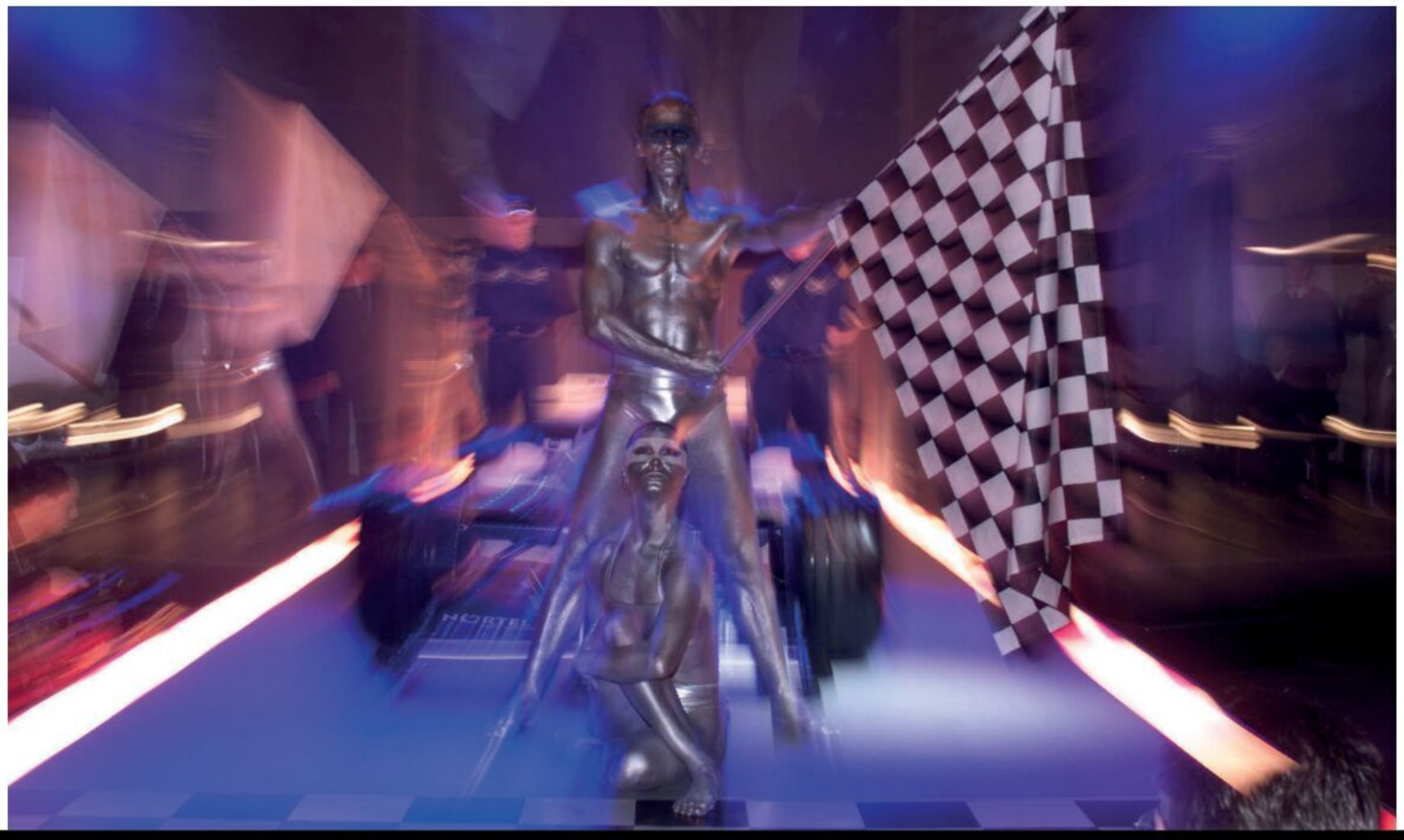
From the sublime to the ridiculous. In 1978 Arrows showed off its first F1 car in 'challenging' conditions at Silverstone, before it was sent straight to the heat and humidity of Brazil. The car had a systems check at a local airport, but the first time it ran for real was in pre-race testing for the GP itself

The circus came to town for Jordan GP's 1998 launch. Or, to be more accurate, the world-famous Cirque de Soleil performed at the equally world-famous Royal Albert Hall. And the team had something to shout about as 1996 world champion Damon Hill would join Ralf Schumacher to drive the Mugen Honda-powered 198

When pop met Formula 1 head on. The Spice Girls 'sang' at McLaren's 1997 launch at Alexandra Palace, and were then joined on stage by a slightly nonplussed Mika Häkkinen and David Coulthard. After the pleasantries were over it all got a bit 'cosmic' as Jamiroquai was left to round off proceedings...



