

## Algo Due Diligence Template

GENERAL	
<p><i>This general section outlines the core features of the algorithm. Providers may consolidate answers 1–5 into a table or grid if they wish to cover multiple algorithms with the same template.</i></p>	
Q1	Algo Provider (also referred to as “you” or “your” below as required):
A1	Australia and New Zealand Banking Group Limited (ANZ)
Q2	Algo name(s):
A2	TWAP (Time Weighted Average Price), Dynamic, Peg, Passive, Limit Participate
Q3	Liquidity type (internal, external, hybrid):
A3	Hybrid (selectable)
Q4	Products covered (spot, NDF):
A4	FX SPOT
Q5	Description <sup>1</sup> of algo(s):
A5	<p>Time Weighted Average Price (TWAP) executes trades at regular intervals between specified times - whilst working interest passively in order to earn spread.</p> <p>Dynamic executes trades in line with prevailing market activity between calibrated lower and upper bounds.</p> <p>Peg is a spread capturing strategy that tracks the market.</p> <p>Passive is a market making strategy that never crosses the spread.</p> <p>Limit Participate execute trade at the nominated rate or better in market.</p> <p>ANZ can receive FX Algo Orders either directly, by contacting our dealers by phone, or electronically via nominated multi-dealer platforms.</p>
Q6	Please describe any parameters or controls the user may adjust:
A6	<p><b>TWAP:</b> Amount / Start Time / End Time / Duration / Limit Price / Liquidity Pools / Execution Style (Pegging mode) / Mode When Limited (Catchup / Extend)</p> <p><b>Dynamic:</b> Amount / Start Time / End Time / Limit Price / Liquidity Pools / Execution Style (Passive / Neutral / Aggressive) / Initial Fill</p> <p><b>Peg:</b> Amount / Start Time / End Time/ Limit Price / Liquidity Pools / Execution Style (Passive / Neutral / Aggressive)</p> <p><b>Passive:</b> Amount / Start Time / End Time/ Limit Price / Liquidity Pools</p> <p><b>Limit Participate:</b> Amount / Start Time / End Time / Limit Price / Liquidity Pools</p>

<sup>1</sup> You may find it helpful to refer to the ‘algo archetypes’ delineated in section 2.1 of [FX execution algorithms and market functioning](#)

	<b>All: Pause / Amend / Resume</b>
Q7	Please specify if the product is built internally or externally:
A7	Internal
<b>CONFLICTS OF INTEREST</b>	
<i>Some conflicts of interest may be expected but it is important to know what they are and what steps have been taken to manage them. This way the Algo User can make an informed decision.</i>	
Q8	If principal liquidity interacts with the Algo User's order, how does this happen and what steps are taken to ensure the fill is a fair one from the order's point of view?
A8	The Algo order will only interact with principal liquidity if it is best price i.e. Top of Book.
Q9	If another part of your business needs to hedge or trade in the same direction as the Algo User's order, how are fills allocated between the two?
A9	The Algo trading and fill logic is run independently from other FX business
Q10	Are there any particular commercial interests in trading venues or other relevant service providers that interact with the algorithm provided by you? If so, how are such conflicts addressed?
A10	None
Q11	Please elaborate on your role as regards market risk, counterparty risk, and settlement risk.
A11	Client Algos are run with ANZ as the principal (i.e. no direct market access). ANZ assumes the market risk, counterparty risk and settlement risk.
Q12	Is there anything else of which you feel the Algo User should be aware?
A12	No (ANZ is always happy to discuss any queries the user may have).
<b>ALLOCATION POLICY</b>	
<i>There are many different approaches to allocations. It is important to understand what happens in circumstances where multiple clients wish to trade or, indeed, when one order would be used to fill the order of another client.</i>	
Q13	If you have more than one client order wishing to trade in the same pair and on the same side, how are fills allocated amongst these orders?
A13	The orders are run independently according to the client's parameters, with no knowledge of each other and on a time priority basis.
Q14	If two client orders are eligible for execution netting, how does this process work?
A14	The orders are run independently (netting may occur if each client orders match on the same venue)
<b>ROUTING POLICY</b>	
<i>Routing policy is an important topic. There are several components such as how execution venues are evaluated, curated, and prioritised. Also covered is the question of what fair-value mid the algo uses to make routing decisions and how information leakage is avoided when placing lit orders. Finally, internalisation is defined: some providers have a strict definition such as 'two algo orders netting' whereas others will include midbooks and trades where they have shown a skew through mid externally to incentivise another counterparty to fill them.</i>	
Q15	How are hedging execution venues evaluated, including both observable (spread, impact) and implicit costs (information leakage)?
A15	ANZ uses an unskewed Mid/Bid/Offer from our core pricing engine. This is used for all trade evaluation in the broader FX business. The core pricing

