DemandFlow Fibre and Outside Plant

DEMANDFLOW®

Design, build and run FTTP from the duct to the premise, every strand accounted for

DATA SHEET

A fibre network is only as good as its records. Once the build is live, every connection, fault, capacity decision and regulator return depends on knowing which strand runs through which closure, how much loss it carries and which premises it serves. Most altnets hold that in a GIS, a splice spreadsheet, an OSS and a field app that never quite agree.

DemandFlow® keeps the whole outside plant in one record set, on the same platform as your sites, circuits, customers, changes and finance. The map, the splice diagram, the loss budget, the work order and the Ofcom return all read the same strand.

What it is

A complete fibre inventory and FTTP delivery system: ducts, chambers, poles and cabinets; cables, tubes and strands in TIA-598 colours; closures and splices; splitters, PON and WDM; premises, access terminals and ONTs; design jobs, consents, work packages, redlines and as-built evidence; and the serviceability, connection and take-up reporting that turns it into a business. It is built for tenants with tens of thousands of plant records and loads only what is in view.

It sits inside DemandFlow, so a cut cable shows which circuits, customers and premises it takes down, a network change lists the premises it affects, a fibre contract raises its charges in finance, and a wayleave goes out for e-signature from the same record.

What an operator gets

- **One map of the plant.** A 3D map of ducts, cables, chambers, poles, cabinets, closures, ODFs, sites, premises and terminals, with live, in-build and proposed plant told apart, OS grid reference search and export to GIS and CAD.
- **Every strand traceable.** Strands generated from the cable spec in TIA-598 colours, traced end to end across splices, patch cords, splitters and muxes, with a loss budget at 1310 and 1550 nm and a pass or fail against the transceiver.
- **Splicing you can read.** A splice diagram per closure, a next-free tray and slot suggestion, splice rules enforced, and a splice sheet PDF for the field.
- **Design to as-built.** Design jobs with rule checks, auto-design and a bill of materials; consents that block release; work packages, redlines with before and after review, and photo evidence checked by AI before a work order can close.
- **FTTP as a product.** Serviceability by UPRN, a five-step connect flow with PON budget, premises passed, ready and connected by build area, and the BDUK and Ofcom returns.
- **Diversity and outage you can prove.** Diverse pairs checked for shared ducts; a cut on any duct, cable, closure or strand reports the circuits, premises and customers it affects and raises the ticket.
- **Field ready.** An offline mobile app for work orders, photos, redlines and OTDR upload; .sor traces parsed into events, loss curves and map positions.
- **Commercial loop closed.** Near-net quotes, fibre contracts that bill monthly, reservations that expire, wayleaves that bill the landowner,

and Openreach PIA notices from the design.

The plant model

Civil routes carry a type (trench, directional bore, aerial span, building entry, bridge crossing), surface, depth and wayleave. Ducts hold up to 48 subducts generated in TIA-598 colours, with a fill check against the NEC limits that warns when a cable will not fit. Poles record material, height, class, ownership and inspection date, and aerial spans are measured from the poles a cable passes. Street cabinets record type, power and lock.

A splice closure sits in exactly one chamber, site, pole or cabinet. Trays and splices used roll up to the closure and the structure, so capacity is never a guess. Cables carry a spec (loose tube, ribbon, microcable, ADSS, armoured or drop; G.652.D, G.657, G.655, OM3, OM4), and setting the spec generates every strand with its tube and fibre colour, including stripe markers past twelve. Strand status is Dark, Lit, Reserved, Faulty, Spare, Broken, PON feeder, PON distribution or Carrying wavelengths, and used, spare and unusable counts are derived from it.