At the opposite end of the launch spectrum, in a random car park in late 1975, Lotus founder Colin Chapman sits in the new 77. Chapman was part of the design team and although drivers Ronnie Peterson and Jacky Ickx were present, the boss obviously wanted some pics of himself in the car



In the late 1990s and early 2000s, no F1 announcement was complete without a show. BMW had already been revealed as Williams' engine supplier, but was given the official stamp at the team launch in early 2000, at BMW's Munich HQ. And no, we have no idea what's going on either, as a chequered flag normally marks the end of something...

FINISHING STRAIGHT

RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 1

BAHRAIN GP

18-20 March 2022
Bahrain International Circuit

PICTURES: MARK SUTTON; CHARLES COATES. ILLUSTRATION: ALAN ELDRIDGE

THE MAIN EVENT

This will be an important step for the new generation of cars, even though the teams will have had the chance to evaluate them at this circuit during a three-day test the weekend before the season opener. Bahrain's high ambient temperatures can push the cars' cooling capacity out of its comfort zone, and the combination of an abrasive track surface (laid specifically to make it offer more grip) with lots of fast, high-energy corners will give the new Pirelli tyres a pummelling.

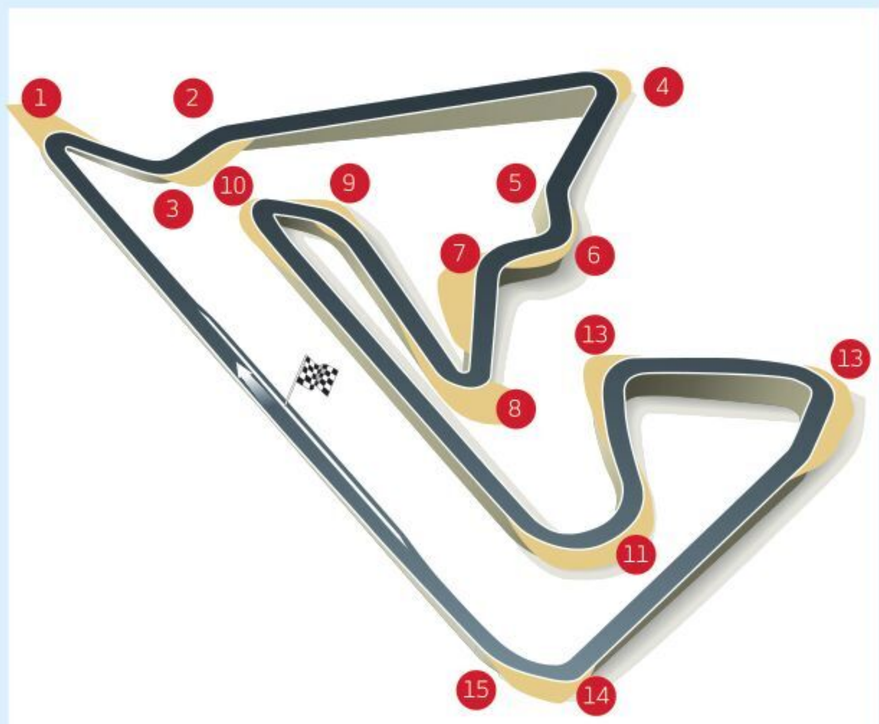
We'll also get a first look at how the new technical package performs in race conditions, and how closely the cars can follow one another. Since only a handful of days will have elapsed since testing, teams will have very little time to react to any performance shortfalls – so while many will introduce upgrades here, the vast majority of the new bits will have been signed off before testing began.

2021 RACE RECAP

An alternate strategy played its part in a compelling dice between Max Verstappen and Lewis Hamilton, and a race which set the tone for the year. Red Bull seemed to have the advantage on pace and Verstappen qualified on pole, but Hamilton kept him in sight in the opening stint and an early stop for hard tyres enabled Lewis to undercut Max for the race lead.