	<p>engine has access to multiple venues including the primary markets to source market data to formulate the benchmark / reference price.</p> <p>The client can evaluate performance via ANZ's TCA report or independently via the BestX TCA report, when the client is also a customer of BestX.</p> <p>A variety of performance metrics are tracked, reported and discussed with ANZ's Liquidity Providers on a periodic basis as part of our liquidity management process.</p>
Q16	How do you prioritise between different execution venues (both external and internal sources) when routing orders?
A16	Algo order logic is based on best price principles (i.e. Top of Book). Where multiple venues are showing the same Top of Book, then additional criteria such as liquidity certainty and fill rates are used.
Q17	If multiple clients enter orders in the same pair, will you aggregate these orders before placing orders externally or treat each client order individually and place multiple similar orders, which may compete with one another for fills?
A17	Each client order is treated individually based on the client's parameters.
Q18	What – if any – ongoing work do you do in order to curate execution venues, where curation is possible? Approximately how often is this conducted?
A18	The Liquidity management process is a systematic process leveraging standardised monthly reports that capture performance metrics. ANZ has active engagement with the trading venues based off these reports to discuss key metrics such as spread retention, volume, fill ratio and more.
Q19	Do you have any logic to avoid orders on venues where the order book is visible to all participants (lit execution venues) causing information leakage? If so, please describe it.
A19	There are ANZ server side orders (resting within ANZ infrastructure) which opportunistically engage with all of ANZ's trading venues thereby minimising information leakage.
Q20	Does the mid/fair-value used by the algorithm differ from the one used by your own market making system for pricing and risk management? If yes, please specify.
A20	No, the same logic applies.
Q21	Please define your understanding of 'internalisation' and, using an example, describe how this works in practice, demonstrating if/how your Algo Clients benefit from this process. If you wish to do so you may provide an indication of how much volume is internalised on average.
A21	Internalisation occurs when the Client Algo executes with ANZ's liquidity. This occurs when ANZ is "best price" normally due to showing a skew against ANZ inventory. This can also potentially minimise market impact and information leakage. Internalisation rates are provided in the ANZ TCA report (see TCA section).
<b>SEGREGATION POLICY</b>	
<i>Segregation policy is all about keeping order information private and reducing the risk of signalling.</i>	
Q22	Please describe if and how the algo orders are segregated within your institution.