Layer	Records
Civils	Routes, ducts, subducts, chambers and joints, poles, street cabinets, duct connections, slack loops
Cables	Cable specs, fibre cables, strands, splice closures, splices, wavelengths, fibre paths, test results
Devices	ODFs, patch panels, splitters and WDM muxes as assets in the shared inventory, with ports and patch cords
FTTH	Premises, access terminals, ONTs, FTTP orders, fibre quotes
Design and build	Design jobs and rule sets, consents, work packages, work orders, redlines, photos and evidence rules
Commercial	Wayleaves, PIA orders, street works permits, fibre reservations, fibre contracts

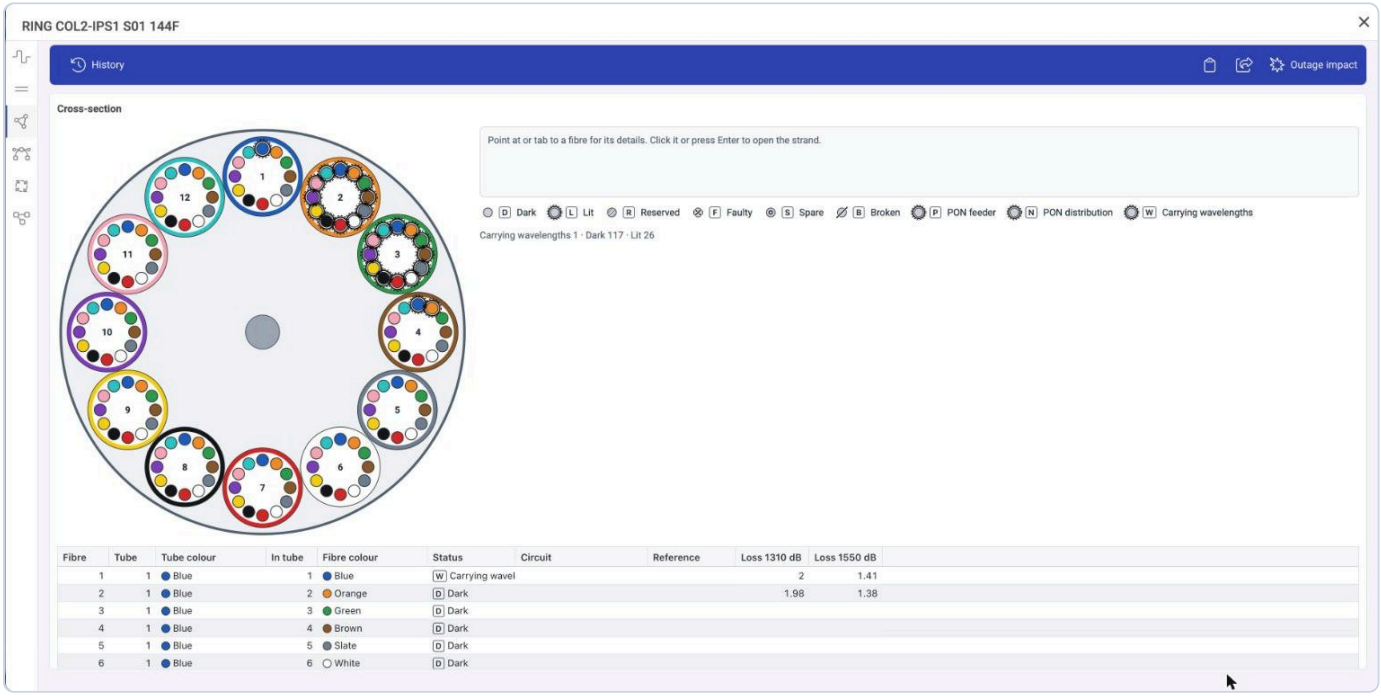


FIGURE 1. A 144-FIBRE CABLE: TWELVE TUBES AND THEIR FIBRES IN TIA-598 COLOURS, STATUS PER STRAND, LOSS AT 1310 AND 1550 NM, AND THE OUTAGE IMPACT ACTION

Splicing and tracing

The splice diagram shows a closure's cables left and right with every splice drawn between them, tube and fibre colours, and the status of each strand. Adding a splice suggests the next free tray and slot; a strand end can be in only one live splice, a fibre cannot be spliced to itself, and estimated loss defaults to 0.1 dB for fusion and 0.3 dB for mechanical. A splice matrix grid and a splice sheet PDF come from the same record.

A trace follows a strand end to end across splices, patch cords, ports, splitters and muxes, on the server first and in the browser if the server is busy, and can be saved as a fibre path with its length and calculated loss. The loss budget takes connector loss, launch power and receiver sensitivity at 850, 1310, 1490, 1550 or 1625 nm and answers Pass or Fail with the headroom.