On fresher tyres Verstappen came back at Hamilton in the final laps, closing in and passing with four laps to go – but going off-track in doing so. He was ordered to give the place back and Hamilton didn't give him another chance.

KEY CORNER: TURN 10 Among the most challenging corners in F1 since it's a big downhill braking area with a curved approach. It's super-easy to overload the front axle and lock a wheel, compromising the exit onto the straight.



RACE DATA

Circuit name Bahrain International Circuit
First grand prix 2004
Number of laps 57
Circuit length 3.362 miles
Race distance 191.530 miles
Lap record 1m31.447s Pedro de la Rosa (2005)
F1 races held 17
Winners from pole 7
Pirelli tyre compounds TBC

CAR PERFORMANCE

Downforce level Medium
Cooling requirement High
Full throttle 66%
Top speed 203mph
Average speed 137mph

TIMETABLE (UK TIME)

Friday 18 March
Practice 1 12:00-13:00
Practice 2 15:00-16:00
Saturday 19 March
Practice 3 12:00-13:00
Qualifying 15:00-16:00
Sunday 20 March
Race 15.00
Live coverage Sky Sports F1
Highlights Channel 4

THE PAST FIVE WINNERS HERE...

2021	2020	2019	2018	2017
Lewis Hamilton Mercedes	Lewis Hamilton Mercedes	Lewis Hamilton Mercedes	Sebastian Vettel Ferrari	Sebastian Vettel Ferrari

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FINISHING STRAIGHT

RACE PREVIEW

F1 WORLD CHAMPIONSHIP ROUND 2

SAUDI ARABIAN GP

25-27 March 2022
Jeddah Corniche Circuit

PICTURE: ZAK MAUGER; JERRY ANDRE. ILLUSTRATION: ALAN ELDRIDGE

THE MAIN EVENT

F1 seasons during the pandemic have become almost like Möbius loops, as venues occupying slots late in one season turn up at the beginning of the next. Fresh from its maiden appearance on the calendar last December, Saudi Arabia becomes the second round of the 2022 season – and may perhaps play host to a less high-stakes affair.

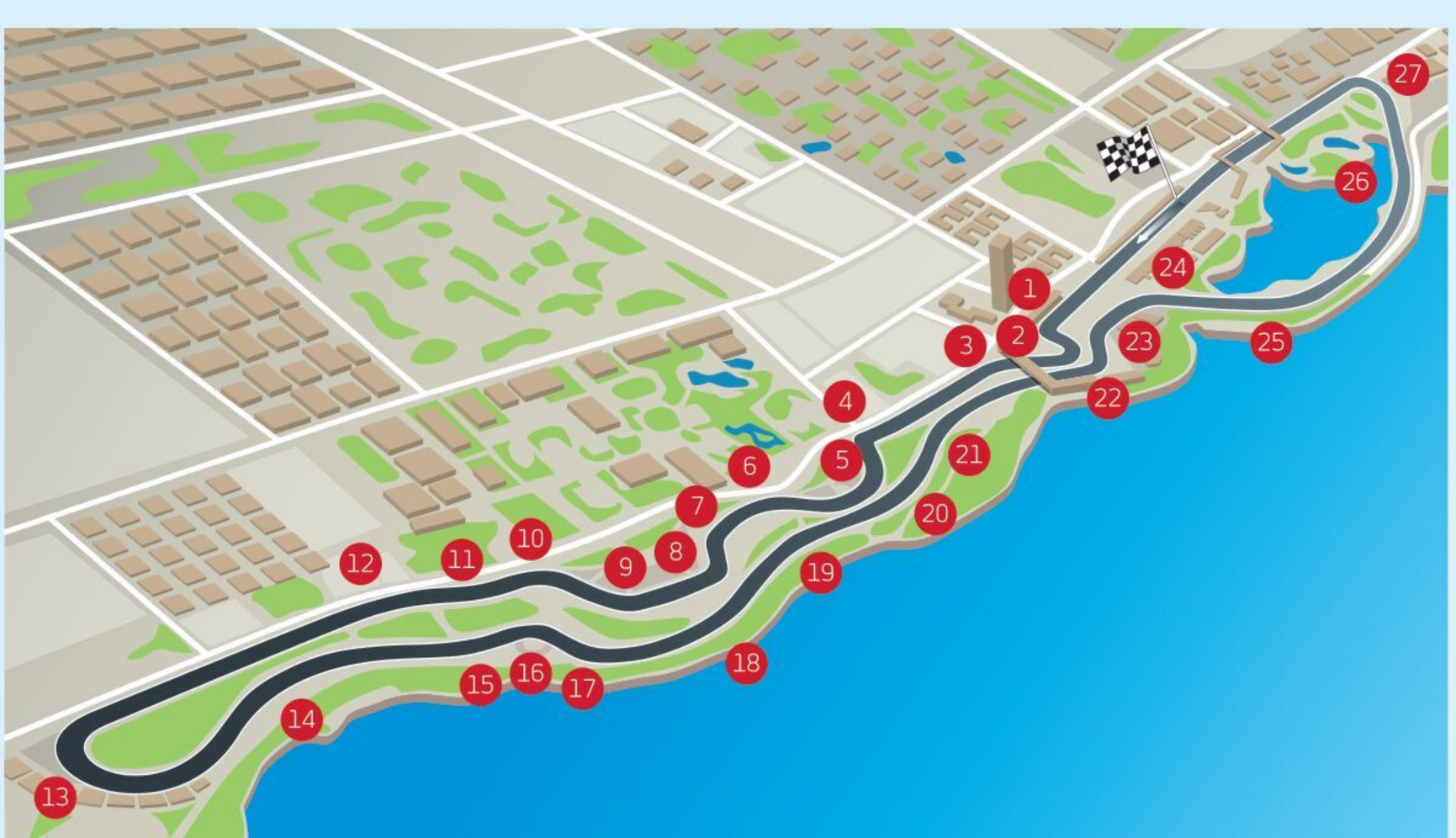
This will sit well with the drivers, as the combination of febrile championship battle and conceptually flawed circuit made for a tense race last time out. In response to criticism there will be changes around the lap, and several barriers will be moved to facilitate better sightlines.