A22	ANZ's Algorithms and FX Algo Orders are managed by ANZ's team of e-FX traders. e-FX traders separately also manage the Orders at the Fix process and FX risk originating from e-channels & platforms (post-trade). ANZ does not currently physically segregate its e-FX traders from its non-e-FX traders (who manage other FX execution flow on behalf of the bank and our other clients), however, it has in place data and information segregation/barriers arrangements which limits the extent to which non-e FX traders can see your FX Algo Order. In certain limited and unavoidable circumstances ANZ may allow certain specified non e-FX traders to view and manage some FX Algo Orders. ANZ takes conflicts of interests seriously and has adequate arrangements in place to manage any potential conflict of interest that could arise in such circumstances. These arrangements include strict policies and training around information use and the flow of information, as well as surveillance and monitoring controls.
Q23	Can sales and trading personnel who provide intraday 'market colour' view algo orders at any stage? If so, what steps have been taken to minimise the risk of information leakage?
A23	ANZ has clear order visibility restrictions and segregated workflows based on 'need to know' principles for sales and trading staff to minimise information leakage.
Q24	Can discretionary traders who may enter or exit risk for your institution view algo orders at any stage? If so, what steps have been taken to minimise the risk of information leakage?
A24	ANZ's Algorithms and FX Algo Orders are managed by ANZ's team of e-FX traders. Only in certain limited and unavoidable circumstances, in order to manage your FX Algo Order, we may need to allow certain specified non e-FX traders to view and manage the FX Algo Order. Steps taken to minimise the risk of information leakage include strict policies and training around information use and the flow of information, as well as surveillance and monitoring controls.
Q25	Can an electronic market making system view algo orders at any stage? If so, what steps have been taken to minimise the risk of information leakage or misuse of information?
A25	No
Q26	Are algo order flows included in any market positioning tools or analyses that other clients may use?
A26	No
<b>SAFETY FEATURES</b>	
<i>Safety features might include fat-finger limits, kill switches or protections that automatically suspend the order when it trades too fast or in certain market conditions.</i>	
Q27	Please describe any in-built safety features you have that may cause an order to be suspended or rejected.
A27	Automated firewalls monitor various parameters including order size; submission and execution pace; reject rate; orders rate; and market spread and impact which may cause an individual order or orders to be suspended or rejected. The algo trading desk provides oversight with access to kill switches to override in emergency scenarios.
Q28	Please explain what you have done, and will continue to do, to ensure the integrity of the electronic trading system you provide for clients to use (including the system's reliability, security, capacity and contingency measures).
A28	The Client Algo product is embedded into ANZ's broader IT management processes which controls and monitors critical features including, but not limited to, the change release process, stress testing and Asset Lifecycle Management (ALM).

	<p>ANZ's e-FX infrastructure has the highest criticality rating with several dedicated resources in place to ensure system resilience and availability. ANZ also has robust system monitoring and security arrangements.</p> <p>On the business side, ANZ has augmented the above with specific Electronic Trading procedures and operating manuals; annual control testing; and an Electronic Governance Oversight forum which encapsulates the business, operational risk, legal and compliance teams.</p>
<b>TCA</b>	
<p><i>TCA is an increasingly important part of the service. Where the TCA is not third party it is important to understand internal metrics. For example, if you have 'beaten risk transfer price' by 3bp how is that risk transfer price calculated?</i></p>	
Q29	Do you support any TCA or analytics? If so, please specify which providers.
A29	Yes. ANZ provides its own TCA. Where a client is also a customer of BestX, they can obtain a third party TCA from BestX.
Q30	If you provide proprietary analytics, please describe how relevant metrics are calculated (mid-price, risk-transfer benchmarks, etc.).
A30	<p>Mid-price is calculated using ANZ's unskewed mid/bid/offer from ANZ's core pricing engine which has access to multiple venues to source market data to formulate the benchmark price.</p> <p>Risk transfer benchmark price is calculated using ANZ's best client tier. Other metrics reported include: average price from mid; passive fill ratio; ANZ internalisation; and open / high / low / close prices in the observable market.</p>
Q31	If you provide proprietary analytics, is there a difference in data provided to different users? If so, please elaborate.
A31	No
<b>SWAPS</b>	
<p><i>Algo Users may have a need to roll an algo execution entirely/partially to one or more forward value date/s. If roll forwards are executed with the Algo Provider, it is crucial to understand if the respective swap prices are competitive and whether potentially sensitive order information is exposed. For example, does the swaps trader know which side of the quote the algo execution is on or do they receive a two-sided RFQ? Also, does the swap trader know they are quoting a captive spot fill or does it appear the same as RFQs that are priced in competition with other banks?</i></p>	
Q32	What information is provided to the STIRT desk when there is a request for swap pricing from an algo order?
A32	Not Applicable