Splitters run from 1:2 to 1:64 and 2:N with planning losses per ratio, and the PON budget is checked for every leaf of the splitter tree against GPON B+ and C+ and XGS-PON N1, N2, E1 and E2. WDM covers CWDM (18 channels) and DWDM at 100 and 50 GHz on the ITU grid, with OADM, and refuses overlapping channels on one strand.

OTDR traces in Bellcore .sor format are parsed in the browser into a test result with an events grid and a cumulative loss chart, and an OTDR event can be placed on the map allowing for slack loops and the cable's helix factor. Bulk .sor import matches each file to its strand. Test types are OTDR, insertion loss, ORL and inspection.

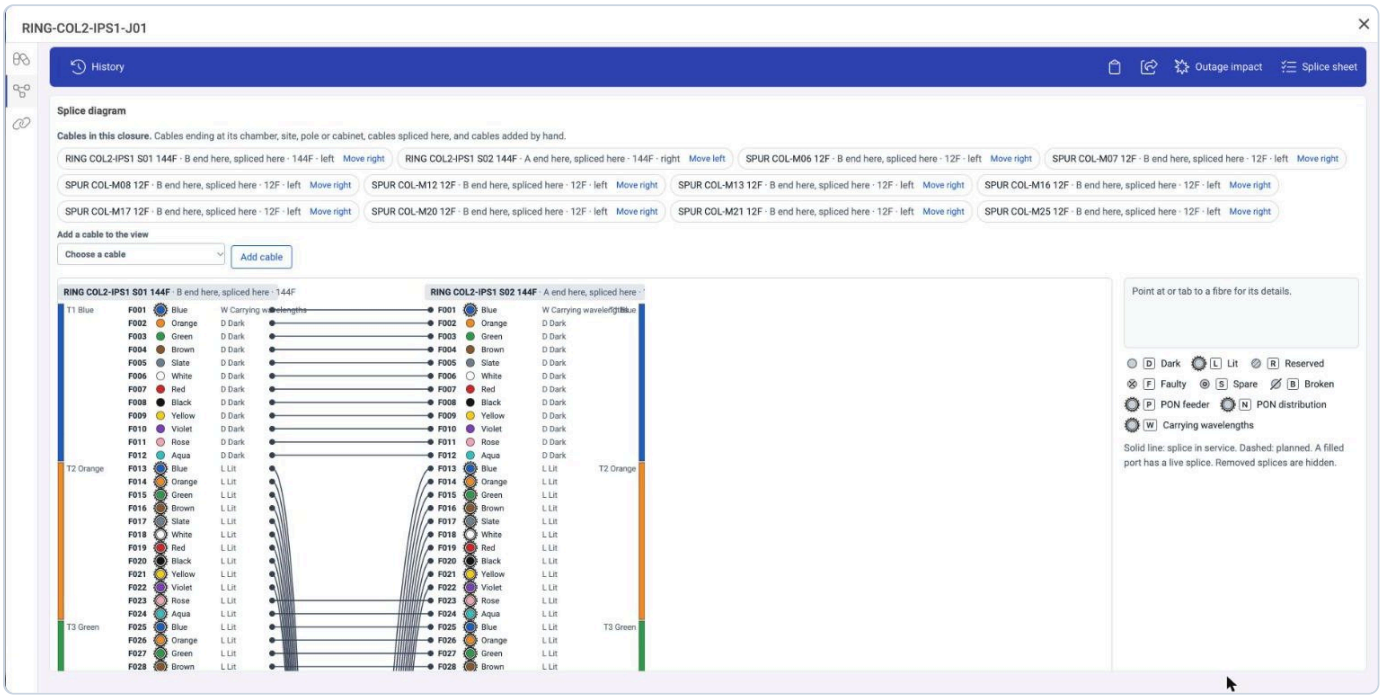


FIGURE 2. THE SPLICE DIAGRAM FOR A RING CLOSURE: TWO 144-FIBRE RING CABLES AND THE SPUR CABLES SPLICED HERE, WITH PER-STRAND COLOUR AND STATUS

The map and the route finder

The fibre explorer is a 3D map (MapLibre and deck.gl, on OpenFreeMap or Ordnance Survey tiles) with twelve layers: ducts, fibre cables, chambers, poles, street cabinets, splice closures, ODFs, sites, premises, access terminals, third-party hops and shared-risk markers. It loads only what is in view, shows feeder and backbone cables when zoomed out, and draws lifecycle as dash patterns with a Live, In build or Everything filter. Go to accepts an OS grid reference, eastings and northings or latitude and longitude. Picking a circuit filters the map to its path and flags any duct it shares with its diverse partner. The view exports to GeoJSON, KML, Shapefile, DXF and GeoPackage in WGS 84 or British National Grid.