2021 RACE RECAP

The penultimate round of the season left the championship protagonists neck-and-neck going into the finale. Lewis Hamilton won from pole, but the manner in which it played out was far less prosaic than this summary sounds. Max Verstappen was faster in qualifying, and would have taken pole had he not tapped the barrier at the end of his Q3 lap.

In the race Verstappen took advantage of two red-flag restarts to pass Hamilton at Turn 1, manoeuvres Lewis described as "over the limit", and the two drivers tripped over each other when Max was told to hand the position back but do so "strategically" (ie in the DRS detection zone).

KEY CORNER: TURN 1 While much of the lap is a high-speed needle-threading exercise, it's the first corner which demands attention because it's a proven flashpoint. A wide, open-entry chicane at the end of a DRS zone, this is a key overtaking point but also (as demonstrated last year) a place where track-limit violations can prove costly.



RACE DATA

Circuit name Jeddah Corniche Circuit
First grand prix 2021
Number of laps 50
Circuit length 3.836 miles
Race distance 191.662 miles
Lap record 1m30.734s Lewis Hamilton (2021)
F1 races held 1
Winners from pole 1
Pirelli tyre compounds TBC

CAR PERFORMANCE

Downforce level Medium
Cooling requirement Medium
Full throttle 79%
Top speed 200mph
Average speed 156mph

TIMETABLE (UK TIME)

Friday 25 March
Practice 1 14:00-15:00
Practice 2 17:00-18:00
Saturday 26 March
Practice 3 14:00-15:00
Qualifying 17:00-18:00
Sunday 27 March
Race 18.00
Live coverage Sky Sports F1
Highlights Channel 4

THE PAST WINNER HERE...

2021
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Mercedes

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FERRARI 75 YEARS

Author Dennis Adler

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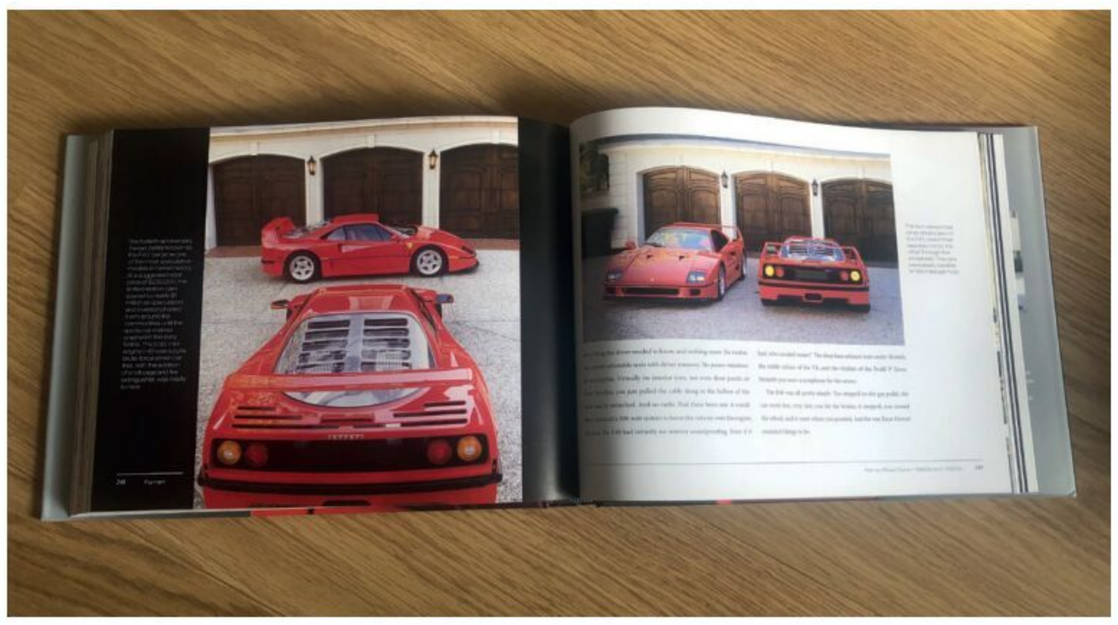
It's 75 years since Enzo Ferrari set up as a car manufacturer under his own name, and just a couple of months away from the exact anniversary of the company's racing debut (Franco Cortese's DNF aboard a 125 S in the Circuito di Piacenza on 11 May 1947). Award-winning author and historian Dennis Adler's sumptuously illustrated book kicks off with Enzo's early career as a race driver and Alfa Romeo's sporting manager to set the story in context, but the meat of it is the procession of glorious machinery that rolled out of Maranello from 1947 onwards. The author's own photographs complement evocative historic imagery of some of the most important cars ever to see action on road and track.



LEGO TECHNIC McLAREN F1 CAR

Price £159.99

lego.com

Some of you might have been making the mistake of assuming that Lego is strictly for kids. That might have been true in the 1980s but nowadays it's perfectly acceptable for adults to wrestle with the block-construction 'toy', and the company has built a high-end product line to suit. If you think £159.99 is steep, you should see the £359.99 Lamborghini Sián...

There are many racing cars in the Lego Technic range but this is the first officially licenced F1 machine, designed in collaboration with McLaren and (vaguely) resembling the team's 2022 car. The 1432-piece kit even features sponsor decals.

Once assembled the wheels roll and the steering, suspension and differential all work. The level of detail extends to moving pistons on the V6 engine. It is 65cm long and 27mm wide, making it a fine centrepiece for a coffee table or bookshelf.

TAG HEUER FORMULA 1 X RED BULL RACING SPECIAL EDITION

Price £1,650-£1,800

tagheuer.com

Longtime F1 sponsor TAG Heuer has added another special edition watch to its F1 watch collection, featuring the colours of Red Bull Racing – the team it's partnered since 2016. Blue, red and yellow predominate within the 43mm brushed steel casing: the dark blue dial features a red border, and yellow and red accents on the 1/10th second chronograph counter. Around the case, the pushers carry red lacquer outlines and the rear is engraved with the team logo.

Water-resistant to 200m, the watch is available in two different strap designs: a traditional steel three-row pin-buckle bracelet with folding clasp, and a textured blue rubber strap.