Map editing. Draw a route, duct or cable; place a chamber, pole, cabinet, closure or premise; move with snapping, split, merge and delete, with undo. New

Find fibre. Engineer shorthand such as "CB-0037 F12" or "ODF-MAN-A P05" opens the strand or port.

records belong to the chosen design job and start as Planned, or Proposed when no job is chosen.

Find a route. Between any two points, find the cheapest spare-fibre path, a diverse second path with any common duct reported, or the cheapest new build over existing ducts. Duct and route continuity is drawn through the chambers with gaps marked.

Import. CSV and Excel, GeoJSON, KML and KMZ, Shapefile, DXF and .sor, always as a dry run first with errors downloadable as CSV. Premises import from AddressBase by UPRN.

Design, consents and build

A design job moves through Proposed, Planned, Approved, In build, As-built, Live and Retired, and moves its plant records with it. Rule checks cover duct fill, loss budget, split ratio, tray fill, bend radius, spare fibre and drop length; a blocking failure stops approval. Auto-design clusters premises, places splitters and compares centralised and distributed split architectures by cost, with new trench following OS road centrelines.

The bill of materials prices materials from the component catalogue and labour from the rate card, reports cost per premise passed and per route kilometre, and exports to Excel and PDF. Approving a design writes forecast lines to the project, so the build appears in finance before the first trench is dug.

Release to build is blocked while any consent is outstanding. Work packages and work orders are generated from the approved job; redlines are reviewed on a before and after map and accepted or rejected; a work order cannot be marked done while a required photo is missing, and photos are checked by AI for blur or mismatch. The mobile field app works offline, lists work orders nearest first and takes photos, redlines and OTDR uploads.

Outputs: splice sheet, port schedule, as-built pack and acceptance pack as PDF; the wayleave register with renewals and payments on a parcel map; Openreach PIA notices built from the design's third-party ducts and poles, with invoice reconciliation.

FTTP: serviceability, connection and take-up

A premise needs a UPRN and moves through Not passed, Passed, Ready for service, Connected and Disconnected. Serviceability is recalculated automatically: a premise is serviceable when a live access terminal with a free drop port is within the maximum drop length (150 m by default). The serviceability screen answers by UPRN or address and shows the terminals within reach; an ISP API answers the same question by UPRN or coordinates and takes FTTP orders.

Connect a customer is a five-step flow: premise and serviceability, terminal port, PON path and loss budget, ONT, confirm. The terminal's drop-port strip assigns and frees ports.

Build and take-up shows premises planned, passed, ready for service and connected by build area and over time, with the take-up percentage, and produces the BDUK Open Market Review and Ofcom Connected Nations downloads. Near-net quotes classify a prospect as on-net, near-net or off-net, price it and issue a CRM quote line.