LOLA: THE T70 AND CAN-AM CARS

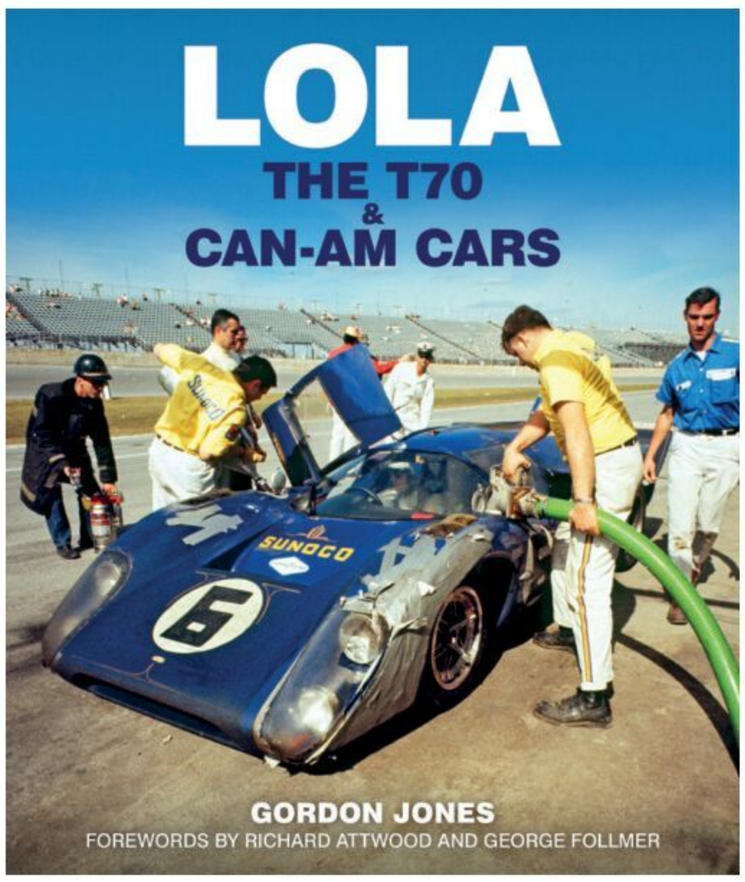
Author Gordon Jones

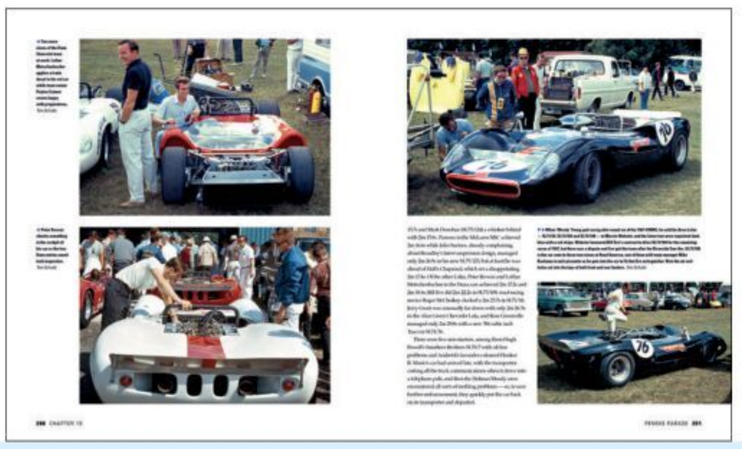
Price £95

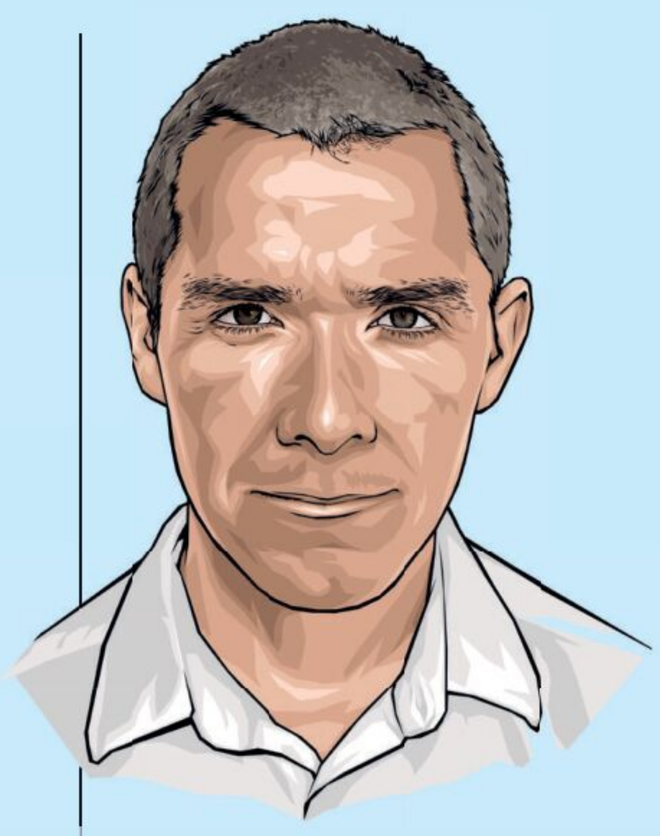
evropublishing.com

The now defunct race car manufacturer Lola might not have enjoyed a glorious run in F1 but it was super-successful in the junior formulae and in sportscars. When sportscar racing was in its pomp during the 1960s and 1970s, Lola took on the might of such as Porsche, Ferrari and McLaren, and this book celebrates its iconic T70 model and its Can-Am derivatives. John Surtees drove a T70 to victory in the inaugural season of the lucrative US-based series in 1966, competing against the likes of F1 rivals Dan Gurney, Graham Hill, Chris Amon and Phil Hill. At a time when grand prix drivers supplemented earnings by racing in other categories, it would not have been at all unusual to find an F1 ace strapped into a T70.

This book is a comprehensive history of the model, which had its beginnings in Lola founder Eric Broadley's abortive involvement in the Ford GT40 project. It features comprehensive details of every T70 ever built and covers every race the Lola ran from 1963 to 1974.







FLAT CHAT

{ FULL THROTTLE MUSINGS WITH **STUART CODLING** }

PICTURES motorsport IMAGES

TRUST IN SHORT SUPPLY AFTER ABU DHABI

Throw 'em a bit of what they want – it's an effective tactic whether you're (hypothetically speaking, of course) a scandal-hit prime minister buying back favour with antsy backbenchers or, indeed, a newly installed FIA president juggling an unexpectedly hot potato left by your predecessor.

When it became clear the outgoing Todt regime's strategy for dealing with the after-stink of the 2021 Abu Dhabi GP – just tell the punters they're too dumb to understand how motor racing works – wasn't going to cut it, Mohammed ben Sulayem smoothly executed a U-turn, announcing an official inquiry into the embarrassing affair.

Essentially, to some extent an ongoing hissy fit on social media can be ignored, but F1's biggest box office stars cannot. When your most important championship's most bankable name takes himself off to the Rockies for the winter, leaving the threat that he may not come back hanging in the air, the wise FIA president swings into action.