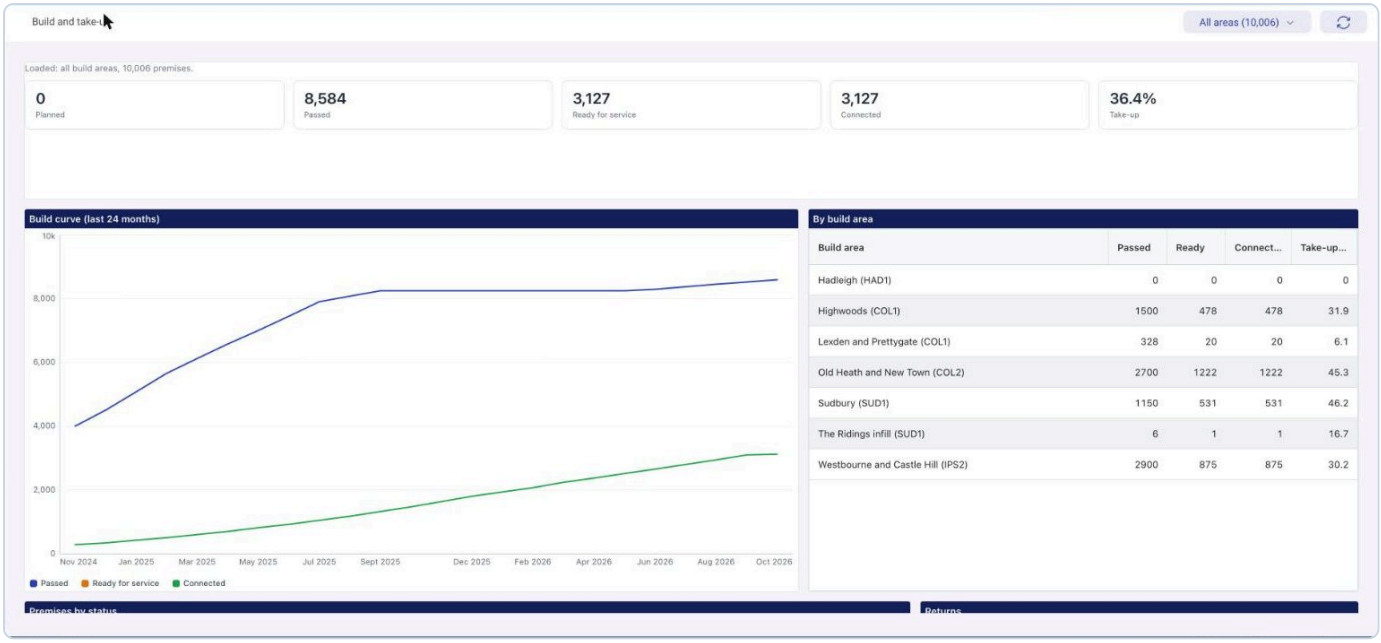


FIGURE 3. BUILD AND TAKE-UP: 10,006 PREMISES, THE BUILD CURVE OVER 24 MONTHS, AND PASSED, READY AND CONNECTED BY BUILD AREA

Diversity, outage and change

Outage impact on any duct, cable, closure or strand walks every circuit, path and premise that depends on it and reports the circuits, customers, premises, links and diversity breaches, with the affected plant on the map, and can raise a fault ticket, save the impact records as evidence or notify the customers. A diversity report per circuit pair or per customer shows where pairs sold as diverse share a duct or cable. A network change that names a duct, cable, closure or strand carries the affected premises in its impact report, and a fibre contract protects its strands from being assigned elsewhere.