As such, resulting from an inquiry which has consulted both teams and drivers, many of the parties most irked by the events of Yas Marina have been given what they want. While Mercedes team principal Toto Wolff denies he dropped the appeal against the Abu Dhabi result on condition of being delivered race director Michael Masi's head on a silver platter, something along those lines has eventuated. In a new structure, former DTM race director Niels Wittich, who had previously been confirmed as Masi's deputy for this season, will alternate with ex-WEC race director Eduardo Freitas, overseen by "permanent senior advisor" Herbie Blash – the late Charlie Whiting's deputy until he was nudged into early retirement in 2016.

Herbie rides again. Blash is back in F1 as permanent advisor to the race director

Masi "will be offered a new position within the FIA", which some may view as *inspecteur en chef du dessous des autobus*. In other words (and Max Verstappen's), Masi's been thrown under the bus. The new race directors will be supported by an off-site facility known as Virtual Race Control, offering real-time backup.

BUT ONE THING REMAINS TO BE SEEN – THE FINDINGS OF THE FIA INQUIRY, AS YET UNPUBLISHED

While the crux of the matter – the unlapping procedure behind the Safety Car – has received only mild tweaks in the latest sporting regulations, the FIA and F1 confirmed that the teams' channels of communication to the race director will have a stricter protocol and not be available for broadcast. Rightly so. A certain lack of respect for the now former race director was palpable in these communications. Knowing their words would be heard by millions, team managers and principals bullied and hectored the race director like expensive lawyers grandstanding to a jury.

Respect cannot be bought, it must be earned, and the re-hiring of Blash – a long-established and trusted F1 'face' – demonstrates the new president's keen political antennae. Lewis Hamilton, who has said publicly that he "lost faith" in the FIA last season, alluded to this theme when he emerged from his winter retreat.

"I put faith and trust alongside each other," he said. "Trust can be lost in the blink of an eye or the flick of a finger. But to earn trust is something that is built over a long period of time."