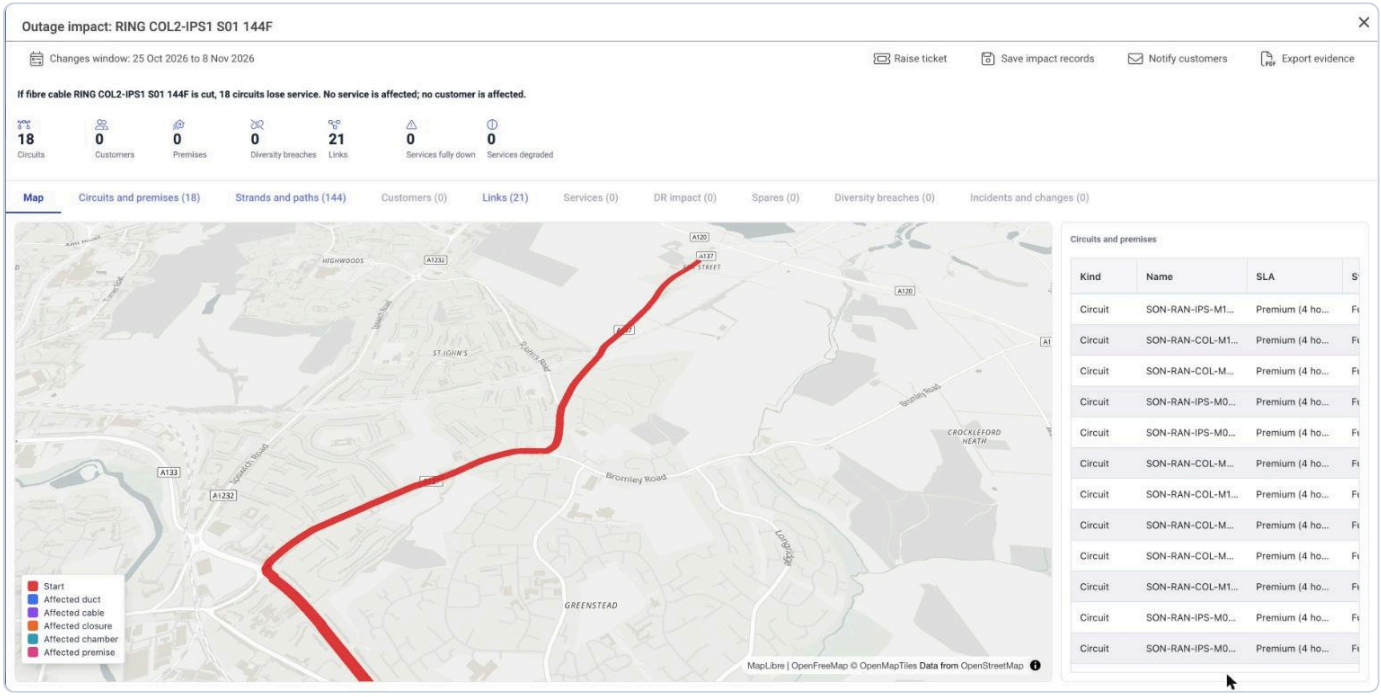


FIGURE 4. OUTAGE IMPACT FOR A RING CABLE: 18 CIRCUITS AND 21 LINKS AFFECTED, THE CABLE ON THE MAP, AND THE TABS FOR STRANDS, CUSTOMERS, DR IMPACT, SPARES AND DIVERSITY BREACHES

Summary of specifications

Item	Detail
Map	MapLibre GL and deck.gl 3D; OpenFreeMap or Ordnance Survey tiles; 12 layers; view-based loading; OS grid, E/N and lat/lon search; export GeoJSON, KML, Shapefile, DXF (R12), GeoPackage in WGS 84 or BNG
Cables	Loose tube, ribbon, microcable, ADSS, armoured, drop; G.652.D, G.657.A1 and A2, G.655, OM3, OM4; up to 10,000 strands per cable; TIA-598 colours with stripe markers; connectors LC, SC, FC, MPO/MTP, ST, E2000
Ducts	Up to 48 subducts; NEC fill limits 53, 31 and 40 per cent; continuity chains to 200 ducts
Splicing	One live splice per strand end; fusion 0.1 dB and mechanical 0.3 dB defaults; next free tray and slot; splice matrix; splice sheet PDF
Tracing and loss	End to end across splices, patch cords, ports, splitters and muxes; trees to 5,000 branches; budgets at 850, 1310, 1490, 1550 and 1625 nm with connector loss, launch power and sensitivity
PON and WDM	Splitters 1:2 to 1:64 and 2:N; GPON B+ and C+, XGS-PON N1, N2, E1, E2; CWDM 18 channels; DWDM 100 and 50 GHz, C21 to C60 with H channels; OADM
Tests	Bellcore .sor parsed in browser; OTDR, insertion loss, ORL, inspection; event located on the map; bulk import
Design rules	Duct fill, loss budget, split ratio, tray fill, bend radius, spare fibre, drop length; blocking failures stop approval
FTTP	UPRN-keyed premises; serviceability within 150 m default drop length; five-step connect; take-up by build area; BDUK OMR and Ofcom Connected Nations downloads; ISP API
Build	Design job lifecycle; consents gate release; work packages and orders; redline review; AI photo check; offline mobile app with OTDR upload
Commercial	Near-net quotes to CRM; fibre contracts billed monthly; reservations expire nightly; wayleaves billed and e-signed; Openreach PIA notice CSV and invoice reconciliation
Reports	Splice sheet, port schedule, as-built pack, acceptance pack; diversity report per pair and customer; five Workbooks templates (utilisation, closure and chamber capacity, ODF ports, loss outliers, shared risk)

www.demandflow.com

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