But one thing remains to be seen – the findings of the FIA inquiry, as yet unpublished. In effect the governing body has been marking its own homework. Only through full transparency will it be able to provide a definitive account of why its processes failed in Abu Dhabi – and establish whether the removal of the race director was the appropriate course of action or simply a sacrifice to appease the mob, leaving a broken system merely patched.

"I think hopefully everyone will get to see it," says Hamilton, "and to have perhaps a better understanding of everything... so we can move forwards and in a positive light."

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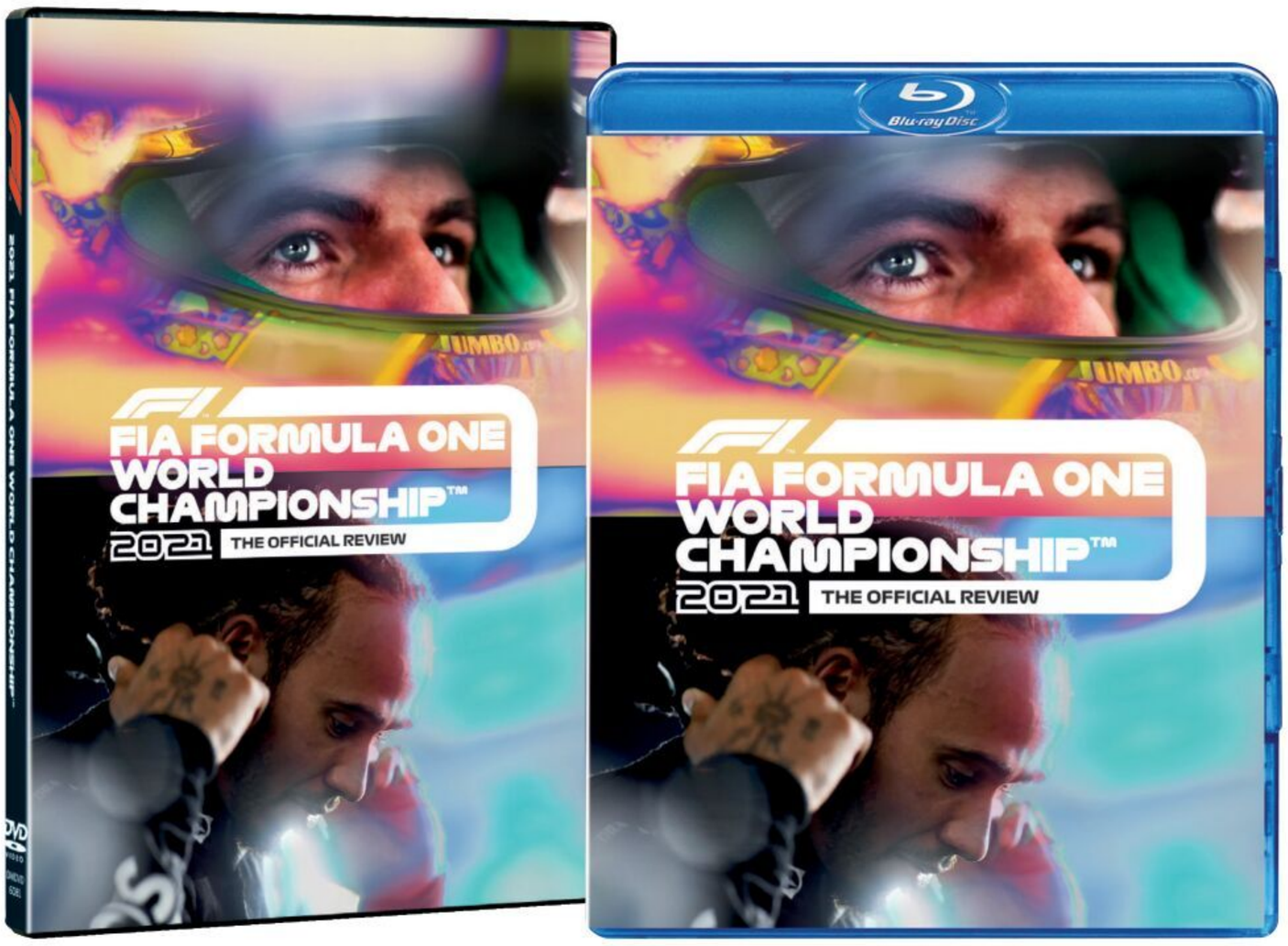

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